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Mushroom Production Using Banana Leaves, Rice Straw, and Cogon in Urban and Rural Negros Oriental

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Abstract. This study investigated the effectiveness of three substrates – dried rice straw, dried banana leaves, and dried cogon leaves – in optimizing mushroom yield under varying environmental conditions. The need for food self-sufficiency was never a genuine concern when the pandemic hit, highlighting the importance of producing food in one's yard. Mushrooms, particularly *Volvariella volvacea*, represent a viable option. Dried rice straw is an effective and eco-friendly substrate for mushroom cultivation, especially in rice-producing regions. Its high cellulose, hemicellulose, and lignin content provide essential nutrients, making it well-suited for mushroom production. Dried banana leaves are a practical and sustainable substrate option for mushroom cultivation, particularly in tropical regions where bananas are widely grown. Like dried rice straws, they also contain cellulose and lignin. Cogon grass, an invasive plant in many regions, is increasingly used as a mushroom substrate due to its abundance, low cost, and lignocellulosic content. Rich in cellulose and hemicellulose, it provides essential nutrients for mushroom production. Farmers from selected urban and rural areas participated in the study, cultivating mushrooms using the three substrates. Data were analyzed using Analysis of Variance (ANOVA) and Duncan's Multiple Range Test (DMRT) at the 5% and 1% significance levels. The result indicated no significant differences in yield among the three substrates at either significance level. However, dried rice straw consistently yielded the highest total and mean outputs, followed by dried banana leaves, while dried cogon leaves produced the least. This trend was observed across all locations and environmental conditions. The results suggest that rice straw is the most effective substrate for *Volvariella volvacea* cultivation. Given its consistent performance across various conditions, rice straw is recommended for farmers aiming to optimize mushroom yields. Future research should explore optimizing substrate combinations, supplementations, and refining cultivation techniques to enhance production, ensuring the continued development of mushroom cultivation practices.

Keywords: Food production; Mushroom cultivation; rice straw substrate; Substrate decomposition; Sustainable food production; *Volvariella volvacea*.

1.0 Introduction

Mushroom cultivation has emerged as a sustainable agricultural practice that transforms low-value agricultural and forestry by-products into nutritious food, addressing global food security challenges. Substrates such as rice straw, banana leaves, and cogon grass are viable alternatives for mushroom farming, particularly for saprophytic species like *Volvariella volvacea*. These substrates, rich in cellulose, hemicellulose, and lignin, support fungal growth while contributing to circular agriculture by reducing agricultural waste (Hu et al., 2023). Historically, China is recognized as the earliest country to cultivate mushrooms and ranks among the top producers today, alongside the United States, Italy, the Netherlands, and Poland.

The global demand for mushrooms has increased significantly, with production growing over 13.8-fold in the past three decades. This growth highlights the importance of integrating sustainable practices into mushroom farming to address environmental challenges and optimize yields (Royse et al., 2021; FAOSTAT, 2022). However, stagnation in production outside China underscores the need to adopt innovative cultivation methods and expand the use of alternative substrates. In the Philippines, *Pleurotus ostreatus* is cultivated commercially due to its feasibility for mass cultivation, and preservation methods such as canning extend its shelf life. *Volvariella volvacea*, another widely available species, flourishes particularly during thunderstorms.

Mushrooms are nutritionally, economically, and biotechnologically valuable. They are low in calories and high in protein and fiber. Beyond their nutritional value, mushrooms serve critical roles in the pharmaceutical industry, recognized for their antioxidant, anticancer, and immunomodulating properties (Niazi & Ghafoor, 2021). Traditional knowledge among indigenous peoples has highlighted the medicinal benefits of both edible and wild mushrooms, which are now being studied for their bioactivity against various ailments.

Mushrooms offer a significant and largely untapped resource for new pharmaceutical products, with various activities reported in areas such as antitumor, cardiovascular, and antimicrobial properties. In developing nations like India, mushroom cultivation can improve food security, healthcare, and employment opportunities. Their combination of umami flavor and high nutritional content makes mushrooms a cost-effective food source across many cultures. Additionally, mushrooms boast a diverse range of bioactive metabolites that can aid in preventing and treating health issues. Extracts from medicinal mushrooms have shown potential in wound healing through various mechanisms (Javad et al., 2020).

In light of increasing food scarcity and the challenges posed by the COVID-19 pandemic, mushrooms can play a crucial role in sustainable food production. However, the seasonal abundance of *Volvariella volvacea* poses sustainability challenges. To address this, spawn production in controlled conditions and the cultivation of mushrooms on diverse substrates is essential. Supporting the mushroom industry is vital for rural economic development. This study aims to help farmers in urban and rural areas produce quality, low-cost mushrooms, thereby contributing to food security and sustainability.

2.0 Methodology

2.1 Experimental Design

A randomized complete block design (RCBD) was employed, with three treatments replicated thirty times. The three treatments represent the different substrates: dried rice straw (Treatment X), dried banana leaves (Treatment Y), and dried cogon leaves (Treatment Z). The Randomized Complete Block Design (RCBD) is a statistical approach widely used in agricultural and biological research to control variability caused by external factors, such as environmental differences. By grouping similar experimental units into blocks and randomly assigning treatments within each block, RCBD minimizes within-block variability while isolating treatment effects (Plant Breeding & Genomics, 2019).

RCBD is effective for experiments where conditions vary significantly across blocks, such as field studies with spatial or soil differences. It is simple to implement and analyze using tools like ANOVA, ensuring robust comparison of treatment effects (Real Statistics Using Excel, 2024). However, it assumes no interaction between treatments and blocks. If this assumption is violated, alternative designs may be required. This design is particularly useful in plant breeding and agronomic trials. For example, it has been applied to evaluate crop yields under varying soil fertility levels or test the efficacy of fertilizers (Plant Breeding & Genomics, 2019).

2.2 Research Locale

This study was conducted in various locations within the third district of Negros Oriental, specifically in the municipalities of Siaton, Sta. Catalina, and Basay, and the City of Bayawan.

2.3 Experimental Plot Layout

The experimental plot layout is presented below, showing the legend and dimensions:

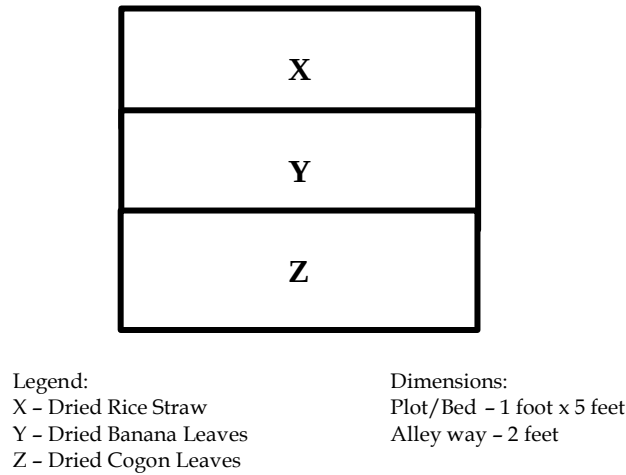


Figure 1. *Experimental Plot Layout*

2.4 Sampling

Thirty farmers were purposively selected to test the three substrates. This resulted in a total of 90 samples (3 treatments $\times$ 30 farmers). Each farmer provided the substrate materials, which were readily available locally. The number of plots was calculated as follows:

$$P_t = (F \times S \times T) = (10 \times 3 \times 3) = 90$$

Where:

- Pt = total number of plots
- F = number of farmer respondents per town or city (10)
- S = number of substrates (3)
- T = Town or City (3)

2.5 Materials and Procedures

Substrate Preparation

Clean, dried rice straw, banana leaves, and cogon leaves were collected two weeks before spawning. These substrates were air-dried for two weeks, soaked in water for 8 hours, and drained. The moist substrates were incubated in sealed plastic bags for 8 days to initiate the incubation process.

Substrate Disinfection/Sterilization

The substrates were disinfected by submerging them in a solution of hydrogen peroxide (20 ml hydrogen peroxide per 200 liters of chlorine-free water) for 8 hours. They were then drained until no water was dripping.

Spawn Beds/Block Preparation

Raised beds (1 foot x 5 feet) were prepared in shaded areas. Layers of disinfected substrate, 5 inches thick, were spread on the beds. The *Volvariella volvacea* spawn was evenly distributed between the layers. Each bed had 5 layers with a total of 100 grams of spawn per layer.

Care and Management

The beds were covered with plastic sheets, which were opened 4 days later to allow gas exchange during the primordial stage. Small holes were made to introduce oxygen. Four days after the primordial stage, pinheads appeared, and mushrooms were harvested from the fifth day onwards. Harvesting was performed daily before sunrise, and the plastic cover was replaced after each harvest.

2.6 Data Gathering and Analysis

Mushrooms were weighed immediately after each harvest. Data for each substrate were recorded in a matrix, and the total yield for each substrate was computed by summing the daily yields. The data were tabulated and analyzed using analysis of variance (ANOVA) and Duncan's multiple range test at the 5% and 1% significance levels.

2.7 Ethical Considerations

This research pass the ethical standards and was given by the research ethical standards committee. This research meets ethical standards and was approved by the research ethics committee.

3.0 Results and Discussion

3.1 Results from Bayawan City, Negros Oriental

The findings (Table 1) underscore the pivotal role of substrate choice in mushroom production. Dried rice straw emerges as the most productive substrate for *Volvariella volvacea* cultivation, yielding a mean of 1.204 kg. This is markedly higher than the yield from dried banana leaves (0.39 kg) and the absence of yield from dried cogon leaves. The latter suggests that this material may not offer the necessary nutrients or structural conditions for optimal mushroom growth. While dried banana leaves did yield mushrooms, it was at a significantly lower rate than rice straw. Villasol produced the highest yield (4.3 kg) among the different barangays, possibly due to favorable environmental conditions or better substrate management practices by local farmers. In contrast, Bugay recorded the lowest yield (0.4 kg), which could be attributed to less favorable growing conditions or variations in how the substrates were handled. These location-based differences highlight the importance of local environmental factors and the need for further research into how microclimates and farming practices affect mushroom production.

Table 1. Summary of result collected from the selected ten barangays of Bayawan City

Location Bayawan City	Treatment			Block Total	Grand Total	Grand Mean
	X	Y	Z			
Ali-is	1.35	0.00	0.00	1.35		
Banay-banay	0.59	0.15	0.00	0.74		
Banga	1.50	0.00	0.00	1.50		
Bugay	0.40	0.00	0.00	0.40		
Dawis	2.30	0.00	0.00	2.30		
Kalumboyen	1.10	0.70	0.00	1.80	15.9	1.59
Minaba	1.70	0.60	0.00	2.30		
Nangka	0.27	0.39	0.00	0.66		
Villareal	0.23	0.36	0.00	0.59		
Villasol	2.60	1.70	0.00	4.30		
Treatment Total	12.0	3.90	0.00			
Treatment Mean	1.20	0.39	0.00			

The Analysis of Variance (ANOVA) results (Table 2) further reinforce the importance of substrate type, with a highly significant treatment effect showing that the substrate substantially affects yield. Interestingly, the non-significant difference between blocks (locations) suggests that the geographic variation in the study sites within Bayawan City did not significantly impact mushroom production. This indicates that environmental factors such as microclimate, soil type, and farming practices across the different barangays were relatively uniform in their effects, allowing substrate type to emerge as the dominant variable influencing yield.

Table 2. Analysis of variance (ANOVA) of Bayawan City result

SV	dF	SS	MS	obF	RF	
					0.05	0.01
Total	17	12.1				
Block	9	6.24	0.69	2.38	3.18	5.35
Treatment	1	3.32	3.32	11.4**	5.12	10.5
Error	9	2.59	0.29			

CV=33.87%

**=highly significant

The results from Duncan's Multiple Range Test (Table 3) further validate dried rice straw as the most effective substrate, distinguishing it as significantly superior to banana and cogon leaves. This finding has important practical implications for local farmers and mushroom producers, as it provides evidence-based guidance for

improving production efficiency. Rice straw is readily available and cost-effective and offers a clear advantage in terms of yield potential, making it the best choice for *Volvariella volvacea* cultivation in Bayawan City and promising a bright future for the producers.

Table 3. *Duncan's multiple range test*

Treatment	Mean	Difference
X	1.2	X**
Y	0.39	0.81
Z		

3.2 Results from Sta. Catalina, Negros Oriental

As presented in Table 4, the results from Sta. Catalina once again confirm the superiority of dried rice straw (Treatment X) as the most effective substrate for *Volvariella volvacea* cultivation. With a mean yield of 2.24 kg, rice straw outperformed dried banana leaves (Treatment Y), which produced 1.33 kilograms. Importantly, dried cogon leaves (Treatment Z) yielded no mushrooms, consistently failing across multiple locations, which indicates its unsuitability as a substrate for mushroom production. This further underscores the undeniable superiority of rice straw as the preferred substrate for *Volvariella volvacea* cultivation. The findings in Sta. Catalina, echoing the earlier results from Bayawan City, confirm that rice straw is adaptable to various conditions, providing the ideal balance of nutrients, moisture retention, and aeration for optimal mushroom yield. This adaptability makes rice straw a confident choice for farmers in different regions, regardless of their specific environmental conditions. Among the barangays in Sta. Catalina and Amio recorded the highest yield (4.7 kg), likely due to favorable growing conditions or improved substrate management practices. On the other hand, Poblacion's lower yield (2.8 kg) may be attributed to less favorable conditions or less efficient handling of the substrate. However, rice straw was the most productive substrate even in Poblacion, further underscoring its reliability across diverse settings.

Table 4. *Summary of result collected from the selected ten barangays of the Municipality of Sta. Catalina*

Location Sta. Catalina	Treatment			Block Total	Grand Total	Grand Mean
	X	Y	Z			
Amio	2.50	2.20	0.00	4.70		
Caranoche	2.90	1.30	0.00	4.20		
Cawitan	3.30	1.20	0.00	4.50		
Fatima	1.80	1.10	0.00	2.90		
Kabulakan	2.10	1.00	0.00	3.10		
Manalongon	2.00	1.60	0.00	3.60	35.7	3.57
Nagbinlod	2.30	1.40	0.00	3.70		
Obat	2.00	1.30	0.00	3.30		
Poblacion	1.70	1.10	0.00	2.80		
San Francisco	1.80	1.10	0.00	2.90		
Treatment Total	22.4	13.3	0.00			
Treatment Mean	2.24	1.33	0.00			

The ANOVA results for Sta. Catalina, as shown in Table 5, aligns with those from Bayawan City, confirming that the choice of substrate significantly influences *Volvariella volvacea* yield. At the same time, the block (location) had no significant impact on production. This finding reinforces the conclusion that substrate selection is the most critical factor in mushroom cultivation, regardless of geographic variation. The consistency of this result across different locations highlights the universal effectiveness of dried rice straw as a substrate. The lack of significant variation due to location suggests that environmental factors such as temperature, humidity, and soil conditions in Sta. Catalina and Bayawan City are sufficiently uniform, or at least not influential enough, to affect mushroom yield. This implies that the performance of substrates, particularly dried rice straw, can be expected to hold across localities with similar climates. This consistency is an important consideration for farmers looking for reliable and replicable results, as it minimizes the need for location-specific adjustments and allows for broader application of the findings.

The significant effect of substrate choice, confirmed by the ANOVA and Duncan's Multiple Range Test, underscores the importance of using substrates that provide nutrients, moisture retention, and aeration. Dried rice straw has consistently met these requirements, making it the most effective substrate tested. The poor performance of cogon leaves, with no yield recorded in both locations, further emphasizes the need for careful substrate selection, as unsuitable materials can severely hinder production. While geographic location did not significantly

affect yield, slight variations in total production between barangays, such as Amio's higher yield and Poblacion's lower yield in Sta. Catalina suggests that localized farming practices or microenvironmental conditions could still play a role. However, the consistency of dried rice straw's performance across all test sites implies that its advantages outweigh any minor location-based differences. These findings offer valuable practical insights for mushroom producers. The consistent superiority of dried rice straw across different environments means that farmers can confidently adopt this substrate, knowing it will yield optimal results regardless of minor environmental or geographic differences. This eliminates much of the guesswork in substrate selection and allows for a more streamlined approach to mushroom cultivation.

Table 5. Analysis of variance (ANOVA) of the Municipality of Sta. Catalina result

SV	dF	SS	MS	obF	RF	
					0.05	0.01
Total	17	7.61				
Block	9	1.48	0.16	0.73	3.18	5.35
Treatment	1	4.15	4.15	18.8**	5.12	10.56
Error	9	1.98	0.22			

CV=13.14% **=highly significant

The results from Table 6 provide further confirmation that dried rice straw (Treatment X) is the most effective substrate for *Volvariella volvacea* cultivation, as validated by Duncan's Multiple Range Test. Rice straw's superior performance in both Sta. Catalina and Bayawan City make it the optimal choice for mushroom production across different locality, consistently yielding higher outputs than other substrates. These findings strongly support the recommendation of dried rice straw as the preferred substrate for mushroom farming, particularly in areas with similar environmental conditions to Sta. Catalina. The consistent results across multiple locations highlight that dried rice straw offers the ideal balance of physical structure, nutrient availability, and moisture retention for promoting mushroom growth. This consistency, confirmed by both ANOVA and Duncan's Multiple Range Test, makes rice straw a highly reliable substrate, eliminating much of the uncertainty accompanying mushroom cultivation. Unlike dried banana leaves (Treatment Y), which produced moderate yields, and dried cogon leaves (Treatment Z), which consistently failed to support mushroom growth, rice straw proved effective in maximizing yield across varied environments.

Table 6. Duncan's multiple range test

Treatment	Mean	Difference
X	2.24	X**
Y	1.33	0.91
Z		

3.3 Results from Basay, Negros Oriental

The results from Table 7 further reinforce the consistent superiority of dried rice straw (Treatment X) as the most effective substrate for *Volvariella volvacea* cultivation. In Basay, dried rice straw achieved a mean yield of 2.15 kg, outperforming dried banana leaves (Treatment Y), which produced a mean yield of 1.3 kg. Once again, dried cogon leaves (Treatment Z) yielded no mushrooms, underscoring its ineffectiveness as a substrate across multiple locations. The consistently strong performance of dried rice straw across different locations – whether in Bayawan City or Sta. Catalina, or Basay – validates its recommendation as the ideal substrate for mushroom cultivation. Its ability to provide the necessary nutrients, moisture retention, and structure needed for *Volvariella volvacea* growth is now well-established through both statistical analyses and practical results. The complete failure of cogon leaves to support mushroom yield in any location, as reiterated here, suggests that this substrate lacks the essential qualities required for fungal development, likely due to its poor nutrient content or inadequate water-holding capacity.

In Basay, the variation in yields between barangays – Cabalayungan producing the highest yield at 4.2 kg and Bal-os yielding the lowest at 2.5 kg – may indicate localized differences in microclimatic conditions or farming practices. This further reinforces the critical role of substrate selection, regardless of location. The practical implications of these findings for farmers in Basay are clear: using dried rice straw as the primary substrate for *Volvariella volvacea* cultivation offers the best opportunity for maximizing yields. The availability of rice straw as an agricultural byproduct makes it both affordable and sustainable, allowing farmers to enhance productivity without incurring significant additional costs. Moreover, the predictable performance of rice straw across different

locations and environmental conditions makes it a reliable choice for expanding mushroom farming in areas with similar climates. While banana leaves (Treatment Y) demonstrated some yield potential, their lower overall performance than rice straw suggests they may be best suited as a secondary or supplementary substrate rather than the primary option. The consistency of the results across multiple locations supports the broader recommendation for farmers to prioritize rice straw over banana leaves or other less effective substrates.

Table 7. Summary of result collected from the selected ten barangays of the Municipality of Basay

Location	Treatment			Block	Grand	Grand
Basay	X	Y	Z	Total	Total	Mean
Actin	1.90	1.40	0.00	3.30		
Bal-os	1.50	1.00	0.00	2.50		
Bongalonan	2.10	1.00	0.00	3.10		
Cabalayungan	2.40	1.80	0.00	4.20		
Cabatuanan	2.20	1.20	0.00	3.40		
Cabudlisan	1.70	1.30	0.00	3.00	34.5	3.45
Daro	2.20	1.20	0.00	3.40		
Maglinao	2.60	1.40	0.00	4.00		
Poblacion	2.60	1.40	0.00	4.00		
Yardahan	2.30	1.30	0.00	3.60		
Treatment Total	21.5	130	0.00			
Treatment Mean	2.15	1.30	0.00			

The ANOVA results for Basay, as shown in Table 8, further underscore the critical importance of substrate selection in *Volvariella volvacea* cultivation. With a highly significant Treatment F-value of 72.40, it is clear that the type of substrate had a profound effect on mushroom yield. At the same time, the Block F-value of 2.8—non-significant—indicates that the location or environmental variations across different barangays did not substantially influence production outcomes. This mirrors the findings from Bayawan City and Sta. Catalina reinforces substrate choice's central role in driving mushroom yield, irrespective of geographic location. The highly significant impact of substrate type, reflected in the ANOVA results, once again highlights dried rice straw (Treatment X) as the superior substrate for mushroom cultivation. This conclusion is supported by the consistently higher yields associated with rice straw across multiple locations, including Basay. The substrate's ability to provide an optimal environment for fungal growth—likely due to its superior nutrient availability, moisture retention, and structural properties—makes it the best option for maximizing yield.

In contrast, dried banana leaves (Treatment Y) produced lower yields, while dried cogon leaves (Treatment Z) showed no potential as a viable substrate. The non-significant Block F-value suggests that geographic variations in Basay, such as differences in microclimate or soil quality across barangays, had little to no effect on mushroom yield. This is a critical finding for farmers, as it confirms that focusing on substrate selection is far more critical than considering location-specific factors when improving mushroom production. The practical implication is that farmers across different barangays in Basay can confidently adopt dried rice straw as their primary substrate, knowing that it will yield consistent results regardless of their specific location. These results also reinforce the broader conclusions drawn from the previous analyses of Bayawan City and Sta. Catalina. The consistency of the findings across these diverse locations supports the recommendation that dried rice straw is the most effective substrate not only within Basay but also throughout Negros Oriental and similar agricultural areas. This reliability offers farmers a clear, evidence-based strategy for optimizing their mushroom cultivation efforts, reducing the uncertainty often associated with geographic or environmental differences.

Table 8. Analysis of variance (ANOVA) of the Municipality of Basay result

SV	dF	SS	MS	obF	0.05	RF
Total	17	5.28				
Block	9	1.23	0.14	2.80	3.18	5.35
Treatment	1	3.62	3.62	72.4**	5.12	10.5
Error	9	0.43	0.05			

CV=6 % **=highly significant

In conclusion, the ANOVA results for Basay confirm that substrate choice, specifically dried rice straw, is the primary determinant of mushroom yield in *Volvariella volvacea* cultivation. The non-significant effect of location demonstrates that substrate performance remains consistent across geographic variations, making dried rice straw

the most reliable and effective option for mushroom farmers in Basay. As the findings align with those from other locations, farmers are strongly encouraged to adopt this substrate to maximize production efficiency and yield, contributing to more sustainable and profitable mushroom farming practices

The results from Table 9, derived from Duncan's Multiple Range Test, provide definitive statistical confirmation of the superiority of dried rice straw (Treatment X) as the substrate of choice for *Volvariella volvacea* cultivation in Basay. Duncan's test, designed to compare multiple treatment means, clearly distinguishes dried rice straw as significantly more effective than dried banana leaves (Treatment Y) and dried cogon leaves (Treatment Z). This finding corroborates the results from the earlier ANOVA, further strengthening the conclusion that substrate choice, particularly the use of rice straw, plays a critical role in achieving optimal mushroom yields. The significant difference highlighted by Duncan's Multiple Range Test confirms the effectiveness of dried rice straw. It emphasizes the marked underperformance of alternative substrates, particularly dried cogon leaves, which failed to produce any yield.

This aligns with the results observed in Bayawan City and Sta. Catalina, where dried cogon leaves consistently proved ineffective. Dried banana leaves were significantly outperformed by dried rice straw while offering moderate yields, underscoring the latter's superior ability to support robust mushroom growth. The findings are particularly valuable for farmers in Basay, as they provide clear, data-driven guidance on maximizing mushroom production. The statistical rigor of Duncan's test eliminates any doubt about the reliability of these conclusions, reinforcing the practical recommendation that dried rice straw should be the primary substrate for *Volvariella volvacea* cultivation. The consistent success of rice straw across different barangays, regardless of environmental conditions, further solidifies its status as the most dependable option for mushroom farming. From a broader perspective, these results highlight the importance of selecting substrates that provide the necessary nutrients for fungal growth and maintain the right physical properties, such as moisture retention and structural integrity. Rice straw, an abundant agricultural byproduct, offers the ideal combination of these qualities, making it both an environmentally sustainable and economically viable choice for farmers.

In contrast, while somewhat effective, banana leaves may lack the nutrient profile or moisture retention capacity needed for optimal growth, and cogon leaves appear unsuitable for cultivation due to their failure to support any mushroom yield. Duncan's Multiple Range Test results also reinforce the notion that location-specific factors such as microclimate or soil conditions have little impact on the effectiveness of the substrate. The significant results for substrate type, combined with the non-significant block effects shown in the ANOVA, suggest that farmers in Basay – and indeed in similar regions – can confidently use dried rice straw without making adjustments based on geographic or environmental variables. This makes the cultivation process more predictable and easier to manage, especially for small-scale farmers who may lack the resources to adapt their practices to varying local conditions.

Table 9. Duncan's multiple range test

Treatment	Mean	Difference
X	12.1	X
Y	1.30	0.85
Z		

3.4 Consolidated Results from Bayawan City, Sta. Catalina, and Basay

Table 10 consolidates the yield data across Bayawan City, Sta. Catalina and Basay provided a comprehensive comparison of the effectiveness of the three substrates tested – dried rice straw (Treatment X), dried banana leaves (Treatment Y), and dried cogon leaves (Treatment Z). The results reveal that Treatment X consistently outperformed the other substrates, with an overall mean yield of 1.86 kg, followed by Treatment Y at 1.01 kg. Treatment Z produced no yield, reaffirming its ineffectiveness as a substrate for *Volvariella volvacea* cultivation. The superior performance of dried rice straw across all locations highlights its ability to provide the necessary environment for optimal mushroom growth. Its high nutrient availability, water retention capacity, and suitable texture make it the most efficient substrate, supporting robust fungal growth. In contrast, while yielding some mushrooms, dried banana leaves consistently lagged, suggesting that although it may be a viable secondary option, it lacks the critical properties required for maximizing yield. On the other hand, dried cogon leaves failed

to produce any mushrooms, which may be attributed to poor nutrient content or inadequate moisture retention, rendering them unsuitable for mushroom farming.

Among the three locations, Sta. Catalina produced the highest total yield at 3.57 kg, emphasizing the overall effectiveness of dried rice straw, particularly in environments with favorable microclimatic conditions. Despite these conditions, the dominance of dried rice straw as the leading substrate remains consistent, with the results indicating that factors such as microclimate or slight environmental variations had minimal impact on overall yield. The lowest total yield was recorded in Bayawan City (1.59 kg), suggesting that factors like farm management, preparation techniques, or environmental stressors could have affected the performance. However, the yield from dried rice straw remained relatively stable. The data underscore the importance of substrate selection as a critical driver of *Volvariella volvacea* yield. The non-performance of cogon leaves across all locations confirms its inadequacy for mushroom cultivation, eliminating it as a viable option. Meanwhile, the moderate performance of banana leaves suggests that although they are better than cogon, they remain suboptimal compared to rice straw. Farmers seeking to maximize their production would benefit significantly from prioritizing dried rice straw, given its consistent ability to deliver the highest yields across multiple environments.

Table 10. Summary of result collected from the Municipalities of Sta. Catalina and Basay and the City of Bayawan

Location	Treatment Mean			Block Total	Grand Total	Grand Mean
	x	y	z			
Bayawan City	1.20	0.39	0.00	1.59		
Sta. Catalina	2.24	1.33	0.00	3.57		
Basay	2.15	1.30	0.00	3.45	8.61	2.87
Treatment Total	5.59	3.02	0.00			
Treatment Mean	1.86	1.01	0.00			

The overall ANOVA results in Table 11 provide valuable insights into the factors influencing mushroom yield across the three study locations. With a highly significant Treatment F-value of 68.75, the analysis confirms that substrate type is a major determinant of *Volvariella volvacea* yield. This result aligns with the earlier location-specific findings, emphasizing that dried rice straw (Treatment X) consistently outperformed the other substrates. The significant effect of substrate choice reiterates its critical role in mushroom cultivation, with rice straw offering the optimal environment for growth due to its superior moisture retention, nutrient content, and structural properties. In contrast, banana leaves (Treatment Y), while moderately effective, and cogon leaves (Treatment Z), which produced no yield, failed to match rice straw's performance, reaffirming their limited utility for large-scale mushroom farming.

However, what stands out in Table 11 is the highly significant Block F-value of 76.25, indicating that the location (block) also had a substantial impact on mushroom yield when data from all locations were aggregated. This result contrasts with the earlier non-significant block effects observed within individual locations, suggesting that microclimatic or geographic differences might not drastically affect yield within a specific site. However, they become more pronounced when examining the results across multiple locations. This finding underscores the importance of considering regional environmental factors such as microclimate, soil composition, humidity levels, and local farming practices, all of which may contribute to yield variability. The significant impact of location may also reflect differences in farm management techniques, such as how substrates are prepared, maintained, or harvested. Variations in moisture control, substrate depth, or harvest timing could contribute to the higher yields observed in certain barangays, such as Sta. Catalina had the highest overall yields.

These location-specific factors introduce an additional layer of complexity to mushroom cultivation, suggesting that while dried rice straw is the most effective substrate across all environments, farmers may still need to tailor their practices to suit the specific conditions of their local environment to achieve maximum yield potential. The fact that substrate type and location significantly influenced yield has important practical implications. For farmers, it means that while choosing the suitable substrate—dried rice straw—is critical, they must also be mindful of local environmental conditions that could impact production. This reinforces the need for adaptive farming practices considering local variations in climate, soil, and resource availability. Farmers in areas with more challenging environmental conditions may need to implement additional strategies, such as optimizing water retention or enhancing substrate nutrition, to compensate for these regional differences.

Table 11. Analysis of variance (ANOVA) of the overall result

SV	dF	SS	MS	obF	RF	
					0.05	0.01
Total	8	2.35				
Block	2	1.22	0.61	76.2**	3.18	5.35
Treatment	2	1.10	0.55	68.7**	5.12	10.5
Error	4	0.03	0.00			

CV=3 % **=highly significant

The results summarized in Table 12 provide compelling evidence that dried rice straw (Treatment X) is the most effective substrate for *Volvariella volvacea* cultivation across all study locations. Duncan's Multiple Range Test confirms this superiority by demonstrating significant differences in yield between rice straw and the other substrates, specifically dried banana leaves (Treatment Y) and dried cogon leaves (Treatment Z). This outcome underscores the importance of substrate selection in maximizing mushroom production. The consistent performance of dried rice straw highlights its intrinsic properties that favor mycelial growth and fruiting body development. Its high moisture retention, rich nutrient content, and optimal structure create an ideal microenvironment for *Volvariella volvacea*, facilitating higher yields.

In contrast, while dried banana leaves yielded some mushrooms, their overall performance was significantly lower than rice straws, indicating that they may need to provide a different level of support for successful cultivation. The total absence of yield from cogon leaves across all locations reinforces its inadequacy as a viable substrate for mushroom farming, suggesting that factors such as poor nutrient content or inappropriate moisture retention may have severely limited fungal growth. These findings have substantial implications for local farmers and the agricultural community. By identifying dried rice straw as the superior substrate, growers can make informed decisions that optimize their production practices. This focus on an effective substrate enhances yield potential and promotes economic viability, as increased mushroom production can lead to higher incomes for farmers.

Furthermore, Duncan's test affirms rice straw's effectiveness and highlights the significance of utilizing agricultural byproducts in sustainable farming practices. The integration of rice straw into mushroom cultivation provides a secondary income stream for farmers and contributes to waste reduction and improved environmental stewardship. As rice straw is readily available in rice-producing regions, its utilization aligns with sustainability principles, turning agricultural waste into a resource that fosters food security and economic resilience. Additionally, the confirmation of rice straw's efficacy across diverse locations suggests that it is adaptable to various microclimatic conditions, making it a reliable substrate for mushroom cultivation in different environments. This adaptability encourages its adoption among farmers in different barangays, promoting a more extensive and successful mushroom production network.

Table 12. Duncan's multiple range test

Treatment	Mean	Difference
X	1.86	X
Y	1.01	0.85
Z		

The results of this study reveal a highly significant difference in mushroom yield based on the substrate utilized, with dried rice straw consistently outperforming other substrates across all locations. This underscores the critical role that substrate selection plays in the successful cultivation of *Volvariella volvacea*. The superior performance of dried rice straw can be attributed to its rapid decomposition rate, which effectively releases essential nutrients into the growing environment. Its physical structure and nutrient profile facilitate this rapid breakdown, creating a conducive microenvironment that supports vigorous mycelial colonization and subsequently leads to higher fruiting body yields. In comparison, while providing some nutritional benefits, dried banana leaves demonstrated lower effectiveness as a substrate for mushroom production. The slower decomposition rate of banana leaves limits the immediate availability of nutrients necessary for optimal growth, hindering mycelial development and fruiting. This highlights the importance of not only nutrient content but also the decomposition dynamics of the substrate in determining the success of mushroom cultivation.

The results concerning dried cogon leaves are particularly revealing. The lack of mushroom production from cogon leaves emphasizes their unsuitability as a substrate for *Volvariella volvacea* cultivation. This ineffectiveness can be attributed mainly to their high lignin content and overall low nutrient availability, which impede microbial activity necessary for decomposition. The inability of cogon leaves to break down adequately during the study precluded mushroom growth and suggests that they may hinder overall soil health and biodiversity if used in agricultural practices. These findings provide critical insights for mushroom farmers, indicating that selecting an appropriate substrate is vital for optimizing yield potential. Dried rice straw emerges as the clear choice for those aiming to enhance their mushroom production, owing to its rapid decomposition and rich nutrient release. Additionally, this study underscores the importance of integrating agricultural byproducts, such as rice straw, into sustainable farming practices. By utilizing readily available materials, farmers can increase their mushroom yields and contribute to waste reduction and environmental sustainability.

Furthermore, the significant differences in yields observed across different substrates highlight the need for ongoing research into substrate management strategies. Future studies could explore combining substrates or adding nutritional amendments to enhance yields further and address potential limitations of other materials. Understanding how different substrates interact within various environmental conditions could lead to optimized practices that maximize mushroom production. In conclusion, the significant variation in mushroom yields based on substrate choice elucidates the importance of effective substrate management in cultivating *Volvariella volvacea*. The study's findings advocate using dried rice straw as the optimal substrate, providing a robust foundation for enhancing agricultural productivity while supporting sustainable practices. Farmers can improve their mushroom production outcomes by prioritizing suitable substrates and contributing to local food security initiatives.

The findings of this study align with recent literature highlighting the critical role of substrate selection in mushroom cultivation. For instance, Iqbal et al. (2019) emphasized the superior performance of rice straw due to its rapid decomposition and nutrient release, consistent with this study's results. Similarly, Mushungwa et al. (2020) reported that banana leaves, while nutritionally beneficial, decompose more slowly, limiting their effectiveness as a substrate. Singh et al. (2021) further corroborated that high lignin content in materials like cogon leaves inhibits decomposition, rendering them unsuitable for mushroom cultivation. Furthermore, studies such as those by Royse et al. (2021) emphasize the potential of combining substrates or adding nutritional supplements to enhance yields, supporting the study's recommendations for future research. These findings reinforce the importance of substrate selection and innovation in optimizing mushroom yields and promoting sustainable agricultural practices.

4.0 Conclusions

This study conclusively demonstrates that substrate choice is critical in successfully cultivating *Volvariella volvacea*, with dried rice straw emerging as the most effective substrate across multiple locations. The significant differences in mushroom yield based on substrate type underscore the importance of utilizing materials that decompose rapidly and provide adequate nutrients. Dried rice straw supports vigorous mycelial growth and enhances overall yield potential, making it the recommended substrate for farmers aiming to optimize their mushroom production. The findings further emphasize the feasibility of cultivating *Volvariella volvacea* in backyard settings, utilizing locally available materials. This accessibility empowers individuals and communities to engage in sustainable agricultural practices, promoting self-sufficiency. Importantly, the cultivation process is simple and straightforward, allowing even those with minimal gardening experience to participate, contributing to increased food production and security.

Additionally, this research highlights the economic viability of mushroom production, which requires minimal space, attention, and financial investment. By leveraging agricultural byproducts and employing efficient cultivation methods, farmers can generate additional income while supporting sustainable practices. Cultivating *Volvariella volvacea* offers a valuable solution to food security, particularly during crises such as the COVID-19 pandemic. Growing nutrient-rich mushrooms with limited resources can help mitigate food shortages and enhance community dietary diversity. As global challenges persist, your role in fostering local production systems will be essential for building resilience and ensuring stable food supplies. In conclusion, successfully cultivating *Volvariella volvacea* using dried rice straw optimizes yield and aligns with broader goals of sustainability, economic stability, and food security. Future research should further explore innovative cultivation techniques and substrate

combinations to enhance productivity and resilience in mushroom farming. Investing in these practices can support local communities and contribute to a more sustainable food system.

5.0 Contribution of Author

This research is conducted by a sole researcher.

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7.0 Conflict of Interest

The author declares no conflict of interest about the publication of this paper.

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Factors Influencing High School Teachers' Adoption of Learning Management Systems: A Study in Northern Luzon, Philippines

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Abstract. The world faced different challenges brought about by the COVID-19 pandemic. The closure of schools brought significant disruptions to the learning process and, in effect, caused learning gaps among students. To adapt and facilitate continued learning, the Philippine Science High School (PSHS) System used the Knowledge Hub (kHub) as its central Learning Management System (LMS). This quantitative study examined factors influencing the acceptance of an extended Technology Acceptance Model (TAM) among teachers at PSHS-CVC. Data was gathered using an online survey and was analyzed using the WarpPLS software. Forty-one teachers, the majority female, with Master's degrees, belong to higher teaching ranks, and with 6 – 10 years of teaching in the institution were the respondents of the study. Analysis of the data gathered indicated that system quality directly impacted both perceived usefulness and perceived ease of use. In turn, perceived ease of use influenced perceived usefulness, while perceived self-efficacy affected perceived ease of use. Perceived usefulness directly affected teachers' attitudes, intentions, and actual use of the LMS, which were also influenced by teaching experience. Of the 29 tested hypotheses, 10 were supported, confirming specific constructs of the extended TAM in this academic setting. Furthermore, the study showed that the adoption of LMS is greatly affected by the teaching experiences of the users, whether it is perceived to be beneficial to them, and if they intend to use the said LMS. This study provides insights into the acceptance factors for LMS adoption, contributing to strategies for effective technology use in education.

Keywords: Educational technology; Extended TAM; Learning Management System; Philippines

1.0 Introduction

Flexible learning is an educational approach that allows students flexibility in time, place, and mode of learning, often utilizing modern technology. It includes both online and offline instructions. Flexible learning implementation may differ depending on technological advancements, device availability, internet connectivity, and digital mastery. Due to the COVID-19 pandemic, the government implemented health protocols like lockdowns and temporary closures of establishments like schools. It intensified the need for flexible learning to ensure continuity of learning, pushing schools to adapt quickly. One widely used approach is distance learning, often supported by Learning Management Systems (LMSs) that enable teachers to continue instruction and students to access learning materials remotely.

LMSs have become a core component of modern education, facilitating in-person and remote teaching. LMS platforms like the knowledge hub (kHub) used by Philippine Science High School – Cagayan Valley Campus (PSHS-CVC) support a variety of instructional tasks. They allow teachers to upload course materials, conduct assessments, and track student progress while providing students with a means to access resources and monitor their performance. However, despite these advantages, LMS adoption and effective use are not guaranteed. Teachers and students may face challenges due to limited digital skills, varying technology accessibility, and differences in user engagement (Zanjani et al., 2016; Ignacio, 2021). PSHS CVC kHub operates using Moodle, a free, open-source software LMS and is used by teachers and students for flexible learning. It has different features like uploading and downloading learning materials and assessments, taking assessments, monitoring students' progress, and participating in forums and chats.

The use of LMSs in the teaching–learning process entails one's mastery of the use of technology. The Technology Acceptance Model and its different versions are a framework to model the extent to which educators adopt technology in their teaching practice (Scherer et al., 2019). The Technology Acceptance Model (TAM) is frequently used to understand technology adoption in educational settings. Initially introduced by Davis et al. (1989), TAM assesses perceived usefulness and ease of use, influencing users' intentions and attitudes toward adopting new technologies. This study utilizes an extended version of TAM, including external factors such as system quality and perceived self-efficacy (Fathema et al., 2015), to examine specific factors affecting LMS acceptance among PSHS-CVC teachers.

Despite extensive global research on LMS implementation, studies examining TAM's applicability in high school LMS adoption in the Philippines remain limited. A study on the applicability of TAM in adopting LMS among high school levels will help the administrator design more programs and policies that will lead to digital transformation and attainment of educational equity among teachers, learners, and stakeholders of basic education. This research addresses this gap by assessing which TAM constructs are most influential for LMS adoption and acceptance by teachers at PSHS-CVC. Figure 1 presents the proposed Technology Model that shows the different hypotheses included in the study.

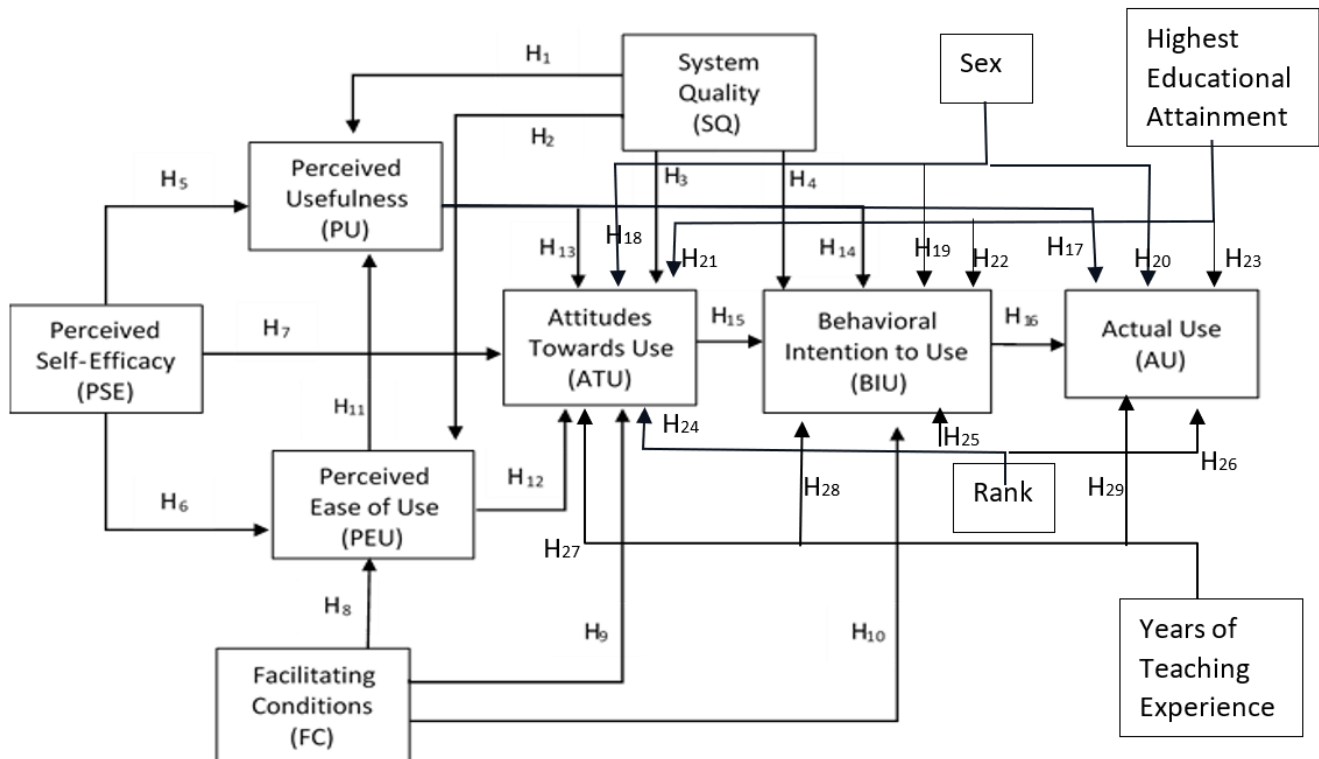


Figure 1: Proposed Technology Model of the Study

The first ten (10) hypotheses address the effects of the external variables System Quality (SQ), Perceived Self-Efficacy (PSE), and Facilitating Conditions (FC) on the original TAM constructs. In this study, "System Quality" (SQ) refers to the users' satisfaction with the performance, responsiveness, features, and contents of the LMS that is currently in use (Mailizar, Burg, & Maulina, 2021). The study's central hypothesis was that teachers would prefer to utilize the LMS in the future if they were satisfied with its quality and had favorable attitudes toward using it.

- H1: PU is directly affected by SQ.
- H2: PEU is directly affected by SQ.
- H3: ATU is directly affected by SQ.
- H4: BIU is directly affected by SQ.

Perceived Self – Efficacy (PSE), which is the self-evaluation of a person's ability to perform the tasks necessary to attain the needed results successfully, is another crucial factor in determining whether or not a technology system will be accepted (Nikou & Economides, 2019). PSE refers to a teacher's assessment of or confidence in his or her ability to use the system in the context of the LMS. The effect of "Perceived Self-efficacy" on "Attitudes Towards Use" was included in this investigation. From these, three hypotheses were examined:

- H5: PU is directly affected by PSE.
- H6: PEU is directly affected by PSE.
- H7: ATU is directly affected by PSE.

Facilitating conditions (FC) are influences that can have a good or bad effect on the difficulty people have in successfully finishing a given work (Teo, 2010). In the current study and the context of LMS use, FC is assessed by the accessibility of capacity-building opportunities, technical help and assistance, and related resources to help work in the LMS. Previous studies revealed a weak positive effect of FC on ATU and PEU (Fathema et al., 2015). If suitable facilitating conditions exist, teachers will adopt favorable attitudes toward using LMSs. The study put forth three more hypotheses to investigate the impact of facilitating conditions (FC) on the PEU and ATU in the context of faculty acceptance of LMS. The effect of FC on BIU was also included in this investigation:

- H8: Facilitating Conditions have a positive influence on PEU.
- H9: Facilitating Conditions' positive influence on ATU.
- H10: Facilitating Conditions' positive influence on BIU.

The other seven (7) hypotheses determine the effects of the original TAM variables, namely, Perceived Ease of Use (PEU), Perceived Usefulness (PU), Attitudes Towards Use (ATU), Behavioral Intention to Use (BIU), and Actual Use (AU) with each other. An individual's perception of using a specific technology effortlessly is known operationally as perceived ease of use (PEU). Operationally speaking, perceived usefulness (PU) is the degree to which an individual deliberates that using a specific system would improve their aptitude to accomplish their job (Davis, 1989). In addition, attitude toward use (ATU) refers to a person's good or lousy inclination toward engaging in the target behavior when using a system. Operationally, behavioral intention to use (BIU) is defined as using the features and content of a learning management system (LMS) to support academic activities, both now and in the future. Lastly, Actual Use (AU) refers to the overall extent of use of the LMS:

- H11: Perceived Ease of Use has a positive influence on PU.
- H12: Perceived Ease of Use has a positive influence on ATU.
- H13: Perceived Usefulness has a positive influence on ATU.
- H14: Perceived Usefulness has a positive influence on BIU.
- H15: Attitude toward Use has a positive influence on BIU.
- H16: Behavioral Intention to Use has a positive influence on AU.
- H17: Perceived Usefulness has a positive influence on AU.

Other variables included in the model are sex, highest educational attainment, rank, and years of teaching experience. Sex is whether the respondent is a female or male. Highest Educational Attainment refers to the respondents' educational attainment, whether they finished a bachelor's degree, master's degree, or doctorate or

post-doctorate degree. The Philippine Science High School System teachers are all Special Science Teachers and are ranked accordingly. In this study, rank refers to whether the respondents are Special Science Teacher I, Special Science Teacher II, Special Science Teacher III, Special Science Teacher IV, or Special Science Teacher V. Years of teaching experience refers to the number of years the respondents are teaching at Philippine Science High School – Cagayan Valley Campus. This does not include the teaching experiences of the respondents outside of Philippine Science High School – Cagayan Valley Campus. The following were the additional hypotheses of the study:

- H18: Sex directly affects ATU
- H19: Sex directly affects BIU
- H20: Sex directly affects AU
- H21: Highest Educational Attainment directly affects ATU
- H22: Highest Educational Attainment directly affects BIU
- H23: Highest Educational Attainment Directly Affects AU
- H24: Rank directly affects ATU
- H25: Rank directly affects BIU
- H26: Rank directly affects AU
- H27: Years of teaching experiences directly affect ATU
- H28: Years of teaching experiences directly affect BIU
- H29: Years of teaching experiences directly affect AU

By studying the effects of these variables on the adoption of LMS, this study seeks to support administrators and policymakers in improving LMS integration, enhancing its usefulness for teachers and students. Understanding these factors can also guide teachers in designing more practical activities, ultimately fostering a supportive learning environment at PSHS-CVC.

2.0 Methodology

2.1 Research Design

This study employed a descriptive-correlational design, utilizing Partial Least Squares Structural Equation Modeling (PLS-SEM) to analyze the relationships among variables within the Technology Acceptance Model (TAM). PLS-SEM was chosen for its efficacy in handling complex path models and its robustness with small sample sizes, aligning well with the study's objectives of examining TAM-related constructs in a specific educational context.

2.2 Research Locale

The study was conducted at the Philippine Science High School Cagayan Valley Campus (PSHS-CVC) in Bayombong, Nueva Vizcaya, Philippines. PSHS-CVC is one of the 16 campuses of the Philippine Science High School System (PSHSS) and serves scholars from Region II and neighboring provinces, including Ifugao and Nueva Ecija.

2.3 Research Participants

The study's participants consisted of PSHS-CVC teachers, totaling 41 individuals. These individuals have firsthand experience using the Learning Management System (LMS). WARP PLS-SEM was used to determine an appropriate sample size, leveraging the inverse square root and gamma-exponential methods. With a significant path coefficient of 0.397, a significance level of 0.05, and a power level of 0.750, the minimum sample sizes required were 35 and 22 participants.

2.4 Research Instrument

Data collection was conducted through an online survey consisting of three sections. The first section provided an overview of the study's purpose and obtained informed consent in compliance with the Data Privacy Act. The second section gathered demographic data, including respondents' gender, educational attainment, rank, and years of experience. The third section contained items measuring LMS-related constructs based on the extended TAM model, adapted from Fathema et al. (2015). The TAM constructs included System Quality (SQ, 4 items), Perceived Self-Efficacy (PSE, 3 items), Facilitating Conditions (FC, 3 items), Perceived Ease of Use (PEOU, 4 items),

Perceived Usefulness (PU, 4 items), Attitude Toward Use (ATU, 4 items), Behavioral Intention to Use (BIU, 3 items), and Actual Use (AU, 3 items).

2.5 Data Gathering Procedure

An online survey was distributed to all 52 faculty members through their official Gmail accounts and a group chat. Data collection occurred from June 7 to June 14, 2023, approximately two years after the initial LMS implementation. Informed consent was obtained from all participants, ensuring compliance with ethical standards and transparency regarding the study's purpose. Respondents accessed the survey using their official Gmail accounts, verifying the authenticity of responses.

2.6 Data Analysis

This quantitative study employed Partial Least Squares Structural Equation Modeling (PLS-SEM) using WarpPLS 8.0 software to assess relationships between TAM-related constructs (SQ, PSE, FC, PEOU, PU, ATU, BIU, and AU) and other relevant variables. Frequency and percentage analyses were performed to describe respondents' demographic profiles.

2.7 Ethical Considerations

Throughout the study, ethical standards were rigorously upheld. All procedures followed PSHS-CVC's research policies and adhered to the Data Privacy Act, ensuring that personally identifiable information was accessible only to the primary researcher. Respondents were fully informed of their rights and provided explicit consent before participating.

3.0 Results and Discussions

3.1 Demographic Profile of Respondents

Table 1 presents the descriptive summary of the profile of the study respondents.

Table 1. Descriptive statistics of the demographic profile of respondents (n=41)

Category	Frequency	Percentage
Gender		
Male	18	43.9
Female	23	56.1
Highest Educational Attainment		
BA/BS	16	39.0
Master's	18	43.9
Doctorate/Post-Doctorate	7	17.1
Rank		
Special Science Teacher I	6	14.6
Special Science Teacher II	8	19.5
Special Science Teacher III	10	24.4
Special Science Teacher IV	10	24.4
Special Science Teacher V	7	17.1
Teaching Experience		
0-5 years	8	19.5
6-10 years	15	36.6
11-15 years	2	4.9
16-20 years	7	17.1
21 years and above	9	22.0

As shown in Table 1, 56.1% of the respondents were female, while 43.9% were male. Most participants (43.9%) held a Master's degree, and only a minority (17.1%) held a Doctorate or Post-Doctorate degree. Distribution by rank was relatively even, with most respondents holding the ranks of Special Science Teacher III and IV. Regarding teaching experience, many respondents had 6-10 years of service, reflecting a diverse range of professional backgrounds and a heterogeneous sample.

3.2 Tests for Reliability and Validity

The level of uniformity among the reflective items and the intended measures is assessed by construct reliability (Amora & Fearnley, 2020). When composite reliability (CR) and Cronbach's alpha (CA) are both at least 0.70, construct reliability is deemed adequate (Kock, 2020). Convergent validity evaluated whether respondents understood the items related to each variable to the same extent as the instruments' creator intended. There are two ways to evaluate convergent validity in PLS-SEM. Item loadings about the variable must be statistically significant ($p < 0.5$) and have a value of at least 0.50. Item loading indicates the correlation between the item and the variable. Another requirement is that the average variance extracted (AVE) be at least 0.50 (Kock, 2015). AVE compares observational error to the overall dispersion attributable to the construct (Amora & Fearnley, 2020)

Table 2. *Constructs' item loadings, AVE, and reliability*

Constructs	No. of Items	Factor Loadings	AVE	CA	CR
System Quality (SQ)	4	0.367-0.923	0.600	0.747	0.846
Perceived Self-Efficacy (PSE)	3	0.892-0.935	0.849	0.911	0.944
Facilitating Conditions (FC)	3	0.741-0.925	0.673	0.751	0.859
Perceived Ease of Use (PEU)	4	0.654-0.895	0.654	0.818	0.882
Perceived Usefulness (PU)	4	0.902-0.979	0.889	0.958	0.970
Attitudes Towards Use	4	0.895-0.948	0.841	0.937	0.955
Behavioral Intention to Use (BIU)	3	0.895-0.938	0.842	0.906	0.941
Actual Use (AU)	3	0.796-0.923	0.739	0.822	0.894

All factor loadings are significant at 0.001 ($p < 0.001$). AVE = average variance extracted; CA = Cronbach's alpha; CR = composite reliability

The data in Table 2 indicate that one of the eight concepts had a factor loading less than 0.50. System Quality (SQ) had a factor loading of 0.396, the 2nd question in the questionnaire, which asked about the respondents' satisfaction with the campus's internet speed. Internet speed is one of the problems of the Philippines in general. PSHS-CVC is not spared from that. Further analysis showed that during the data-gathering time, PSHS-CVC experienced fluctuation and slow internet speed. This has affected the responses of the respondents to the said questions. The other constructs have factor loadings within the valid value, which is 0.50, which indicates that the given questionnaire is of sound construction. The Cronbach's alpha and composite reliability of the eight different constructs are all above 0.70, exceeding the recommended construct validity threshold of 0.70. Like how item loadings are recorded, AVE values above 0.50 were deemed sufficient for the structural model's constructs' convergent validity. With all these results, it can be concluded that the questionnaire used in this context is valid.

Discriminant validity refers to the ability of the respondents to distinguish one variable from another, particularly in their content and structure (Kock, 2015). A variable's components have a strong correlation if the square root of the AVE of that variable is greater than the number of combinations of that variable with another (Teo, 2010). In this case, only System Quality (SQ) has a diagonal value lower than the related off-diagonal values. This shows seven constructs have satisfactory discriminant validity for all concepts (see Table 3).

Table 3. *Coefficients of correlations and constructs' AVEs*

Constructs	SQ	PSE	FC	PEU	PU	ATU	BIU	AU
System Quality (SQ)	0.774							
Perceived Self-Efficacy (PSE)	0.580	0.921						
Facilitating Conditions (FC)	0.820	0.641	0.820					
Perceived Ease of Use (PEU)	0.706	0.838	0.741	0.809				
Perceived Usefulness (PU)	0.702	0.681	0.806	0.806	0.943			
Attitudes Towards Use (ATU)	0.663	0.634	0.723	0.714	0.825	0.917		
Behavioral Intention to Use (BIU)	0.705	0.704	0.770	0.768	0.868	0.885	0.918	
Actual Use (AU)	0.341	0.455	0.089	0.451	0.110	0.140	0.270	0.860

The above results showed that the convergent validity, discriminant validity, and reliability tests were all satisfied to ensure their use in estimating the structural model. Other parameters needed to ensure the fitness of the data were also considered. Such parameters, but not limited to, are average path coefficient, average r squared, and nonlinear bivariate causality direction ratio. The following data showed the results of these different parameters.

Average path coefficient (APC)=0.210, $P=0.037$

Average R-squared (ARS)=0.665, $P<0.001$

Average adjusted R-squared (AARS)=0.607, $P<0.001$,

Average block VIF (AVIF)=3.396, acceptable if ≤ 5 , ideally ≤ 3.3
Average full collinearity VIF (AFVIF)=5.451, acceptable if ≤ 5 , ideally ≤ 3.3
Tenenhaus GoF (GoF)=0.748, small ≥ 0.1 , medium ≥ 0.25 , large ≥ 0.36
Simpson's paradox ratio (SPR)=0.828, acceptable if ≥ 0.7 , ideally =1
R-squared contribution ratio (RSCR)=0.931, acceptable if ≥ 0.9 , ideally = 1
Statistical suppression ratio (SSR)=0.897, acceptable if ≥ 0.7
Nonlinear bivariate causality direction ratio (NLBCDR)=0.931, acceptable if ≥ 0.7

Overall, the fit and quality indices of the structural model in the present study fell within acceptable limits.

3.2 Test of Structural Model

After testing the validity and reliability of the said constructs, the test for the structural model ensued. The parameter approximations and results for suggested associations in the extended TAM are shown in Table 4. Table 4 contains the hypotheses being tested, the direct path between the constructs being studied, the results of the β , p-value, and f^2 , and whether the data generated supports or not the given assumptions. Only 10 of the twenty - nine (29) hypotheses being tested were confirmed after the collected data were analyzed.

Table 4. Parameter approximations of the extended TAM for LMS

Path	β	p-value	f^2	Results
SQ→PU	0.394	0.002	0.303	Supported**
SQ→PEU	0.238	0.049	0.175	Supported*
SQ→ATU	0.094	0.266	0.072	Not Supported
SQ→BIU	-0.108	0.237	0.083	Not Supported
PSE→PU	0.025	0.435	0.018	Not Supported
PSE→PEU	0.611	<0.001	0.521	Supported**
PSE→ATU	0.047	0.380	0.033	Not Supported
FC→PEU	0.148	0.160	0.110	Not Supported
FC→ATU	0.069	0.326	0.054	Not Supported
FC→BIU	0.083	0.292	0.067	Not Supported
PEU→PU	0.522	<0.001	0.425	Supported**
PEU→ATU	0.165	0.132	0.120	Not Supported
PU→ATU	0.525	<0.001	0.443	Supported**
PU→BIU	0.493	<0.001	0.436	Supported**
ATU→BIU	0.471	<0.001	0.418	Supported**
BIU→AU	0.332	0.009	0.188	Supported**
PU→AU	-0.284	0.024	0.131	Supported*
Sex→ATU	-0.189	0.099	0.008	Not Supported
Sex→BIU	0.034	0.414	0.002	Not Supported
Sex→AU	-0.165	0.133	0.012	Not Supported
EducA→ATU	0.113	0.226	0.022	Not Supported
EducA→BIU	-0.071	0.321	0.014	Not Supported
EducA→AU	0.078	0.304	0.005	Not Supported
Rank→ATU	0.162	0.136	0.052	Not Supported
Rank→BIU	-0.112	0.229	0.035	Not Supported
Rank→AU	-0.231	0.055	0.053	Not Supported
Exper→ATU	0.066	0.333	0.014	Not Supported
Exper→BIU	-0.005	0.488	0.001	Not Supported
Exper→AU	0.256	0.038	0.037	Supported*

Table 4 shows that the structural model revealed that SQ positively affects PU (H_1) and PEU (H_2) as shown by their p - p-values, which are 0.002 and 0.049, respectively. The effect of SQ on PU is significant with an $f^2 = 0.303$, whereas the effect of SQ on PEU is moderate, with a value of f^2 equal to 0.175. Positive β values (i.e., path coefficients) indicated that low SQ led to low PU and PEU, a direct positive correlation. This aligns with studies like DelOne and McLean (2003), Cheng (2012), and Ferran (2021) that highlight the importance of system quality in shaping Perceived Usefulness. The moderate effect of SQ on PEU also aligns with studies such as those by Thong et al. (2006), who found that quality aspects of systems reduce the system's complexity and enhance its ease of use. Higher system quality in different platforms reduces the learning curve, making users feel more comfortable and confident using the technology. Moreover, SQ did not significantly influence ATU (H_3) and BIU (H_4), meaning SQ has no direct effect on ATU and BIU. Pynoo et al. (2011) found that although system quality

influences PU and PEU, it does not always directly lead to a positive attitude toward use or intentions, as PU often mediates these factors.

For PSE, it can be deduced that PSE significantly influenced PEU (H_6) with a p-value less than 0.001. The amount of the influence of PSE can be described as large on PEU ($f^2 = 0.521$). This implies that individuals with high self-efficacy are more likely to perceive technology as easy to use. The large effect size further confirms that teachers with higher confidence in their technological skills find the LMS easier to navigate. However, PSE did not significantly affect PU (H_5) and ATU (H_7), indicating no correlation between these constructs. The lack of significant correlations between PSE, PU, and ATU contrasts with other studies, such as Venkatesh and Davis (2000), where PSE often influences perceptions of usefulness through its effect on PEU. Ferran (2021) also found that PSE strongly affects the users' perceived ease of use, while perceived ease of use highly influences the students' perceived usefulness. This is also affirmed by Panergayo and Aliazas (2023), who found out that online learning self-efficacy positively impacts both PU and PEU. However, McFarland and Hamilton (2006) mentioned that in some environments, PSE might not always directly influence PU or attitude, especially if the system's usefulness is perceived independently of the user's confidence.

In connection with the findings of Fathema et al. (2015), this study demonstrated that SQ significantly and favorably influences PU. This implies that teachers will consider a high-performing LMS valuable. PEU is significantly influenced by teachers' perceived levels of self-efficacy, which supports earlier research that states that self-efficacy plays a key role in determining whether a technology use will be successful. This finding recommends that educators with high self-efficacy also have high levels of ease and assurance in their ability to use the LMS to further their professional objectives. According to prior research, teachers with high self-efficacy have better perceptions of and more significant aims to employ the LMS (Parkman et al., 2018)

FC did not influence PEU (H_8), ATU (H_9) and BIU (H_{10}). This implies that for teachers, facilitating conditions do not affect their perception of the ease of use of the kHub, actual use of the kHub, and their behavioral intention to use the said LMS. These results on FC's effect on the different constructs are intriguing, given that facilitating conditions such as available support and infrastructure are often viewed as influential in technology adoption models, such as those in Venkatesh et al.'s (2003) Unified Theory of Acceptance and Use of Technology (UTAUT). However, similar to these results are those of Teo (2010), who found out that facilitating conditions may not always play an important role for experienced users, who may rely more on their abilities and the perceived benefits of the system rather than external supports. The research conducted by Ferran (2021) also showed that FC does not affect the users' attitudes toward the use of e-learning tools.

PEU has a significant effect on PU (H_{11}) to a large extent ($f^2=0.0425$) but no significant effect on ATU (H_{12}). This shows the mediating role of PEU on PU across multiple contexts. PEU's influence on PU suggests that as teachers find the LMS easier to use, they start seeing it as more beneficial for their tasks. In terms of PU, it had a positive and large effect both on the ATU (H_{13}) and BIU (H_{14}) ($f^2=0.443$ and 0.436 , respectively). This implies that if teachers perceive the LMS to be helpful, then they will use the LMS and will have a strong behavioral intention to use it. Moreover, the large effect sizes for both paths are consistent with TAM's fundamental hypothesis that PU significantly predicts ATU and BIU. Scherer et al. (2019) reinforced these findings in educational technology, where perceived usefulness is a strong motivator for positive attitudes toward technology and actual behavioral intentions to adopt and use it. Garcia (2017) found that PEU and PU significantly affect each other in the acceptance of college students of learning management systems. Additionally, PU has a small direct effect on AU (H_{17}) with a f^2 value equal to 0.131. These findings were corroborated in the study of Panegaryo and Aliazas (2023), where they found that PEU and PU positively influence ATU. In the same study, PU and ATU significantly predicted BIU. Furthermore, Prasetyo et al. (2021) found that PEU has the most significant impact on AU, followed by the user interface and SQ towards PEU, which subsequently led to BIU and AU. Navarro et al. (2021), in their study among engineering students in the Philippines, found that PU and PEU significantly influence BIU. However, Chatterjee (2023) found that PEU does not affect PU.

On the other hand, ATU positively and significantly affected BIU (H_{15}) at a large extent ($f^2=0.418$), and in turn, BIU directly affected AU (H_{16}) at a moderate extent ($f^2=0.188$). The significant and positive relationships between these constructs echo many TAM studies that identify attitude as a key predictor of intention to use and actual

usage of the technology. Park (2009) found similar patterns among teachers adopting e-learning platforms: positive attitudes lead to increased behavioral intention to use and the actual usage of the technology. This was further confirmed by the research of Belo et al. (2024), which found that ATU had the most decisive influence on BIU among aviation college students. The positive effect of PEU with PU, PU on ATU, AU, and BIU, ATU on BIU, and the comparable result of BIU on AU align with the works by Sibuea (2018), Amora & Fearnley (2020) and Lavidas, Komis & Achriani (2022). This means that teachers who perceive ease of use with the system will develop promising behaviors toward LMS practice and have higher intentions to use the technology, which will later lead to active actual use. The study's results also showed the positive effect of years of teaching experience on using the LMS. This indicates that the more years of teaching, the greater the chance they will use the said LMS.

Of the additional hypotheses being tested, only years of teaching experience directly affect AU (H₂₉) moderately, with an f^2 value of 0.037. Sex, Educational Attainment, and Rank do not affect the use of LMS. This is partially aligned with the research of Teo (2011), who observed that teaching experience is a significant predictor of actual use of technology in TAM studies, possibly due to more experienced teachers having greater exposure and comfort with technology. However, Tarhini et al. (2014) found that sex and educational attainment could influence technology acceptance in specific contexts, though cultural and institutional factors often mediate these effects.

This study aimed to verify the extended TAM's suitability in a regional educational setting (Fathema et al., 2015). This research supported only 10 hypotheses, even though it confirmed several relationships from the model. After analyzing the model generated and considering only the significant paths, Figure 2 was generated. Figure 2 shows which of the different constructs on the extended TAM and the additional variables are significant with one another. Similar to the original TAM, the study's results showed that attitudes toward use directly affect the behavioral intention to use the LMS, directly affecting the actual use of the LMS. Additionally, Perceived Usefulness also directly influences Attitudes toward use and Behavioral intention to use, and perceived ease of use directly affects perceived usefulness, as indicated in the original TAM. Moreover, from the original TAM, external variables such as system quality, perceived self-efficacy, and facilitating conditions directly affect perceived usefulness and ease of use. Of the said variables, System Quality directly affects Perceived Usefulness and Perceived ease of use. In contrast, Perceived self-efficacy directly affects perceived ease of use. This study did not establish the direct effects of facilitating conditions on the different variables. In addition to the extended TAM, the study was able to show that teaching experience has a direct effect on the actual use of the LMS, and perceived usefulness has a direct effect on Actual use. These two direct relationships were not indicated in the original and extended TAM.

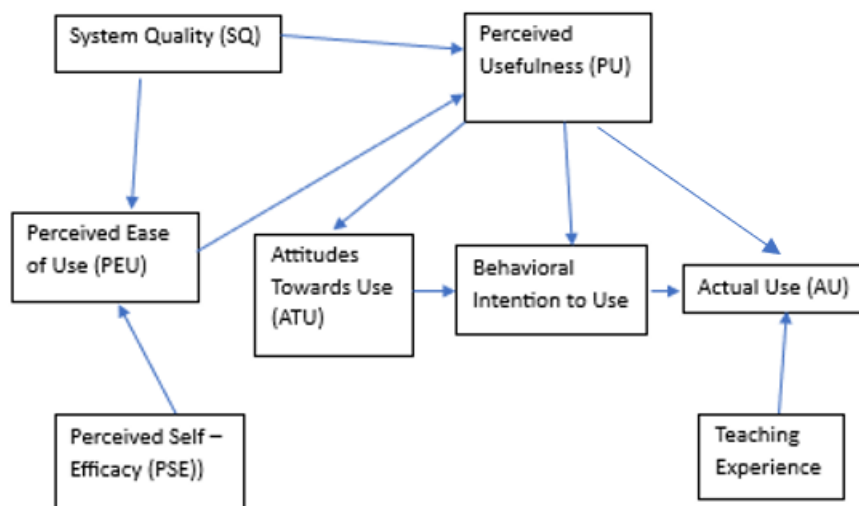


Figure 2. Technology Adoption Model Generated

4.0 Conclusion

The findings of this study offer substantial insights into the Technology Acceptance Model (TAM) as applied to learning management systems (LMS) within educational contexts. Although eight hypothesized relationships among the model's constructs were not statistically supported, the overall results demonstrate significant adherence to TAM's extended and original versions, reinforcing its relevance in educational technology adoption. This partial alignment aligns with Amora and Fearnley's (2020) observation that no universally accepted TAM model exists, as ongoing technological advancements and contextual factors within education—such as shifting behaviors, experiences, and the prominence of external variables—continuously reshape the model's applicability.

Key findings from this research highlight the critical roles of System Quality and Perceived Self-Efficacy. Specifically, System Quality and Perceived Self-Efficacy were positively associated with Perceived Ease of Use, while System Quality also significantly impacted Perceived Usefulness. These results indicate that teachers are more likely to find an LMS that is easy to use when the LMS has high system quality. Furthermore, if teachers perceive themselves to have high self-efficacy in using LMS, they will most likely perceive the LMS as easy to use and navigate. In addition, a high-quality system feature of an LMS enhances teachers' perceptions of the LMS's usefulness. Moreover, the study found a positive relationship between teaching experience and actual LMS usage, suggesting that experienced teachers are more likely to engage and use the system.

The findings further suggest that educators who demonstrate high self-efficacy, positive attitudes, and favorable behavioral intentions toward the LMS could serve as champions of LMS adoption, potentially assisting peers who face challenges in adopting flexible learning technologies. This study emphasizes that enhancing system quality and supporting teachers' self-efficacy are key strategies for increasing Perceived Ease of Use and Perceived Usefulness, both driving positive attitudes and behavioral intentions toward LMS adoption. These findings reaffirm a core principle of TAM: Perceived Usefulness remains a critical determinant of actual system use. The study also notes that demographic factors such as sex, educational attainment, and rank appear to exert minimal influence on LMS adoption, indicating that future strategies should prioritize system quality and intrinsic motivational factors, particularly teachers' belief in the system's usefulness and ease of use.

These results underscore the importance of prioritizing system quality and perceived usefulness as central criteria in LMS selection for university and school administrators responsible for LMS implementation. Future research on TAM may benefit from exploring additional external variables and considering mixed-method approaches, which could yield qualitative insights to enhance understanding of TAM's constructs. This expanded approach may contribute to refining TAM's descriptive power in educational technology, adapting it more effectively to the evolving landscape of digital learning.

5.0 Contributions of Authors

Rosalinda Luwang conceptualized and performed the study, gathered and analyzed the data, and prepared the research manuscript. Oligo, Jubert: gave input on the conceptualization of the research topic and helped with the analysis of data and finalization of the research manuscript. Valderama, Julius: gave input on conceptualizing the research topic and helped with data analysis and the research manuscript's preparation.

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7.0 Conflict of Interests

There is no conflict of interest

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Leadership and Resilience: Evaluating Rural Development Training for Barangay Officials

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Abstract. This study assessed the effectiveness of lectures and training programs in enhancing the knowledge and skills of barangay officials and workers, aiming to facilitate positive transformations in local governance. The study gathered detailed information about respondents' knowledge, perceptions, and experiences using a descriptive research design. The objectives included identifying existing gaps in competencies, tailoring training content to meet specific needs, and evaluating the overall impact of these capacity-building initiatives. Findings revealed a significant improvement in participants' self-reported knowledge and skills, with mean scores rising from 2.51 ("Substantial") before training to 3.69 ("Highly Substantial") after training, indicating a 1.18-point increase. This improvement reflects the effectiveness of the structured training sessions in addressing gaps and boosting participants' confidence and competency. High satisfaction levels were also recorded, with mean scores for dimensions ranging from 4.63 to 4.88, all rated "Excellent." The highest ratings were attributed to learning tools and materials, underscoring their pivotal role in achieving program success. Although logistics scored slightly lower, it fell within the "Excellent" range, highlighting the program's strong organizational framework. The training significantly enhanced the capability of barangay officials and workers, enabling them to deliver more responsive and accountable public services. As a result, the local governance structure became more transparent and trustworthy, fostering public confidence and community development. Identified future priorities included livelihood and economic development programs, agricultural support, and improvements in technology and communication. Livelihood initiatives were ranked highest due to their immediate impact on economic stability, while agricultural support was prioritized for sustaining primary livelihoods. Technology and communication, although ranked lower, were acknowledged as crucial for long-term development. The study demonstrated that structured training programs are critical for empowering local leaders, driving sustainable development, and fostering community resilience. By addressing current needs and aligning future initiatives with identified priorities, barangay officials can ensure long-term prosperity and environmental sustainability.

Keywords: Extension project; Leadership; Resilience; Rural development; Satisfaction.

1.0 Introduction

Barangays are the backbone of community development, serving as vital hubs for maintaining public records and implementing national government programs related to peace, order, and environmental sustainability. However, many barangays face persistent challenges, including limited technical expertise, insufficient training, and resource constraints, which undermine their capacity to manage development projects effectively. These issues hinder the successful implementation of critical initiatives, such as farm-to-market roads, health centers, electrification, water and sanitation facilities, schools, and livelihood programs, leaving communities vulnerable to socioeconomic stagnation.

Maragondong, La Libertad, is one such barangay where these challenges are pronounced. The local economy heavily depends on farming, carpentry, buy-and-sell activities, and fishing. However, the lack of strategic planning and governance capacity among officials prevents the community from fully optimizing its resources and addressing pressing needs. Furthermore, the absence of structured training limits their ability to conduct situational analyses, manage budgets, and implement sustainable development plans, exacerbating the community's vulnerabilities. To address these critical issues, targeted training and capacity-building programs are essential. This study evaluates the transformative impact of the "Rural Development Lecture and Training for Barangay Officials of Maragondong, La Libertad." The training program aims to equip officials with the knowledge, skills, and tools to effectively plan, execute, and sustain development projects. The study seeks to determine the program's effectiveness in driving tangible change within the barangay by assessing outcomes such as improved project management, strategic decision-making, and environmental stewardship. This evaluation is urgent and necessary to bridge the gap between community needs and governance capabilities. Strengthening the skills of barangay officials can lead to more resilient, self-sufficient communities, fostering socio-economic growth and environmental sustainability. Ultimately, this initiative underscores the importance of empowering local leaders to overcome systemic challenges and achieve long-term development goals.

2.0 Methodology

2.1 Research Design

This study employed a descriptive research design to gather detailed information about the respondents' knowledge, perceptions, and experiences. The primary data collection method involved using a survey questionnaire administered after the respondents participated in lectures and training sessions. This approach allowed for a systematic examination of the respondents' insights and responses about the training provided. The design was chosen to explore the current status and conditions of the respondents, focusing on their understanding of the topics covered in the training. The research was cross-sectional, as data were collected once after the lectures and training were completed. Additionally, the study utilized a quantitative approach to analyze the responses from the survey questionnaire, providing measurable data that could be statistically analyzed to conclude.

2.2 Research Locale

The study was conducted in Barangay Maragondong, located in La Libertad, within the province of Negros Oriental, Philippines. This barangay was chosen as one of the beneficiaries of the university's extension programs due to its critical need for capacity-building initiatives and its strategic role in local community development.

2.3 Research Participants

The respondents were barangay officials and workers from the identified barangay. They also served as the key proponents of the training and lecture conducted during the community extension project of Negros Oriental State University-Guihulngan Campus. The researcher ensured that all respondents actively participated and provided feedback following the training and lecture sessions.

2.4 Research Instrument

The primary data-gathering instrument used in the study was the Customer Evaluation and Satisfaction Survey, a questionnaire developed by the Office of the University Research, Innovation, Development, and Extension of Negros Oriental State University. The survey evaluated various aspects of the training and lecture, including Assessment and Knowledge/Skill, Evaluation, Overall Satisfaction Rating, and Future Assistance Needed. To ensure the instrument's validity, a validation process was conducted using a rating scale from 1 to 5, where 5

indicated "very much valid" and 1 indicated "not valid." Expert validation yielded an average score of 4.67, confirming the instrument's high validity for the intended purpose. The survey was administered to 40 respondents aged 20 to 65 for reliability testing. A Cronbach's Alpha test was performed on the Likert scale responses, yielding a reliability coefficient of 1.21, which is typically interpreted as excellent reliability. This high score demonstrates that the survey instrument consistently measures the intended variables. Additionally, pilot tests were conducted to refine the instrument further. These refinements aimed to enhance the survey's ability to assess the effectiveness of the training and lecture and its potential to improve the overall project outcomes.

2.5 Data Gathering Procedure

The respondents were first informed about the content and purpose of the survey questionnaire. This step involved explaining the study's objectives and how the collected data would be used. Ethical considerations, such as confidentiality and voluntary participation, were also emphasized. The study incorporated lectures and training sessions as a key component. These sessions were designed to provide the respondents with relevant knowledge and skills necessary to support the study's objectives. After the lectures and training sessions, the respondents were asked to answer the survey questionnaire. This approach ensured the participants had sufficient context and understanding of the topics discussed, allowing for more informed and reflective responses.

2.6 Data Analysis

To determine level of the substantiality of knowledge and skills acquired by the respondents, the researcher used this descriptive interpretation using the scale below:

Scale Range	Verbal Interpretation
4.00 – 3.00	Highly Substantial
2.99 – 2.00	Substantial
1.99 – 1.00	Limited
1.99 – 0.99	Very Limited

The level of satisfaction with the lecture and training of the respondents was determined using the descriptive interpretation below:

Scale Range	Verbal Interpretation
4.21 – 5.00	Excellent
3.41 – 4.20	Better
2.61 – 3.40	Good
1.80 – 2.60	Fair
1.00 – 1.79	Poor

To answer the future assistance needed, the researcher used the ranking method to rank the respondents' responses.

2.7 Ethical Considerations

The study adhered to ethical principles to protect the rights and well-being of respondents. Informed consent was obtained before answering the questionnaire, ensuring respondents understood the study's purpose and agreed to participate willingly. Confidentiality was strictly upheld, with all responses kept private and used solely for academic purposes; any personal data collected were anonymized to safeguard privacy. Additionally, care was taken to ensure that the data collection process caused no psychological or emotional discomfort, prioritizing the respondents' well-being throughout the study.

3.0 Results and Discussion

3.1 Barangay Officials' Assessment and Knowledge/Skill

Generally, the purpose of assessing the level of substantial knowledge and skills acquired by barangay officials and workers before and after lectures and training is to measure the effectiveness of these capacity-building initiatives and facilitate positive transformation in local governance. Evaluating the training establishes a baseline that helps identify existing gaps in knowledge, skills, and competencies among the officials and workers. This

allows trainers to design targeted programs that address specific needs, ensuring that the training content is relevant and aligned with the practical demands of their roles. After the training, reassessing their knowledge and skills provides a means to measure the impact and effectiveness of the instruction. The comparison between pre- and post-training results indicates how much improvement has been achieved and highlights areas that may still require further support or enhancement.

This process strengthens individual competencies and drives a broader transformation within the barangay. As officials and workers acquire more substantial knowledge and skills, they become more confident and effective in delivering public services, addressing community issues, and implementing local projects. This enhanced capability fosters a more responsive, transparent, and accountable local governance structure, which can lead to improved public trust and community development. Ultimately, the transformation brought about by this assessment contributes to building a more resilient and empowered community, as barangay officials and workers are better equipped to meet the evolving needs of their constituents. According to one scholar, development and growth often become the motive and aim of organizations (Goldberg, 2018). In an increasingly changing environment, organizations find that they should embrace a new strategy to enable their competitive advantage to survive. As can be seen from Table 1, the participants self-reported knowledge or skills on a given topic before and after attending a lecture and training sessions. Before training, respondents rated their knowledge or skill as 2.51, falling under the "Substantial" category.

Table 1. *Level of Substantiality of Knowledge and Skills Acquired*

Statements	Mean	Interpretation
Knowledge or skill on the topic/s BEFORE participating in the lecture and training.	2.51	Substantial
Knowledge or skill on the topics AFTER completing the lecture and training.	3.69	Highly Substantial

This indicates that participants learned something but were not confident and sure of their skills. The rating improved to 3.69 after training and was classified as "Highly Substantive." To improve to that level means the participants learned knowledge or skills significantly, indicating that the lecture plus training is practical. This is close to 1.2 points in almost every case, demonstrating an indication of the training that enhanced the depth of understanding and competency in the topic. From the data provided, a noticeable improvement in the knowledge or skills indicates that the training was beneficial. The difference of 1.18 increases from 2.51 to 3.69, significantly reflecting that structured training programs enhance participants' skills. According to research, training, and development will enhance learning and understanding of management processes by exposing them to expansive views, talents, experience, and insights that will empower them to increase their reservoir of new and valuable innovative ideas (Muñoz Castellanos & Salinero Martín, 2011).

3.2 Barangay Officials' Evaluation of the Lecture and Training

The Barangay Officials' Evaluation of the Rural Development Lecture and Training in Maragondong, La Libertad, aims to certify that the program has been undertaken effectively in addressing the needs of the officials, helping them build capacity for local governance and community development. This can help assess the objectives and whether the training goals were clear, pertinent, and relevant to the rural development priorities of the particular barangay. It ensures that what was learned is of practical value and would be put into immediate practice to help them in their work. What was learned was evaluated to determine whether the content is competent, current, and relevant in the context of rural development in Maragondong. This feedback will help identify if what was covered was relevant and practical for the problems to be addressed at the local level.

Satisfaction level is a measure of the assessment of the features or benefits of a service or the product itself that can award a level of consumer satisfaction in terms of satisfying consumer consumption needs (Wibowo, 2022). Table 2 reflects an exceptionally high level of satisfaction among participants regarding the lecture and training program. All key aspects evaluated – objectives and learning content, learning tools and materials, resource persons, and logistics – received mean scores interpreted as "Excellent," indicating that participants were delighted across all dimensions. The objectives and learning content scored a mean of 4.75, demonstrating that the objectives were clear, relevant, and comprehensive, effectively meeting the participants' expectations. This reflects well-structured training sessions with content aligned to the audience's needs.

Table 2. *Level of Satisfaction for the Lecture and Training*

Variables	Mean	Interpretation
Objectives, Learning Content	4.75	Excellent
Learning Tools and Materials, Activities	4.88	Excellent
Resource Person/ Consultant	4.84	Excellent
Logistics	4.63	Excellent
Total	4.71	Excellent

The learning tools, materials, and activities received the highest score, with a mean of 4.88. This indicates that participants found these resources particularly effective and engaging, suggesting they played a significant role in the program's success by facilitating active participation and practical learning. Similarly, the resource person or consultant scored a mean of 4.84, reflecting intense satisfaction with their expertise, communication skills, and delivery. The high rating indicates that the consultant was knowledgeable and approachable, greatly enhancing the participants' learning experience. According to Asgarova (2019), formal training services offered by organizations increase job satisfaction and fulfillment among workers, which in turn positively increases the productivity of their organizations.

Although logistics scored slightly lower at 4.63, it was still within the "Excellent" range. This suggests that logistical arrangements, such as venue, scheduling, and organization, were broadly satisfactory, with only minimal areas for improvement. The overall satisfaction score 4.71 reinforces the program's success, highlighting consistent excellence in all evaluated dimensions. The data suggests that the lecture and training program was highly effective and well-received by participants. To sustain these high levels of satisfaction in future programs, it is essential to continue prioritizing the quality of learning tools and activities while addressing minor logistical gaps. Ensuring the engagement of experienced and skilled resource persons will further enhance the learning experience. By maintaining these strengths and making incremental improvements, similar programs can achieve even higher levels of participant satisfaction.

3.3 Barangay Officials' Futures Assistance Needed

Identifying needed assistance for the future enables barangay officials to engage in capacity-building activities like training and workshops, which helps boost their skills regarding governance, planning, and resource management. Coordination among the barangay with the other government agencies, NGOs, and the private sectors is also put into better dynamics to bring fast solutions to its complex problems. Such a process ensures the creation of a more resilient, self-sufficient, and adequately supported barangay, thus contributing to improved quality of life among its residents.

Table 3. *Future Assistance Needed*

Assistance Needed	Frequency	Priority
Livelihood and Economic Development Programs	6	1
Agricultural Support	4	2
Technology and Communication	1	3

Livelihood and economic development programs are ranked as the priority of the barangay officials and workers since livelihood programs provide training and equip the residents to engage in alternative livelihood sources, including several small-scale enterprises and crafts or services. These programs prepare them to run and manage their non-agricultural enterprises, which reduces their reliance on just one sector and also reduces risk from the perspective of agriculture volatility. For this transition, economic development programs are further supported by fomenting local entrepreneurship and improving access to markets and a more diversified economic base. By prioritizing these programs, barangay officials and workers wish to build a more resilient and self-sufficient community, improve economic opportunities, and bring about further upgrades in the quality of life for the people. Agriculture support ranks second in the future requests for assistance for the barangay officials and workers because it supports a significant source of livelihood. Such support to farmers would be access to good quality seeds, modern equipment, and advanced techniques in agriculture to improve crop yields, thereby enhancing the efficiency of the farming sector. It can be an effective tool to address issues about pests, soil fertility, and climatic resilience that would make farming viable and profitable. Support for agriculture as a secondary emphasis or focus has been the intent of barangay officers and employees, as it is meant to supplement broader economic development efforts of further reinforcing the basic sector that underlies the livelihood of the barangay's

community and ensuring sustained success in their agricultural ventures. Governments paid little attention to the rural non-farm sector because they perceived it as unproductive and of negligible importance (Lanjouw, 2001). Recent contributions point out that the rural non-farm sector bridges agricultural-based livelihoods and industrial ones (Barrett et al., 2002), thereby playing an important role in a country's structural transformation.

Technology and communication fall amongst the least of the priorities for barangay officials and workers when it comes to their future requests for assistance since the immediate focus is on more pressing needs that directly affect the livelihood and economic stability of the community. Though these factors are important for improving efficiency and connectivity, the barangay's primary focus is to fortify its economic foundation and diversify its sources of income. The given needs in these areas are prior because they relate to immediate survival and growth for the benefit of the community. The improvement in technology and communication may seem highly beneficial for long-term development but comes secondary to the fundamental aspects that ensure the community has the necessary resources and skills for survival. Only after the core issues are resolved, and economic stability is achieved can technology and communication better increase productivity and connectivity.

4.0 Conclusion

Training and transformation are essential components of rural development because they empower local leaders with the necessary skills and knowledge to address the unique challenges faced by their communities effectively. By measuring the effectiveness of rural development lectures, barangay officials can identify whether the training has led to enhanced leadership, better resource management, and improved service delivery. These evaluations help ensure that the training aligns with the unique needs of rural communities, allowing for targeted improvements in administrative efficiency and development planning. In essence, training serves as a key driver for transforming barangay operations, fostering sustainable growth and environmental sustainability, and empowering local communities to build resilience and self-sufficiency. Overall, the training was impactful and well-organized, aligning with the barangay's goals for building resilience and economic independence. Ultimately, training catalyzes transformation, driving sustainable development and enhancing the capacity of barangay officials to foster long-term resilience and prosperity within their communities. Therefore, under the guidance of a proactive and visionary leader, the barangay can achieve environmental sustainability by fostering a culture of respect and protection for the environment, ensuring the conservation of resources and the well-being of the community for generations to come.

5.0 Contributions of Authors

The authors contribute to the conceptualization, formal analysis, original draft, supervision, data curation, validation, writing-review and editing, visualization, funding acquisition, investigation, methodology, and project administration of this study.

6.0 Funding

The authors fund this research study.

7.0 Conflict of Interests

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Assessment of the Implementation of Special Program in Journalism (SPJ): Basis for an Intervention Program

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Abstract. In light of the implementation of the Special Program in Journalism (SPJ) and the low performance of the school in school's press conference competitions, the study aims to assess the level of standard, performance, and challenges in implementing the SPJ program through the lens of student journalists as a basis for an intervention program. The study consists of one hundred (100) journalist respondents purposively selected through purposive sampling. The study used a mixed method research design using sequential explanatory methods, which employ survey questionnaires and polyangulation, which consist of interviews and Focus Group Discussion (FGD) as tools for data gathering. The survey questionnaires were adopted from existing studies and underwent validation and reliability testing. The study used semi-structured questions for the interview questions to allow the respondents to respond extensively. To analyze and interpret the quantitative data, the study used descriptive statistics using weighted mean, while for qualitative, the study adopted Colaizzi's 1978 method of data analysis, which involves steps such as transcribing significant statements into meaning units and extracting emerging themes. The study found that the level of standard and performance and outcomes in implementing a Special Program in Journalism (SPJ) in school is satisfactory. Meanwhile, themes such as a lack of facility, uniformity of instruction, disengagement in the training, and lack of parental support emerged as challenges in the implementation of the program. The study concludes that implementing the SPJ program fosters challenges like lack of facility, student disengagement among journalists, and uniformity of instruction, which constitutes a low level of performance and standards; thus, an intervention program is recommended.

Keywords: Assessment; Implementation; Intervention program; Special Program in Journalism.

1.0 Introduction

Journalism in education plays a vital role in transforming the field into an inclusive and more resilient quality for learners. According to Adetunji (2022), journalism prepares young people for the role of full-time professionals employed by sizable news organizations. Notably, an expanded approach to journalism education is not just about technical skills; it must include critical thinking and self-awareness while centering on established values of independence and public service. It can be inferred that through journalism, the students' skills, particularly in literacy, comprehension, and critical thinking, will be developed, which will help them land a better job in the future. The study of Bidzilya et al. (2022) shows that journalism developed the following skills of journalists in lifelong learning: creativity, professional independence, professional responsibility, critical and analytical thinking, communicative skills (vision of practicing journalists); creativity, critical-analytical thinking, professional independence, fact-checking (teachers' vision), professional responsibility, professional

independence, critical-analytical thinking, creativity, fact-checking (media employers' vision). The pressing issue related to the quality of education that the Philippines faces today, as shown in the recently concluded PISA result, calls for learning interventions to bridge the learning gaps among students in various subject areas. The role of journalism is very significant since it can develop various skills in both English and Filipino.

According to Republic Act No. 7079 s. 1991 Section 2 states that the role of journalism is to promote the development and growth of campus journalism as a means of strengthening ethical values, encouraging critical and creative thinking, and developing the moral character and personal discipline of Filipino youth. In furtherance of this policy, the State shall undertake various programs and projects to improve the students' journalistic skills and promote responsible and free journalism. Instead of this act, the Department of Education (DepEd) implemented a Special Program in Journalism (SPA), a specialized curriculum that schools should include in their journalism subjects. However, this is only limited to the aspiring journalists screened by the school's journalism selection committee to join the unique program.

However, despite implementing the Special Program in Journalism in the school, it gained several awards. However, our school was not yet recognized as one of the top-performing schools in journalism. This gap also exists in other schools in the Philippines. Though the level of expectation is high since the school was given the privilege of such programs, the result is not commendable based on the school's performance during competitions. Supported by the study of Babiano et al. (2024) that despite legislative efforts, numerous obstacles hinder effective implementation, including inadequate funding, insufficient teacher training, curriculum inflexibility, social stigma, and infrastructural barriers in implementing the Special Education (SPED) curriculum in the Philippines. It was found that the implementation of campus journalism in the division was hampered by issues, challenges, and problems that are directly related to the implementing indicators. This is similar to the study of Espadero (2022). The data revealed that problems encountered by the schools that pertain to the editorial policies, editorial board, school paper advisership, and financial aspects of campus journalism are severe in terms of their level of seriousness. If these gaps are not addressed, this will continue, creating more problems and challenges while implementing the Special Program in Journalism (SPJ).

Furthermore, in the recently concluded 2024 Division Schools Press Conference in Camp Evangelista Elementary School, nobody qualified for the Regional Schools Press Conference (RSPC) except the school paper, which ranked in the top 2 in the overall Best School Paper Elementary Filipino. There are several placements, such as 2nd Placer and 3rd Placer in Individual Writing, particularly in Editorial and News Writing, and 2nd Placer in Radio Broadcasting; however, it does not give the school a chance to represent in the Regional Schools Press Conference (RSPC). The same scenario occurred in previous years when the school could not join, at least in the region, despite the program's implementation. This shows a negative trend of data given the implementation of the SPJ program, which needs a thorough evaluation to find out the factors and challenges among program implementers and student journalists that contribute to the school's low performance in the journalism field.

The study is conducted to assess the standard, performance, and challenges of implementing the SPJ program through the lens of student journalists as a basis for an intervention program. The intervention program will address the gap relative to the factors and challenges behind implementing the SPJ program in school. The result of this study would be beneficial to all schools in the Department of Education in the Philippines that are implementing special programs in journalism to determine the cause of the school's low performance in the school press conference competitions despite the unique program in journalism. This will raise awareness among teachers and program implementers in the Department of Education to design further training and change the existing policies to improve the program's implementation further. This study would serve as a springboard for all program implementers throughout the Philippines to consider the factors and challenges that affect the implementation and adopt the intervention program to gain positive and commendable results.

2.0 Methodology

2.1 Research Design

The study utilized a mixed-method research design employing quantitative and qualitative data. Specifically, it used an explanatory sequential mixed method approach to gather data in two phases. The first phase is quantitative, preceded by the qualitative phase, to further explain the result of the numeric findings. Furthermore,

qualitative data will be gathered using polyangulation, such as interviews and focus Group Discussions (FGD). According to Creswell et al. (2003), an explanatory sequential design aims to explain and interpret numerical findings. This research design suits this study since the data will be generated from both quantitative and qualitative methods to allow the researcher to widen his inquiry with sufficient depth and breadth on the exploration of the perceptions of the journalists as well as challenges and outcomes in the implementation of special programs in journalism. The quantitative data will be gathered using an adopted and modified survey questionnaire, preceded by qualitative data inquiry using data polyangulation, which implies multiple data sources such as interviews and focus Group Discussions (FGD) among journalists. To analyze and interpret the result, the study used descriptive statistics using weighted mean and standard deviation and adopted Colaizzi's 1978 method of data analysis. The results of quantitative findings will be further explained through qualitative data to delve deeper into the respondents' responses.

2.2 Research Local

The study was conducted in Camp Evangelista Elementary School, West-II District, Division of Cagayan de Oro City. It is located inside the 4th Infantry Division of the Philippine Army. The school is considered a medium school with an average enrollment of 1,300 to 1,600 per year. In 2020, the school was given the privilege to implement the Special Program in Journalism (SPJ) by the Department of Education (DepEd) Region X. As a program implementer, the school actively joined the school press conferences in the district, division, regional and national level throughout the years and produced competitive journalists in the different fields of writing.

2.3 Research Participants

The study respondents were chosen using a purposive sampling method. According to Nikolopoulou (2023), purposive sampling is a technique in which units are selected according to their characteristics to be used in the study following inclusion and exclusion criteria that a.) the respondent is currently enrolled in the school, b.) the respondents is currently a Grades 4-6 in the current school year and; c.) the respondents has passed the screening from the screening committee of the school's program implementers. The school has a total enrollment of 1300 school years 2024-2025, and the study only covers one hundred (100) journalists, or 7.7% of the overall population.

2.4 Research Instrument

This study used an adapted and modified 4-Point Likert Scale questionnaire from Avelino's (2022) Implementation of the Special Program in Journalism of a Public Secondary School in DepEd Rizal: An Evaluation. Since the study was adopted and modified, the researcher asked for informed consent from the rightful author to adapt and modify his survey questionnaires before it was validated and underwent reliability testing. Meanwhile, for the qualitative data, the study utilized a semi-structured questionnaire, which allowed the respondents to expound their answers with no restrictions or time limitations, exploring and discovering a range of answers and determining a common theme for the chosen respondents who will undergo the interview and Focus Group Discussion.

2.5 Data Gathering Procedure

The preliminary preparation for the study was securing official permission from the Schools Division Superintendent of Cagayan de Oro City. After the approval, the researcher wrote a letter of consent to the respondents for participating in the study, highlighting their voluntary participation. To help the respondents be informed and acquainted, a short orientation was conducted face-to-face so they could be guided mainly on what to do during the entire data-gathering phase. After the orientation, the researcher started to gather the data, which involved two phases: the first phase, data gathering for the quantitative, and the second phase, for qualitative. The researcher utilized adapted and modified survey questionnaires for this study.

Part of the ethical practice of research is to seek approval from the authors to adopt and modify their survey questionnaires as a tool for data gathering. After approval, it underwent a validation process by the external and internal validators who were experts in the field of education, preferably holding a doctorate's degree in education and designated as master teachers, head teachers, and school principals. The validated survey questionnaires were subjected to reliability testing using Cronbach's alpha, preceded by pilot testing for the master teachers and school administrators who were excluded as study respondents. After the validation, reliability, and pilot testing, the

survey questionnaires were administered to the respondents face-to-face. The raw data was collected by the researcher subject for analysis and interpretation.

After the analysis and interpretation of the quantitative data, the researcher proceeds to the second phase of data gathering through an interview with the select fifteen (15) respondents who got the highest weighted mean during the survey, which will be followed by a Focus Group Discussion (FGD) selected five (5) respondents. The researcher used semi-structured questions, which allowed the respondents to answer the questions with depth and breadth with no time restrictions. The result of this polyangulation method in gathering qualitative data will help explain the results of the findings from the quantitative data.

2.6 Ethical Considerations

This research study followed ethical guidelines instead of the Data Privacy Act 2012. The participants were given informed consent along with the questionnaires, ensuring the non-disclosure of their responses, and it is solely used for research purposes only. All soft copies of their responses in the Google form will be deleted permanently once the study is published. Furthermore, since the survey questionnaires were adopted and modified, the researcher secured informed consent from the rightful authors before it was validated.

3.0 Results and Discussion

3.1 Standard in Implementing Special Program in Journalism (SPJ)

As shown in Table 1, the standard level in the Implementation of a Special Program in Journalism (SPJ) as manifested by student journalists is Satisfactory with an overall weighted mean of 2.91 (SD 0.85). This implies that the program's implementation is within the satisfaction level among student journalists. However, it did not reach the outstanding level, which denotes gaps within the program's implementation. Based on the data, one factor affecting the implementation is the Physical Facilities and equipment, which acquired the lowest weighted mean of 1.84 (SD 0.82). This amplifies that the lack of physical facilities affects the program's implementation and contributes to the school's low performance in competitions.

Table 1. *Level of Standard of Special Program in Journalism (SPJ)*

Indicators	Mean	SD	Interpretation
A. Objectives	3.58	0.64	Outstanding
B. Curriculum	3.02	0.89	Satisfactory
C. Instructional Materials	2.85	0.84	Satisfactory
D. Physical Facilities and Equipment	1.84	0.82	Fair
E. Teaching Strategies	3.17	0.93	Satisfactory
F. Administrators Support	3.03	0.95	Satisfactory
G. Teachers Competence	2.85	0.84	Satisfactory
H. Students Engagement	2.91	0.91	Satisfactory
Overall Result	2.91	0.85	Satisfactory

Legend: 3.26 - 4.00 (Outstanding), 1.76- 2.50 (Fair), 2.51- 3.25 (Satisfactory), 1.00- 1.75 (Poor)

On the same note, the study of De los Santos and Grana (2024) shows that the lowest mean scores were also indicative of the experiences of the SPJ graduates, as noted in their qualitative responses from the survey. Most of them pointed out that schools must give immediate attention to equipment, facilities, and technological resources for the continuity of better learning experiences and outcomes in journalism. Similarly, Compadó et al. (2023) reported that facilities and other resources were imprinted in the many public schools in the Philippines. Implementing the SPJ curriculum was able to escape the impediments brought by the problems with equipment and technological resources (Avelino, 2022).

This data further implies that the program's implementation positively impacts them. However, the implementation's impact level is not high, which means there is room to improve the program's implementation. Relevant to the study of Balinas and Ibojo (2023), meeting many people is one of the positive experiences of students in the Special Program in Journalism (SPJ) and exposure to other people is extremely important and meeting many people implies a social connection that strengthens relationships and gives them a sense of belonging and purpose. It can be inferred that the significance is impactful among students; however, it is important to note that barriers and challenges should be addressed to implement the program effectively. Additionally, the study of Tejano (2023) states that the SPJ is primarily successful for the journalism industry.

However, there are areas for improvement, such as updating the curriculum, providing more practical experiences, and strengthening industry collaboration. By addressing these areas, the quality of journalism education can be enhanced, better preparing future journalists to navigate the ever-changing media landscape and contribute to a more informed and engaged society.

3.2 Performance and Outcomes in Implementing Special Program in Journalism (SPJ)

The Performance and Outcomes of the Special Program in Journalism are Satisfactory, with an overall weighted mean of 2.75 (SD 0.89), which implies that the performance and outcome of the program bring satisfaction among the journalists. However, since the result is satisfactory and did not reach an outstanding level, it denotes that there are existing gaps throughout the implementation that need immediate action. Based on the data presented in Table 2, the indicators such as instructional materials, physical facilities, and students' engagement acquired the lowest weighted mean. They were interpreted as fair and poor, respectively. This implies that the challenges and barriers in implementing the program lie in these particular indicators that need to be addressed by the program implementers. Furthermore, this postulates that the journalists experienced problems related to instructional materials, physical facilities, and equipment throughout the program's implementation, resulting in poor student engagement in journalism classes or training.

Table 2. *Level of Performance and Outcomes of SPJ as Perceived by the Learners*

Indicators	Mean	SD	Interpretation
A. Objectives	2.56	1.20	Satisfactory
B. Curriculum	3.11	0.92	Satisfactory
C. Instructional Materials	2.18	1.12	Fair
D. Physical Facilities and Equipment	2.28	0.92	Fair
E. Teaching Strategies	3.42	0.89	Outstanding
F. Administrators Support	3.57	0.63	Outstanding
G. Teachers Competence	3.27	0.79	Outstanding
H. Students Engagement	1.6	0.65	Poor
Overall Weighted Mean	2.75	0.89	Satisfactory

Notably, physical facilities and instructional materials play an important role in fostering active engagement in the classroom because they help enrich students' learning in journalism. Supported by the study of Miranda (2023) that learners have insufficient knowledge regarding the guidelines on writing journalistic articles because they are new in campus journalism and need more intensive critiquing for new writers and the lack of training courses on campus journalism because the school shifted to modular distance learning for two years and the pupils do not have enough motivation to be engaged in campus journalism. On the same note, the study of Tettey (2024) states that the large number of students enrolled in journalism programs and the lack of suitable production facilities negatively impacted the program's implementation. It can be inferred that there is a need for program implementers to revisit the basic requirements in implementing the program if the facilities are complete in making sure that the classroom is not congested and that everyone can feel comfortable during the journalism class. This is one of the main reasons why the students' performance is not high, and the overall result is satisfactory because of the existing gaps that need immediate action.

Additionally, the study of Likoko et al. (2023) states that the status of instructional materials, equipment, and facilities are inadequate, obsolete, dilapidated, and unsuitable for preparing competent teachers. This state of affairs raises concern about the quality of teachers from emerging private primary teacher training colleges serving in the school system. This articulates clearly that inadequate instructional materials and facilities can affect not just the competence of the students but also the teachers because they, too, will be affected in conducting their classes due to the poor classroom environment, which creates poor engagement among students.

3.3 Summary of Responses on the Assessment of the Implementation of Special Program in Journalism (SPJ)

Table 3 presents the summary of responses of the student journalists on the assessment of the implementation of the Special Program in Journalism (SPJ) in the areas of standards, performance, and outcomes based on the eight (8) indicators. Based on the table, both the standards, performance, and outcomes in the implementation of the program acquired the same level of assessment, which is a satisfactory level, which implies that the program's implementation is ineffective since it does not reach an outstanding level. Meanwhile, the data shows that most areas in standards, performance, and outcomes have the same indicators that acquired the lowest means, such as

instructional materials, physical facilities, and equipment, which resulted in students' disengagement in the journalism class.

Table 3. *Summary of Responses on the Assessment of Special Program in Journalism (SPJ)*

Indicators	Level of Standard	Level of Performance and Outcomes	Decision
A. Objectives	2.91 SD=0.85 Satisfactory	2.75 SD=0.89 Satisfactory	Needs an Intervention Program
B. Curriculum			
C. Instructional Materials			
D. Physical Facilities and Equipment			
E. Teaching Strategies			
F. Administrators Support			
G. Teachers Competence			
H. Students Engagement			

On the same line, the study of Advincula and Adtoon (2024) revealed that a multi-dimensional view of the experiences shed light on the following key themes: technological adaptations, challenges in student engagement, content diversification, and responsiveness, impact on publication production, sustaining professional development which affects the implementation of the journalism program. About the current study, these factors and challenges must be given immediate attention since this fosters adverse outcomes on the satisfactory program implementation. The result speaks for enhancing and modifying policies, improving teaching strategies and teaching competence, and improving the environment to make it more conducive to learning. This postulates that the program implementation needs improvement and enhancement among program implementers to gain positive outcomes among the student journalists and improve their performance in the competitions. Therefore, there is a need to design and implement an intervention program among program implementers such as journalism coordinators and school paper advisers headed by the school principal, particularly in the areas of physical facilities and equipment, instructional materials, and student engagements to gain more winnings in the schools press conference and improve the performance of the school as implementers of the SPJ program. The school's intervention program will help improve the learners' performance and help them achieve more winnings in the competition.

Additionally, the study of Pante et al. (2024) revealed substantial interest from learners and parents, confirming a strong market for the SPJ program aligned with their aspirations. Furthermore, it highlighted strong interest and enrollment potential for SPJ, emphasizing the need for targeted outreach to address hesitations and maximize participation.; SPJ emerged as the most preferred academic track among learners and parents, reflecting its unique appeal and alignment with modern educational needs; the program's success requires enhanced resources, partnerships with media organizations, and structured planning to meet its technological and infrastructure needs; and identified risks, such as maintaining enrollment and securing resources, can be mitigated through proactive recruitment, stakeholder engagement, and diversified funding. The current study would focus on the intervention programs that identified the gaps in the study to improve the implementation of the unique program in journalism among schools in DepEd Cagayan de Oro City.

3.4 Challenges in Implementing Special Program in Journalism (SPJ)

Data shows emerging themes such as lack of facility, uniformity of instruction, disengagement in the training, and lack of parental support. The theme explains the level of standards, performance, and outcomes in implementing SPJ programs in school, which is the Satisfactory level. The factors become more evident, such as lack of parental support and uniformity of instruction, which explains why students' disengagement and instructional materials acquired the lowest weighted mean. Notably, the lack of facility, delivery of instruction, disengagement in the training, and parental support constitute the students' performance in journalism.

Lack of Facility

The statement, *"I am very interested in journalism; however, due to the volume of participants and the lack of facility made me disengaged,"* according to Participant 4. This statement explains why the school's low performance in journalism is due to the problem in the classroom facility, given the volume of participants. When a classroom is congested, learners cannot concentrate very well on the lessons tackled because they will feel uncomfortable inside the classroom. As cited by the significant statement from Participant 6, *"We are too crowded in the classrooms, I felt discomfort inside which I cannot concentrate on the training."* The significant statement explains why classroom

facilities and equipment became a problem conducting journalism classes. Supported by the study by Permana et al. (2024), the lack of classroom space hurts students' ability to learn. With limited classroom space, students experience difficulty focusing and concentrating, limited social interaction, and higher stress levels. Apart from that, learning becomes less interactive, and students find it difficult to move freely. It can be inferred that having a conducive classroom environment where learners feel comfortable and relaxed inside can help them learn better. However, it is very evident from the existing study that congested classrooms hurt the students' learning outcomes.

Uniformity of Instruction

Another theme that emerged was the uniformity of instruction. This implies the similarity of teaching strategies used to deliver instruction. Additionally, the uniformity of instruction among teachers means the use of similar or uniform teaching strategies in the delivery of instruction. For instance, most teachers use ICT instead of printed modules or worksheets, considering the diverse needs and interests of the students. If these gaps are addressed immediately, this will change the effectiveness of the implementation and will lead the school to garner more winnings and awards in future competitions in the field of journalism. Participant 5 stated, *"I want the training to be as interactive as possible, like going out in the classroom and doing an activity outside with peers; I think that would make sense."* This statement speaks for the need to consider the diversity of the learners in the teaching-learning process.

Supported by the study of Penchu et al. (2022), the role of media technologies in life and educational practice is continually growing. Mastering media culture allows the modern teacher to work more effectively with information and develop students' media competence. In this regard, the search for tools for developing and determining the level of media culture of school teachers is urgent. The results of introducing special modules in the advanced training programs, which include a set of mediatized assignments, demonstrated the prospects of using similar teacher training methods. It can be inferred that teachers should be equipped with skills and highly competent in teaching journalism to sustain their interest and engagement during class hours. Disengagement is one of the outcomes when uniformity in the delivery of instruction is practiced. Moreover, Participant 2 stated, *"My teachers are always using Television as an aid for instruction, and I found it boring,"* showing that if the teaching practice is diversified and student-centered, it can foster better learning outcomes and engaging learning experiences among student journalists. Moreover, the competence of teachers in teaching journalism is imperative because the student's engagement in the lesson will significantly rely on their way of teaching. For instance, the effective use of multimedia instruction, the diversity of instruction, and the student's engagement should be considered.

Disengagement in the Training

The data shows that one of the challenges encountered by the students is the disengagement of learning due to factors like lack of classroom facilities and instructional materials of the teachers, which contribute to their poor performance in journalism even though the school already has a unique journalism program. Notably, when students feel uncomfortable inside the classroom, they will no longer be interested in learning, resulting in disengagement in learning. Based on the table, Participant 1 responded, *"I feel disengaged often, especially when my groups are not cooperating. It would be better in the individual category rather than in groups."* This implies that one of the factors of disengagement is when cooperation is absent. One of the factors why students have no drive to cooperate is due to classroom facilities and learning materials that the teachers are using. Though not all students feel disengaged since they belong to a group category like radio broadcasting, their overall performance will be affected.

The study of Hauzel et al. (2024) states that students lose interest in learning if they do not feel in control or connected to what they are being taught. It is crucial to understand the factors contributing to student disengagement and a lack of ownership in learning to improve computer science education. Computer science teachers must strive to make students more responsible for their learning. It can be inferred that the essence of connectedness is vital to the student so that they can connect to the lesson and find a meaning or purpose. However, they cannot do that if teachers' instruction is uniform in teaching journalism. The classroom strategies need to be diversified to meet their diverse needs, connect to the lesson, and internalize its importance. On the other hand, Participant 3 responded, *"There are times when I am very loaded with my academic requirements, plus the rigorous training in journalism made me disengaged."* This implies the need to consider the students' academics in

other subjects while they are joining the rigorous training in journalism. Teachers also need to consider the students' different academic requirements in other subjects because disregarding this will result in failing the subjects. This is in contrast to the findings of Anjum (2021) that there is a severe need for the introduction of extracurricular activities and orientation programs for students of the secondary level. Extracurricular activities positively influence students' lives by improving their behavior, academic performance, better exam scores, more regular class attendance, and better self-image; these aspects make their lives more successful. It can be inferred that high school students are more flexible when balancing extracurriculars and academics. It can be inferred that most pupils are still developing their autonomy and flexibility in managing their extracurricular activities and academic subjects at the primary level. Thus, teachers must learn to consider this aspect, as pupils need to perform well in academics and, at the same time, in their extra-curricular activities.

Lack of Parental Support

The absence of parental support is one of the indicators of learners' disengagement in the classroom. When they feel that their parents do not support school activities such as journalism, they will quickly feel discouraged and disengage. According to Participant 4, *"My parents are not supportive when it comes to the training because I still have to do household chores at home after class."* This implies that the lack of parental support will result in quitting the training because they feel that their parents do not support them. On the same line, Kapur (2020) postulates that the effects of lack of parental support are remaining unaware regarding various factors, impediments in the achievement of professional goals, problems in management of household responsibilities, inability to hone problem-solving skills, being overwhelmed by psychological problems, being overwhelmed by seclusion and loneliness, experiencing health problems and illnesses, problems in getting settled, impediments in honing skills and abilities, problems in forming an effective social circle, barriers within the course of up-gradation of personality traits and obstacles in promoting enrichment of overall living conditions. It can be inferred that the lack of parental support can be a serious problem among learners, especially in journalism. More time is needed for the students to extend due to the rigorous training, and parents must understand that there are instances when they will go home late.

4.0 Conclusion

The assessment on implementing the Special Program in Journalism (SPJ) in school has reached a satisfactory level, with identified factors such as a lack of facilities, equipment, and instructional materials resulting in disengagement. Therefore, the study concluded that an intervention program should focus on facilities and equipment, teachers' instructional materials, and ways to improve students' engagement in teaching-learning. These factors can lead to poor school performance, specifically in journalism. Meanwhile, when it comes to its standards, performance, and outcomes, the program's implementation reached a satisfactory level, which means there are still areas to improve. The data strongly calls for an intervention that will help improve and enhance the implementation of the SPJ program. With the help of the intervention program, the school will gain better performance, which can be seen in the number of wins in the journalism competitions. Furthermore, the intervention program will address themes such as uniformity of instruction, lack of facilities, parental support, and disengagement among students in the lesson. This can be done by collaborating with the community in creating more facilities that could suffice the volume of participants in the program, designing and crafting more instructional materials in journalism that will enhance the engagement of the students and ensure that the full parental support by the parents by collaborating and communicating with them. Moreover, conducting more seminars and training among teachers, school paper advisers, and coaches is also recommended to deliver lessons with mastery and competence.

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None

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7.0 Conflict of Interests

author certifies that there are no financial, personal, or professional conflicts of interest that could have influenced the research or its findings

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Interactive Physics Toys in Teaching Basic Concepts of Linear Motion

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Abstract. Grade 7 and 8 students did not receive adequate instruction on the fundamental concepts of linear motion due to the impact of the pandemic. This study aimed to examine the effectiveness of incorporating self-made interactive physics toys, such as a toy car with a string and beads, a balloon-powered toy car, and an acceleration toy car, in teaching the basic concepts of linear motion to 7th and 8th-grade students. The researcher employed a quasi-experimental design, specifically a one-group pretest-posttest design. Statistical tools such as percentage, mean, standard deviation, weighted mean, t-test for dependent data, and Spearman Rank-Order Correlation were used for data analysis. The study involved 21 students, divided into 7 groups with 3 members each. The results indicated a “fairly satisfactory” performance in the pretest and a “very satisfactory” performance in the posttest, with the difference in their performances being statistically significant. Additionally, the students demonstrated a “very high” level of interest in using the three self-made interactive physics toys. Moreover, this study suggests that incorporating self-made interactive toys significantly improves students' performance and interest in science. This heightened engagement results in better comprehension and retention of concepts and fosters a positive attitude toward science. Finally, a moderate and significant correlation was found between the student's interest in using the interactive toys and their post-test performance.

Keywords: Interest; Instructional approach; Physics; Self-made interactive Physics toys.

1.0 Introduction

Science education focuses on providing real-world experiences to drive scientific progress (Nida et al., 2021; Sæleset & Friedrichsen, 2021; Torres et al., 2021), and physics plays a crucial role in enhancing students' procedural skills and cognitive abilities (Daher et al., 2021; Krumphals & HaagenSchutzenhofer, 2021). However, recent studies indicate a decline in students' interest in physics at the secondary school level (O'Neill & Mcloughlin, 2021). Research by Steidtmann et al. (2023) also suggests a significant decrease in interest in physics from Grades 5 to 7, particularly from Grades 5 to 6. Multiple factors contribute to students' decreasing interest in physics, such as perceived teaching quality, lack of parental encouragement, insufficient motivation from physics teachers, the complexity of physics materials, and reduced career prospects for physics educators (Steidtmann et al., 2023).

In the Philippines, the MATATAG Curriculum is created based on diverse educational theories and models to enhance student involvement and improve learning results. By prioritizing fundamental skills and core competencies, the MATATAG Curriculum strives to establish a more compelling and efficient learning environment (Kilag et al., 2024). Nonetheless, Moro and Billote (2023) claimed that the Philippines is falling behind in physics education, as evidenced by recent national and international assessments. The latest PISA 2022

results, released on December 5, 2023, further confirmed this, indicating that Filipino students continue to perform poorly in math, reading, and science compared to their global counterparts (OECD, 2023).

After reviewing several studies, the researcher discovered that some studies focused only on evaluating physics students' conceptual understanding through traditional methods like lectures, diagrams, and videos. Moreover, there have been insufficient studies on self-made interactive toys as innovative teaching aids for learning the basic concept of linear motion. Thus, this study introduced a method for comprehending linear motion through self-made interactive physics toys to address these gaps. These toys include (a) a toy car with string and beads for distance and displacement, (b) a balloon-powered toy car for speed and velocity, and (c) an acceleration toy car for acceleration. Exploring these interactive physics toys, not commonly used in regular physics classes, can make learning physics more enjoyable and comprehensible.

The researcher conducted the study in a geographically isolated school with no available laboratory and equipment. The target school relies on its mother school, which, most of the time, cannot also provide the laboratory needs. With these in mind, the researcher recognized the significant need to investigate the significance of self-made interactive physics toys as a teaching aid for the basic concept of linear motion to assess students' interest levels and the impact of interactive physics toys on students' performance.

2.0 Methodology

2.1 Research Design

The researcher employed a quasi-experimental design, specifically a one-group pretest-posttest design. A quasi-experimental design is a research method used to evaluate the effects of an intervention without randomly assigning participants to experimental groups. It often involves preexisting groups and uses pretest and posttest measurements to compare outcomes before and after the intervention (Alvarez et al., 2022).

2.2 Research Locale

The study was conducted at Cangkue High School, where the researcher teaches, in Sitio Cangkue, Barangay Sto. Niño, Tanjay City, Negros Oriental.

2.3 Research Participants

The study's respondents were the 21 grade 7 and 8 students of Cangkue High School enrolled in the school year 2021-2022. They were divided into 7 groups with 3 members each. The 3 members per group had different roles to ensure that all of them manipulated the interactive physics toys.

2.4 Research Instrument

The researcher developed self-made toys using inexpensive and recyclable materials to help students understand basic concepts of linear motion, supported by an activity guide. The "Toy car with string and beads" demonstrated distance and displacement, the "Balloon-powered toy car" explained speed and velocity, and the "Acceleration toy car" illustrated acceleration. Activity guides provided instructions for using these toys, while pretest and posttest questionnaires assessed students' understanding before and after using them. Additionally, interest questionnaires, adapted from Piñero et al. (2023), measured students' interest in the toys. These instruments, including the activity guides and questionnaires, were validated by three science experts: a science supervisor, a Master Teacher, and a master's degree holder in Biological Science. A dry run was conducted to assess reliability using the test-retest method for test items and Cronbach's alpha for interest questions, resulting in reliability values of 0.816 and 0.707, respectively, indicating strong reliability.

2.5 Data Gathering Procedure

The researcher prepared A letter of request, asking permission to conduct the study and distribute the questionnaires. This letter was signed by the Dean of the Foundation University- Graduate School and submitted to the Division Office for approval of the Division Superintendent. The approved request was then presented to the school head of another school, and the researcher conducted a dry run among thirty (30) Grade 7 students. The dry run allowed the researcher to test the self-made interactive physics toys. After the successful dry run, the researcher proceeded to experiment at Cangkue High School.

The study focused on teaching linear motion concepts, starting with theoretical discussions on distance and displacement (Day 1), speed and velocity (Day 2), and acceleration (Day 3). On Day 4, a pre-test was administered to assess students' initial understanding. Days 5, 6, and 7 involved hands-on activities using interactive toys, where students worked in groups of three to apply the concepts. A post-test on Days 8 and 9 evaluated the impact of the activities on their comprehension. On Day 10, students' interest and engagement with the interactive toys were assessed. Data from the tests and activities were then analyzed to interpret the study's outcome.

2.6 Ethical Considerations

The study was conducted by ethical research standards. Ethical approval was obtained from the Ethical Committee of the Foundation University Research Office. Participation by the respondents was entirely voluntary, with no pressure or coercion applied. To maintain confidentiality, students' personal information was kept private. Additionally, students who wished to withdraw from the study were given one month. After this period, their information remained confidential, and after one year, it was anonymized. Measures were taken to ensure the students were not exposed to harm or adverse effects during the study.

3.0 Results and Discussion

3.1 Difference in the Pretest and Posttest Performances of the Students

Table 1 on the next page shows the difference between students' pretest and posttest performances following an educational intervention involving self-made interactive physics toys. The pretest performance rating is 78.41%, while the posttest performance is 87.43%, indicating a 9.02 percentage point increase. A t-test for dependent data revealed that this increase was significant ($p = 0.000$).

Table 1. Differences in the Pretest and Posttest Performances of the Students

Pretest (%)	Posttest (%)	D	T	p	Decision	Remark
78.41 (Fairly Satisfactory)	87.43 (Very Satisfactory)	9.02	6.393	0.000	Reject H_{01}	Significant

These findings align with those of Ugwuanyi et al. (2019), who observed that students participating in practical physics activities achieved higher academic success than those who did not engage in hands-on experiences. Acabal et al. (2021) also demonstrated that using toys made from recyclable materials to teach fluid mechanics significantly enhances students' conceptual understanding, leading to improved performance. Similarly, Aghastya and Astuti (2019) found that interactive tools like car toys with video (TwV) significantly increased students' scores in kinematics concepts, indicating substantial educational benefits. These results suggest that the interactive toys positively impact students' understanding and retention of basic concepts of linear motion.

3.2 Students' Interest in Utilizing the Different Interactive Physics Toys

Table 2 reveals the students' interest levels in engaging in activities utilizing the different interactive physics toys. Based on the results, students' level of interest is "very high" in all of the self-made interactive physics toys with a composite $w\bar{x}$ of 4.53 (toy car with string and beads), 4.50 (balloon-powered toy car, and 4.46 (acceleration toy car). These values suggest that the lessons on the basic concepts of linear motion were made interesting through the self-made interactive physics toys and that students enjoyed, felt excited about their discoveries, and developed motivation to listen attentively to the teacher.

The result supports the findings of Gök and Sürmeli (2022) that middle school students' scientific creativity improved positively because of scientific toy design activities based on the engineering design process. Likewise, Acabal et al. (2021) asserted that the extent of students' interest in engaging themselves in activities using the localized toys for fluid mechanics is very high. Gainsan et al. (2021) also revealed the same, stating that students' interest in the localized linear motion track and localized projectile launcher is very high. They further found that when students utilized the linear motion track apparatus, they engaged more in classroom discussions. They went on to say that when localized toys were used, the students listened more attentively, and their abilities to answer questions were developed.

Table 2. *Level of Students' Interest in Utilizing the Different Interactive Physics Toys*

Indicators	Toy Car with String and beads		Balloon-Powered Acceleration Toy Car		Toy Car	
	$w\bar{x}$	VD	$w\bar{x}$	VD	$w\bar{x}$	VD
1. The use of interactive physics toy cars in science discussions is interesting.	4.76	SA	4.57	SA	4.67	SA
2. Using an interactive physics toy car helps me focus on the discussion of the concepts of distance and displacement, speed and velocity, and acceleration.	4.48	SA	4.52	SA	4.29	SA
3. The basic concepts of linear motion fascinate me because of the use of interactive physics toy cars.	4.57	SA	4.52	SA	4.24	SA
4. The use of interactive physics toy cars makes me curious about the nature of science, especially linear motion.	4.38	SA	4.52	SA	4.62	SA
5. Using interactive physics toy cars makes me listen attentively to the teacher.	4.57	SA	4.71	SA	4.57	SA
6. I enjoyed using the interactive physics toy cars.	4.67	SA	4.43	SA	4.52	SA
7. The activity encouraged me to use my skills in manipulating objects.	4.38	SA	4.19	A	4.19	A
8. The use of interactive physics toy cars makes me excited about what I'm going to find out, especially in the lesson about distance and displacement.	4.76	SA	4.48	SA	4.57	SA
9. The activity made me realize that Physics is not merely a set of formulas that needs to be memorized.	4.33	SA	4.48	SA	4.43	SA
10. It made me realize that with interactive physics toy cars, science concepts would be much more fun.	4.38	SA	4.57	SA	4.48	SA
Composite	4.53	SA	4.50	SA	4.46	SA

3.3 Relationship between the Students' Interest Level and Their Posttest Performance

Table 3 shows how students' interest in using interactive toys correlates with their post-test performance. The results indicate a moderate and significant relationship (all p -values $< \alpha = 0.05$) between the use of the toy car with string and beads ($r_s = 0.433$), balloon-powered toy car ($r_s = 0.486$), and acceleration toy car ($r_s = 0.436$) and their posttest performances.

Table 3. *Relationship between the Students' Interest Level and their Posttest Performance*

Posttest Performance and Interest in Using:	r_s	p-value	Decision	Remark
Toy Car with String and beads	0.433	0.049	Reject H_{02}	Significant
Balloon-Powered Toy Car	0.486	0.026	Reject H_{02}	Significant
Acceleration Toy Car	0.436	0.048	Reject H_{02}	Significant

The results suggest that students who enjoyed using these toys tended to achieve higher post-test performances. This finding aligns with Scholastica (2020), which found that interest significantly drives higher achievement in physics. It supports the conventional interest theory that when students are interested in a subject, such as physics, they tend to focus on their studies, become actively engaged, and participate more. Similarly, the study by Li and Wong (2018) obtained statistically significant results, supporting the claim that experiments enhance students' academic performance.

4.0 Conclusions

The basic concept of linear motion is a physics concept closely related to students' daily lives. However, many students do not realize this and often ignore it. Understanding linear motion concepts can be challenging for students when taught through traditional methods such as lectures, diagrams, and videos. These concepts are often abstract, making it difficult for students to connect them to real-world experiences. Nonetheless, interactive physics toys, such as the toy car with string and beads, the balloon-powered toy car, and the acceleration toy car, provide a more practical and engaging way to learn. These educational tools allow students to directly observe and describe the motion of objects in terms of distance, displacement, speed, velocity, and acceleration. By physically interacting with these toys, students can transform abstract ideas into something tangible and easier to understand. This hands-on approach enhances their comprehension and makes learning more enjoyable and relevant. Moreover, this study suggests that incorporating self-made interactive toys significantly improves students' performance and interest in science. This heightened engagement results in better comprehension and retention of concepts and fosters a positive attitude toward science. Consequently, students are more inclined to pursue additional education and careers in scientific fields, ultimately contributing to a more scientifically literate society.

5.0 Contributions of Authors

The authors confirm their equal contribution to all aspects of this research. Ms. Rosales and Mr. Piñero conceptualized the research problem, while Dr. Futalan carried out the necessary protocols for conducting the study and handled the statistical analysis. All authors collaborated in discussing the findings, and they reviewed and approved the final version of this paper.

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7.0 Conflict of Interests

All authors declared that they have no conflicts of interest as far as this study is concerned.

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Stakeholders' Contribution to the Cotabato Historical Conflict: Experiences and Perspectives on Conflict

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Abstract. Understanding stakeholders' contributions to the Cotabato historical conflict has agreeable benefits for the community, especially for human security. Stakeholders were the primary actors in times of conflict. This study employed phenomenological research design to capture stakeholders' experiences about their contributions in pre- and post-conflict scenarios. Results show promising initiatives on how the inter-agency collaborative efforts stabilize and maintain the safety among the people. The historical conflicts in Cotabato come in series, massive displacement and attacks. Cultural stereotyping and misunderstanding became the dividing factors that caused the conflict to last so long. The late 1960s to 2000s were the years when the province suffered from economic losses and failure, unstable living conditions, starvation, and discrimination brought by different parties involved between GRP vs. Blackshirt; this war was between the Government of the Republic of the Philippines and the Moro people who inhabited the Province of Cotabato that called themselves as Blackshirt, GRP vs. NPA; this war was between the Government of the Republic of the Philippines and the New Peoples' Army who fought for reform the government; GRP and a group of Umbrakato and ILAGA vs. Moro; the Ilonggo Land Grabbers Association was headed by Umbrakato who fought against the Moro and maintained alliance with the Philippine government. However, LGU, military, and barangay officials' commitment to normalizing the situation was the highest support. As a result, people return home confident in a peaceful situation and hoping for peace. Another striking initiative was headed by LGUs, NGOs, and religious groups to health care facilities and food. A community-based program like Duyog Ramadhan helped increase community awareness and encourage cooperation. On the other hand, establishing military camps and observatory units to identify conflicted areas improves human security. This study, therefore, provides a meaningful reference to how, in conflict situations, stakeholders can improve areas where human security is challenged.

Keywords: Cotabato historical conflict; Narratives; Conflict-affected areas; Stakeholders; Human security.

1.0 Introduction

The island of Mindanao is historically a land of promise because of its rich fauna and flora resources and, at the same time, the diversity of cultures that emerged in various regions. Even though this island produced exquisite resources for individuals, peace remains elusive. Mindanao becomes the arena of war between the Moro and the Christian settlers due to land-grabbing issues, rido, injustices, and discrimination (Mallo, 2024). Province by province, each experienced instability and underdevelopment because of these existing issues. In particular, the historical conflicts in the province of Cotabato were disturbing and unforgettable, and they caused unrest. They led to the failure of human security and development, but they were also crucial for the region's improvement. It

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became a long struggle for stability in the province. Numerous causes of the conflict were also identified, such as ancestral domain and economic depression (Ochiai, 2016). These conflicts crumpled and represented the dying economy and the degrading sustainable upliftment of the community to recovery. However, the coming of local and non-government organizations, church leaders, and other stakeholders as support entities forged alliances to combat these conflicts. They aimed to prioritize health, economic upliftment, and social and psychological recovery.

On the other hand, stakeholders (both internal and external) were the prime actors in conflict situations who support the formulation of aid in minimal and larger spheres of deficiency, influencing the interplay between the community and stakeholders. Some factors influencing the participation of stakeholders' performance include reforms in local economic development with local policy support (Wu & Zhang, 2014), advocacy tourism (Duarte Alonso & Nyanjom, 2017; E. Mallo, 2024), and the priority of stakeholders in HEIs (de la Torre et al., 2019). However, few have tackled stakeholders' participation in post-conflict scenarios and their contribution to the community. Damoah et al. (2020) stated that stakeholders' abandonment may result in a bad image, slow economic growth, discouraged investment, and financial loss. That is why the unwavering support given by stakeholders must be considered and taken into account.

Furthermore, this paper aims to capture and understand stakeholders' contributions in post-conflict scenarios. It will provide reliable data on social support and literature on stakeholders' specific contributions in conflict scenarios. Specifically, it will address the research question: What narratives can stakeholders share on historical conflicts in selected municipalities in Cotabato Province?

2.0 Methodology

2.1 Research Design

The study employed a phenomenological research design. This design facilitated exploring participants' lived experiences in conflict settings. It also captured the unique stories of their situations, feelings, and emotions in the context of contribution in a scenario where human security and survival were at stake. In the words of Creswell & Creswell (2018), people's experiences are the products of their expression during the time and situation when they experience a certain phenomenon.

2.2 Research Locale

This research occurred in the province of Cotabato, part of Region XII, also known as the SOCCSKARGEN region. The province's total land area, including urban and rural areas, is 9,008.90 square kilometers. According to the most recent Regional Department of Tourism XII survey conducted in March 2021, the Cotabato province reported 216,182 domestic and foreign tourists. In addition, some local attractions in the province can be found in nearby neighboring municipalities of Aleosan, Pikit, and Makilala, which have been identified as research participants. These areas were identified before being included in the geographical area of BARMM.

Aleosan has a total area of 225.44 square kilometers, accounting for 2.42 percent of the province's total land area. According to the 2020 Census, the municipality had 41,944 people across 19 barangays. The U.K. Peak is a thriving tourist attraction in the barangays of Upper Mingading and Katalicanan. In comparison, the Municipality of Pikit has a total land area of 604.61 square kilometers or 6.49 percent of the total land area of Cotabato. It had a total population of 164,646 people, according to the 2020 Census. The historical Fort Pikit, built during the Spanish military regime in 1893, is a tourist attraction of the municipality. It is located near the municipal hall along the national highway. The municipality of Makilala, endowed with natural resources, is one of the province's most popular tourist destinations. The New Israel Eco-tourism Park in Barangay Israel has become a prominent attraction to local and foreign visitors. During the visit, a fun adventure includes a zip line and a scenic view of Mt. Apo. It covers 343.57 square kilometers of land, accounting for 3.69 percent of Cotabato's total area. According to the 2020 Census, the municipality has 87,927 people.

2.3 Research Participants

The following parameters were used in the selection process. Participants came from the municipalities of Aleosan, Pikit, and Makilala. Six participants were interviewed for the Key Informant Interview (KII), comprising the LGU and BLGU Barangay Captain. They currently hold the office and know about current tourism

development and living in times of conflict. For the Focus Group Discussion (FGD), eighteen participants were interviewed, including the owners of the tourist site, the head of BPAT, teachers, vendors, habal-habal drivers, and Brgy. Kagawad. As to their inclusion, they should be barangay residents living in a time of conflict and have some knowledge about tourism development in their area. This study used purposive sampling techniques. Participants were indemnified as key informants in three different localities.

2.4 Research Instrument

The study's instruments used a researcher-made interview guide. Before proceeding to actual data collection, the research tool was subject to validation by Florie Jane Tamon and Rowell Natafan, who checked the necessary probing questions to include. Also, as per their suggestion, a pilot test was conducted to determine the suitability and accuracy of the questions and probes. The Key Informant Interview (KII) and Focus Group Discussion (FGD) guide questionnaire used the same questions to vouch for their responses, which dealt with discovered processes of transitions from peace to sustainable tourism, which seek to search for the involvement of multi-sectors to offer programs addressing tourism needs and interventions to attain sustainable tourism in their locality.

2.5 Data Gathering Procedure

This study employed interviews and focus group methods. Environmental scanning was conducted before the interview and focus group to validate and affirm the key informants' participation. The researcher identified the participants using the criteria provided. A letter was sent to the local government unit and barangay captain for approval. After receiving the acceptance letter, the interview was arranged. Interview responses were digitally documented to record the participants' responses.

2.6 Ethical Considerations

The researcher maintained and valued the confidentiality of the participants' information. By their willingness, without any force, they shared their experiences according to the purpose of the study. The researcher also used informed consent, which values the participants' interests. All the data obtained during the interview was used mainly for the study. Proper referencing was also observed to credit the authors' ideas during the analysis and further discussion in the study. The researcher ensured that all participants' rights, safety, and -well-being were protected throughout the research process. Informed consent was given. The participants were informed about the risks associated with their involvement in the research and allowed to make a voluntary decision to participate or not participate in the research.

3.0 Results and Discussion

The emerging themes and sub-themes reflect stakeholders' experiences regarding conflict, feelings of years of instability, and displacement.

3.1 Historical Conflicts in Cotabato Province

Table 1 shows the sub-themes of the historical Conflicts in Cotabato Province.

Table 1. *Historical Conflicts in Cotabato Province*

Sub-Themes	Description
Conflict comes in a series.	I experienced a series of conflicts. In 1970, a series of conflicts happened in various areas of Pikit. There was active fighting every month.
War is present	War took place as far as I could remember. War and calamities challenged the government.
There is displacement	People left their farms and preferred to establish or start a new livelihood. Evacuation happens from time to time out of their lands and find refuge in their relatives in Maguindanao, neighboring towns, or go up to the mountains.
Attacks	Recorded incidents of ambush, harassment, and killings. Killings came to be every day and everywhere. Insurgents also blocked Barangay roads. There were records of stealing of carabaos, extortion, and land conflict. There were invasions by the military.
<i>Rido</i>	Prevailing issues of <i>rido</i> introduce conflict in the areas. This conflict is between Muslim families and groups.
Ethnic stereotypes	There were killings among Christians in areas populated by Muslims due to cultural misunderstandings. Muslim and Christian youths feared one another. Through generations, the Bangsamoro thought that Christians were the priorities with more opportunities than them.

The historical evidence of conflicts in Cotabato Province can be described in a series of contested conflicts and devastation. This prevailing conflict is supported by (Ochiai, 2016), showing that the Mindanao conflict, in general, is often portrayed as a simple fight between Christians and Muslims. Cases of violence are also scattered in

different towns and provinces. According to Özerdem & Podder (2012), violence in North Cotabato is considerably bigger than an armed conflict with the Philippine military or Christian settlers. Due to its conditions, the province is feared by individuals (tourists and investors). It further resulted in a massive challenge towards safety and economic immobility. As a result, underdevelopment and security are challenged. Furthermore, the accounts of deadly armed clashes between government forces and rebel/terrorist groups further attest to the viciousness of hostilities in the province (Capuno, 2020). This shows that war is present. This result is supported by the study of Neumann (2010), who claims that the wars of 1997 and 2000 caused substantial evacuation efforts and vast devastation of land and buildings. This means that war creates an atmosphere of fear and destruction of infrastructure.

Aside from this occurrence, historical conflicts have caused displacement in the community. From Paul Hutchcroft's description, people have been killed in armed conflict, and millions have been displaced (South, 2017). The rapid increase of conflicts in the area made people move to safe places and near relatives. Artificial evacuation centers were overpopulated. In response, the LGU, in support, focused its resources on providing evacuation shelter, medicines, and any aid. For example, for women in Pagangan, North Cotabato, the armed war makes their lives more difficult. The children suffer in silence for a long time, from the terror of gunfire to the problematic life conditions they face while in the relocation facilities (Daylusan - Fiesta, 2019). Women and children face the challenges brought by conflicts in their areas.

To advance their security forces in the conflicted areas, the GRP and local government military strengthen their alliance and patrol areas with a high presence of armed conflict. The government assembles its defense and prevents larger conflicts from escalating. The victims of conflict received assistance through support from DSWD and other NGOs (Weder et al., 2010). The humanitarian sectors invest to support the victims. The province is in a state of despair. Tantamount to conflicts and attacks emerged to contribute in Mindanao, particularly in Cotabato, Rido, or clan conflicts have instigated state-insurgent violence (Adriano & Parks, 2013), intermittent skirmishes staged by warring families (Cagoco- Guiam, 2015), and practically happened among Muslims (Mendoza, 2020). This again adds to the severity of the situation. Ochiai also insists that what causes ongoing rido in the locality can be concentrated through elites' land resources, local politics, and local inhabitants. However, the emphasis of this violence, somehow complicated, is mostly determined by a complex interaction of local political elites. (Neumann, 2010).

Further, for Espesor, these local political elites governed the areas with their vision through their power (wealth, family identity, and resources). Some use power to employ threats and intimidation (Espesor, 2017). Power was able to bring misdirection of development and control the movements. In inappropriate situations, this political power escalates the ethnic stereotype among tri-people with fewer opportunities. As a result, the dramatic socioeconomic and political marginalization of the Muslims and Indigenous peoples prevents peace and security (Neumann, 2010). These historical conflicts continue to expand their dysfunctional effects on the locals. Political and economic factors worsen the conflict situation in the province.

3.2 Origins of Conflict in Cotabato Province

Table 2 shows the years of origin of Conflict in Cotabato Province.

Table 2. *Origins of Conflict in Cotabato Province*

Year	Description
1968	In 1968, conflict emerged in the area.
1970	In 1970, Conflict was already present. There is a misunderstanding between Muslims and Christians. This year marked the birth of an organized Christian group, ILAGA, a counterinsurgent group.
1971	In 1971, the Conflict between Moro and ILAGA escalated and recorded the killings and evacuation of the locals to neighboring towns.
1985	In 1985, conflicts escalated, and prevailing killings were present.
1986	Confrontation between the government and the <i>black shirt</i> . The declaration of martial law escalated the Conflict this year.
Sometime between 1980s to 1990s	The conflict occurred in Carmen, Aleosan, and New Panay between the 1980s and 1990s. During this time, people used artificial wagons and carriages to transport their belongings.
2000	The declaration of an <i>all-out war</i> created massive confusion among the people.
2008	Aborted MOA on Ancestral Domain between the government and the MILF, resulting in the intensification of the conflict situation. MILF's goals and sentiments for autonomy and recognition were not realized.

The participants' memories of the origins of the conflicts remain clear. Conflicts started in late 1968 when an alternative Muslim elite started organizing with the intent of seceding from the Philippines (Adam, 2013). This is evident in the Municipality of Matalam, province of North Cotabato, where massive open clashes occurred. According to Loesch (2017b), the historical background of the Moro conflict emerges due to socio-economic marginalization, ethnoreligious discrimination, and lack of political representation. Certain dates to remember how the conflict affected the peace situation of the community reminded them of their struggles and experiences. The contested memories of the origin of conflicts mark the crucial situation and fighting between GRP and other combatants.

In 1968, the province has experienced emerging conflicts. The participants claim that it is the MILF caused destabilizing the locality. The community was alarmed and eventually feared, so they evacuated from Aleosan. This is supported by the study that of the same year, the unforgivable Muslim massacre called the Jabidah massacre in Corregidor on March 17, 1968, killed 46 young Muslim trainees under the Philippine Army (Macasalong, 2013). This incident resulted in massive rallies against the GRP for the inhumane death of their comrades. War takes place and devastates the villages. War advocates violent deaths and displacements.

Two years after the Jabidah massacre in 1970, MNLF enjoins movements to accelerate their power and alliances against the GRP. However, this movement also affected the settlement of the residents, both Christians and MNLF. Land conflicts are another conflict that emerged between Muslims and Christians and became a pivotal issue due to Christians' coming into the province. This result is supported by Adriano & Parks (2013) That tension escalates between communities of Muslims and Christian settlers. The land grabbing of ILAGA and Blackshirt of Moro has appeared.

Year after the tension, 1971 characterized the evacuation and transport of the residents because of the ongoing war in the locality. This also sparks the killings of sixty-one- Muslims by Christians in North Cotabato. In the same year, the Libyan government shows support to MNLF in the form of financial and military assistance. This claim is supported by UCA (n.d.) when Marcos's administration called for ceasefires between two groups. The experience of increasing conflicts makes the community find a peaceful place to live. While GRP and MNLF/MILF continued to form chaos, the GRP administration faced the people power movements aiming to oust Marcos's dictatorship. The battle prolonged and developed the invisibility of peace among them. This year is a significant year for the killings of 61 Muslims and its long-term impact on the community.

Moreover, according to Asia Report (2011), in the year 1985, deaths continued to increase caused by conflicts. As per the report, 1,282 military or police were killed, as well as 2,134 NPA fighters and 1,362 civilians. The severity of conflicts suggests that Mindanao is not a safe place to visit. The national government in 1986 welcomed the new democratic leader, Corazon Aquino, through people's power. However, the condition of conflicts hinders the plan for MILF representation to the democratic government. This is supported by Asuna & Wataru (2020), failure to channel the leadership of armed rebels into representative democracy. Even if this is a reform to the government, conflicts do not stop, and more incidents will occur in the coming years. The provincial armed conflict in Aleosan could be traced back in the year 1995 when the 64th IB was based in the area in search of the MILF commanders in Dongguan, Aleosan. (Daylusan - Fiesta, 2019). Government military forces extend the search and distort MILF troops.

The next president captures the mother camp of MILF. Estrada's administration marks the historical war between MILF and GRP. In 2000, Estrada declared an all-out war in Camp Abubakar on March 21, 2000, where hundreds were killed and wounded (Franco, 2019). The bloody war weakens the MILF troops, and GRP claims the camps as new military residents. In the last year of the historical conflicts of the participants in 2008, disgruntled factions of the MILF expressed their disgust over the non-signing of the MOA-AD (Ilagan, 2014). The dismay of the MILF further reflects the historical conflict in Mindanao. The increase in fighting between GRP and MILF is on the record. Further, the origins of conflicts in the Cotabato province show how conflict creates division and economic losses to the people while safeguarding themselves from the effects of misunderstanding, confrontations, declaration of all-out-war, and aborted MOA signing.

3.3 Parties Involved in Conflict

Table 3 shows the sub-themes of the parties involved in Conflict.

Table 3. Parties Involved in Conflict

Sub-Themes	Description
Government vs. Black Shirt	Blackshirt appeared as a combatant group of Bangsamoro.
Government vs. MILF	The government declared an <i>all-out war</i> and commenced the brutal and unending killings and threats between GPH and MILF.
Government vs. Umbra Kato of BIFF	: The founder of BIFF, Umbra Kato, hoped to promote Moro Islamic State against the government.
Government vs. NPA	The NPA created scenes in neighboring barangays, becoming insurgents against the government. This armed group asked for revolutionary taxes from businesses.
ILAGA vs. Moro	The ILAGA, headed by Commander Toothpick, killed Muslims in the area. ILAGA are associated with Christians who grabbed land areas of Muslims. Some accounts also say that Muslims stole carabao from Christians, as the latter tagged as killers and robbers.

The Philippines, in general, is in an organized conflict that involves different parties. Regarding the history of conflicts and their origin, the province of Cotabato has three contested parties and localized conflicts in selected Municipalities that conflict with GRP. The longest Maoist-inspired disputant in Asia that GRP struggled to hand over the peace agreement is the CPP-NPA- NDFP or the leftist. The GRP and CPP-NPA-NDFP ceasefires have not been a salient engagement feature until today (Åkebo, 2020). This means that it tries to revolutionize the entire government and radically end colonial bondage, bureaucratic corruption, and state repression. (Imbong, 2019) . The controversial warfare between GRP and CPP-NPA-NDF in the municipality of Makilala has severely suffered from threats and killings. NPA has remained strong in some areas and financially resilient through domestic funding sources, including revolutionary tax (Åkebo, 2020). The participants during the FGD interview in Barangay New Israel claimed that while they were on their Banana plantation, the NPA member left a note containing a threat that if they did not pay the revolutionary tax, they would be killed. Soon after, the husband was ambushed and killed. The harassment continues to infuse fear into the community.

However, the GRP intensified its military resources and broke the NPA's chain of alliances (Imbong, 2019), these bloody battles between the NPA and GRP resulted in killings, illegal arrests, abductions, and torture among activists alleged to be sympathizers of the NPA. As a result, the participants felt the presence of safety. To maintain this ambiance, they insisted the CAFGU be installed in their military camps to sustain the presence of security. Each CAFGU member is assigned to a particular AFP commander and attached to a maneuver battalion in that geographic area (Özerdem & Podder, 2012). The community believed that as long as the military camps remained erected in their location, it was a clear indication that peace and security were at stake.

The other party involved in the conflict between GRP is the MILF. The MILF headquarters remained covered and working in Maguindanao province. Due to its location, scattered conflicts evolved among other provinces of Sultan Kudarat and Cotabato in Region XII. In Municipality of Aleosan of the province has contested frequent battles between MILF and GRP. According to the participants, they kept transferring and left their farms uncultivated because of war in their area. Military forces continued to provide transport vehicles for the evacuees. MNLF (Moro rebels) and ILAGA (para-military support of GRP) conflicts became a prevailing problem in the province that resulted in long-term discrimination. This coincided with the study of Adam (2013) and Verbrugge et al. (2014), Who stated that in a period of intense communal warfare in Cotabato province between Christian militias (known as Ilaga or rats) and Muslim armed militias. Land grabbing was the root cause of unending conflict between Christians and Muslims. The ILAGA group headed by Norberto “Kumander Bucay” Manero elicited fear, and his role was to terrify supporters of Muslim and communist rebels in Cotabato province. (Gutierrez, 2012). In an interview with Barangay Fort Pikit, the captain shared his experience with Muslims and Christians. The participant called Christians the “Pulahan,” where Muslims feared their groups. In response to the growing fear, the Bangsamoro in the province named themselves Black Shirt in Central Mindanao to counter against ILAGA. However, ILAGA remained in power due to the support of the AFP under the Marcos administration—the memoir of conflicts molded in the history between ILAGA and Moro rebels.

Aside from GRP and Moro rebel conflicts in Central Mindanao, rido emerged as contributory disputes that existed among Muslims. In Muslim-populated areas like Pikit, rido sparked devastating incidents that affected the peace situation. The rampant family feuds happened in various barangays. The leaders of each family continuously exposed hatred. According to the Pikit Tourism Officer, this conflict resulted from unresolved issues and remained aggressive. In Poblacion, for instance, this member of the family was killed, and the next day, another member of the suspect was killed. Peace becomes unstable. However, the town's mayor had made a settlement for both families and provided a peace offering.

These parties involved in the Cotabato conflicts marked Mindanao's history as war-torn areas. The evidence of GRP and rebel groups (MILF, MNLF, CPP-NPA-NDF) and the ILAGA battle led to the confinement of massive development instead. This battle causes misery and deaths to Moro, Christians, and other members of the community. Conflict is, therefore, prohibiting good relationships with one other. It divides the people of Mindanao because of unresolved issues of economic injustices, stealing, and inequality.

3.4 Perceived Impacts of Conflict

Table 4 shows the sub-themes of perceived impacts of conflict.

Table 4. *Perceived Impacts of Conflict*

Sub-Themes	Description
Persistence of sporadic conflicts	Pocket conflicts occur irregularly in a few but scattered barangays in the localities.
Massive displacement	Large groups of families leave their residences due to conflicts. The municipal plaza served as an evacuation center.
Infrastructural concerns	The access to market roads is problematic.
Economic failure	Investments failed, businesses closed, job opportunities ran out, there was unemployment, and farmers no longer produced crops and livestock.
Unstable living condition	Because of conflict, people's life conditions were not stable. Transactions were delayed due to armed and rebel groups in the barangay. People struggle to recover. Localities are unsafe.
Starvation	The conflict resulted in starvation. The buying and consumption of food resources were limited.
Fear	Farmers fear growing their crops and tending to animals. They hide behind the bamboo, stay in the attic of the house, and endure sleepless nights for fear of insurgents passing by their town. They often think they are prone to danger. They fear being mistaken as aggressors and turn out to be victims. Muslims fear the <i>pulahan</i> .
Discrimination	The negative impact of the conflict was that Muslim brothers were mostly discriminated against.

Conflict is negative. According to the stakeholders, the perceived impacts of conflicts prevent the status of a good community and development. Instead, fears and displacement are massively characterized by the locality. Sporadic wars have been happening in the areas that demanded massive evacuation that lasted for about three to eight years in Aleosan (Daylusan - Fiesta, 2019). Moreover, in Matalam, in the village of Kibya, all sorts of low-intensity violence, such as harassment, threats, and, in some cases, actual killings, occur regularly (Adam, 2013). The prevalent conflict happens in these places and the neighboring provinces of ARMM, Sultan Kudarat, and Maguindanao. From 2011-2016 in ARMM, this region had more potent effects of violent hostilities than other regions and had the lowest level of socioeconomic development in 2015 (Capuno, 2020). These findings justify the economic failure and displacement. Security has been crucial, and it challenges peace movements. It is supported by Espesor (2017). This reveals that lack of security and instability makes peace operations difficult in Mindanao.

Further, everyone is losing hope for Mindanao. The study of that area supports the claim that there is significant complexity in this multi-faceted conflict involving numerous stakeholders and sub-groups, including within the heterogeneous Moro community (South, 2017). The negative impacts of conflicts become the mask of Mindanao. Even in a song, Mindanao by Freddie Aguilar states that, "*tuloy pa rin ang digmaan, kalat na ang kaguluhan sa Mindanao*". This shows bigger concerns about what is happening in Mindanao. Therefore, the impact of Mindanao conflicts is naturally negative.

3.5 Results of Stakeholders' Initiatives to Address Conflict

Table 5 shows the sub-themes of the results of Stakeholders' initiatives to Address Conflict. The country's primary mission is to suspend all forms of human violence. Undoubtedly, the LGU and other agencies offered strategies and initiatives to realize better peace and security opportunities. The spirit of hospitality is a key factor in why the LGU and other agencies openly spread their support through the initiative (Capuno, 2020). This result is

supported by the Philippine government's adoption of various interventions to control, manage, resolve, or prevent them, including many military operations, economic programs, self-governance and fiscal autonomy measures, and other peacebuilding efforts.

Table 5. Results of Stakeholders' Initiatives to Address Conflict

Sub-Themes	Description
People return home	After negotiations, people are observably returning home little by little. The community welcomed the evacuees and their families coming from neighboring barangays.
Confidence in the peace situation	People became confident that peace, safety, and stability were restored. They could move forward, and students could attend classes with military security.
Developed hopes for peace	We hope for immediate responses to minimize the number of casualties.
Assistance by NGOs	When conflicts arose, NGOs were there to assist. Balay Mindanao is one NGO that shares resources to mediate and study causes of conflict. Balay also provided pumps to meet people's strategic needs. Other NGOs, including the EU and humanitarian and development agencies, also held other activities in 2007, and IMO-Oblates of Mary provided relief for conflict areas.
LGU and NGO collaboration	The LGU signed an agreement with NGOs to implement methods to eliminate and lessen the effects of conflict. These two also meet to plan interventions.
BPAT	The BPAT rendered services, watching over all community activities to maintain peace and order day and night. Boundaries were checked to monitor residents' comings and goings. They also augmented with AFP and PNP to strengthen their workforce.
AFP	Newly established AFP battalions and camps were designated across conflict areas in Aleosan to manage insurgent uprisings. Through them, peace became visible and sustained. A good relationship prospered between the military and locals as they provided goods to the community.
PNP	The presence of the police made them feel secure and safe.
CAFGU	Served as the security force in the barangay.
BLGU	The barangay captain ensured that his constituents were well-monitored and safe. He informed constituents to refrain from associating with NPA. Barangay officials were assisted by AFP and CAFGU. Each barangay appointed individuals to facilitate conflict-related concerns.
DepEd	School teachers collaborated in building artificial camps for the evacuees.
Duyog Ramadhan	This socialization activity promotes peace among the residents in the locality of Pikit.
Religious groups	OMI-ARB and Pikit Pastoral Council (PPCARB) initiated an interior dialogue to promote a culture of peace.

Millions were spent to accommodate the ongoing conflicts. Mindanao become the flagship of financial spending of the country in terms of security and livelihood development of the people. This is supported by Berhe (2017), who believes that donors with the goodwill to assist transformation from war to peace come with substantive funding. The succeeding years become hostile. The emerging initiatives or support systems of LGU and other initiatives prioritize evacuation. This is supported by the study of Daylusan-Fiesta (2019) and Mallo (2024). Local Government Units (LGUs) should ensure the evacuation sites are safe from danger. The DepEd transforms its classroom to temporarily house the residents while security forces (AFP, BPAT, CAFGU, and PNP) look closely at the people's movements and the status of peace. Therefore, the intensifying collaboration of LGUs and other agencies makes initiatives as supporting aid to the situations.

4.0 Conclusion

The historical narratives about Cotabato's conflicts centered its ideas about human security from the past decades. Human security is an essential social aspect that should be secured and valued no matter how difficult it is to achieve. This study shows the valuable and responsible commitment of different inter-agencies and sectors as a form of initiative in response to the problems encountered by stakeholders. The ongoing recovery and rehabilitation of conflicted areas are the leaders' priorities. However, specific evidence claims that support systems from humanitarian agencies failed to provide appropriate aid, which is crucial in defending human security. To preserve the people in conflicted areas, stakeholders should provide continuous surveillance and security. Meanwhile, non-government organizations and other humanitarian agencies must collaborate with the local government to specify the services needed, particularly in remote areas. Local leaders must establish trust and commitment to deviate from conflicts. Lastly, there is never-ending support for the victims and displaced community in a situation where conflict kills innocent people. These promising results of initiatives ascertain the stakeholders' manifestation to collaborate in a more humane intervention.

5.0 Contributions of Authors

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7.0 Conflict of Interests

The researcher declares no conflict of interest in this study.

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Enhancing Commuter Accessibility in Tacloban's University Belt, Philippines

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Abstract. Public transportation is critical in supporting urban mobility, providing economic benefits, and reducing environmental impacts. However, Tacloban City, particularly its University Belt Area, faces significant transportation challenges, including traffic congestion, inadequate infrastructure, and accessibility disparities among transit stops. While many studies broadly explore urban transportation systems, this research distinguishes itself by addressing accessibility within a localized context, combining commuter perceptions with traditional metrics. By focusing on Tacloban City's University Belt Area, this study fills a gap in understanding transit accessibility in densely populated, commuter-reliant urban areas. This research evaluates six transit stops—TS-1 (LNU), TS-2 (LNHS), TS-3 (EVSU), TS-4 (Card Bank), TS-5 (LBC), and TS-6 (LVD)—through data collection from 599 respondents and 10 days of traffic volume counts. Using Geographic Information System (GIS) heatmaps and statistical tools like Spearman's Correlation, ANOVA-Kruskal Wallis, and Dunn's Test, the study identifies patterns and variations in accessibility during peak and off-peak hours. Findings reveal that 83% of commuters experience waiting times of 10–20 minutes during peak hours at underperforming stops like TS-5, compared to 5–10 minutes at high-performing stops like TS-2 and TS-3. Additionally, 60% of TS-5 users report travel times exceeding 5 minutes, unlike other stops where travel times are predominantly within 0–5 minutes. Recommendations include increasing public transport availability, optimizing schedules, and enhancing pedestrian pathways and transit facilities. The findings provide actionable insights for policymakers to prioritize investments and design equitable urban transportation solutions, contributing to a more sustainable and accessible transportation system for Tacloban City and serving as a framework for addressing similar challenges in other urban areas.

Keywords: Accessibility; Traffic congestion; Transportation ecosystem; University belt area; Tacloban City.

1.0 Introduction

Public transportation is crucial to society's infrastructure, providing financial benefits, making travel more straightforward, and boosting opportunities and property value. It also contributes to reducing air pollution, easing traffic congestion, and supporting job opportunities. These modes of transportation, such as trains and buses, follow set routes and fares and are essential in urban areas where private cars are heavily relied upon prices (Dmitry Ryabchikov et al, 2022). Public transportation plays a critical role in addressing societal challenges and decreasing dependence on individual vehicles (Dušan Teodorović & Janić, 2022).

Despite its importance, personal transportation's substantial contribution, especially private cars' use to greenhouse gas emissions, tends to be consistently disregarded (Gače et al., 2023). Residents in densely populated urban areas keenly feel the negative consequences of vehicle emissions. As technological advancements rapidly progress alongside a growing middle class, the ownership of cars is expected to rise. This increasing trend in car ownership poses an elevated threat of environmental pollution (Li et al., 2022). Consequently, public transportation becomes progressively vital in addressing and mitigating the environmental consequences associated with individual vehicle usage.

The public transportation sector in the Philippines encompasses a wide range of vehicles, including traditional bicycles, tricycles, modern buses, and taxis. In addition to playing a crucial role in daily mobility, this transportation mode is a significant economic pillar for rural inhabitants (Asael, 2023). Commuters benefit from public transportation as it provides a convenient and cost-effective means to reach destinations more quickly than private vehicles, contributing to the reduction of environmental damage caused by private car use (Zimmermann et al., 2023). However, this positive perception does not universally apply to Metro Manila, where many Filipinos view public transportation negatively (Chelcie & Kardi, 2016).

The entire Philippine public transport system faces challenges characterized by outdated equipment, insufficient financial security for operators, and a lack of a proper structure to support ongoing development and modernization (M2.0 Communications Inc., 2022). Using private vehicles provides a level of comfort and privacy that public transportation cannot replicate. Individuals in control can regulate cleanliness, temperature, and music choices within their vehicles, resulting in a travel experience customized to individual preferences. Furthermore, private transportation is commonly perceived as a safer alternative, especially during late hours or in areas with questionable security conditions (Vista Residences, 2023).

In 2022, approximately 1.27 million private cars were registered in the Philippines. The number of registered private cars in the country gradually increased year-on-year from 2020 (Statista Research Department, 2023). Additionally, 77 percent of the population opts for private vehicles (Freeman, 2016). This preference is fueled by poorly maintained highways, inadequate road infrastructure, and the lack of efficient public transportation options, resulting in higher travel time, vehicle operation costs, and overall reduced accessibility within the city (Montemor et al., 2023).

However, the seemingly attractive attributes of private transportation, including autonomy and convenience, come at a significant cost, as highlighted by Limos (2022). Corresponding to this statement, Alamri et al. (2023) stated that inadequate public transportation can also result in several problems, including parking challenges and lengthier commute times. It can also have a negative social impact, isolating individuals, especially the elderly, the disabled, and non-drivers. The expenses associated with fuel, maintenance, insurance, and parking fees contribute to the financial burden of private vehicle ownership (Limos, 2022). Moreover, the surge in private vehicles exacerbates traffic congestion, causing delays and environmental concerns.

Moreover, Tacloban City is one of the places affected by land transportation disadvantages. According to the 2023 Census, the city has a population density of about 261,642, making it the most populous city in Eastern Visayas. It is also visited vastly as it is the busiest and most progressive city in Region 8. The city's population triples during business hours due to the influx of residents from nearby Leyte and Samar municipalities who are available for the city's utilities and services. Demand for transients has steadily increased because of its central location for business, education, health, and leisure activities (City Government of Tacloban, 2019). This situation is particularly noticeable in the Tacloban University Belt Area (TUBA), which accommodates many structures and services. Consequently, transportation accessibility within the TUBA is strained as the existing public vehicles struggle to meet the high demand, especially during peak hours when the influx and departure of students and workers in the University Belt Area intensifies.

Literature on accessibility, especially in urban transportation systems, has been extensive. Sharaf Alkheder et al. (2021) and Tong et al. (2015) highlight data-driven approaches and spatial analysis as the basis for understanding accessibility. The quantitative approaches employed by both studies to assess accessibility through tools such as spatial interaction models and network analysis underpin their results. This study, however, takes a different

approach as it is local-scale user perception added by qualitative methods inspired by the work of Cheng and Chen (2015). Through a structured combination of quantitative and qualitative methods, the researchers hope to offer a less partial overview of how accessibility is experienced, both as a collection of objective metrics and as a group of subjective perceptions. Furthermore, inspiration was drawn from Albacete et al. (2015) in using multiple accessibility metrics to provide a more comprehensive assessment. Their study stresses the need to consider specific requirements regarding travel time, distance, or transfer frequency when assessing accessibility. Albacete et al. (2015) compared two accessibility measurement techniques, SAL and PTWAI, in Helsinki. Access to various urban facilities, including education, healthcare, shopping, and the like, was used similarly in both methods. According to the study, PTWAI had a more detailed and nuanced understanding of accessibility, whereas SAL had a more general perspective. SAL typically overestimated accessibility while PTWAI gave a milder evaluation. This study contributes to the literature on accessibility by bringing together these three elements, which we hope will provide valuable insights for local policymakers and urban planners.

The importance of evaluating accessibility in urban transportation through a Geographic Information System based analysis in the Tacloban University Belt area includes addressing several key issues and contributing to the enhanced quality of urban mobility and planning. This study will be helpful for students, commuters, local business owners, policymakers, and the entire community. Better access to educational facilities will help students and teachers, which may facilitate increased enrolment, improved attendance, and a more conducive learning environment. This study may help the commuters as it provides information on the public transport accessibility within the Tacloban City University Belt area, which may lead to improved transportation facilities, lesser travel time, and overall convenience of everyday transportation. Accessible transportation will enhance consumer flow and encourage frequent visits to local businesses and shops. This can lead to better sales and revenue for these companies. Moreover, the research could offer valuable data and correspondence to city planners and policymakers to help make better urban transport infrastructure and regulation choices. The study's outcome will allow the community to approach local authorities and demand that their transport needs be integrated into their services.

2.0 Methodology

2.1 Research Design

This study used the quantitative research method design to assess and analyze urban transportation in the Tacloban City University Belt Area. It used Slovin's formula to identify the number of respondents and stratified random sampling to ensure representation from different user groups and demographic backgrounds.

2.2 Research Locale

This study was conducted in Tacloban City, a heavily urbanized coastal region in the Eastern Visayas, particularly in the University Belt Area of the city. Six distinct areas comprise the University Belt Area: a section of Ninoy Aquino Avenue, Paterno Street, Athletic Road, Salazar Street, Sta. Cruz Street and Avenida Veteranos Street, then classified six (6) transit stops at TS-1 (LNU), TS-2 (LNHS), TS-3 (EVSU), TS-4 (Card Bank), TS-5 (LBC), and TS-6 (LVD).

2.3 Research Participants

Stratified random sampling was considered for data collection. Assuming the population to be normally distributed, Slovin's Formula, given by Almeda, Capistrano, and Sarte (2010), was used to determine the sample size. According to Stephanie Ellen (2020), Slovin's Formula enables a researcher to select a sample from the population while maintaining a specified level of accuracy. It guides the researcher regarding the necessary sample size to achieve satisfactory precision in the results. The equation determined a minimum sample size of 600 participants across all study zones. A total of 600 individuals, evenly distributed among the zones, completed an eleven-page questionnaire. After rigorous data cleaning, including removing incomplete responses and those lacking crucial data, 599 usable questionnaires were retained from each of the six transit stops for subsequent analysis.

The respondents of this study were students, faculties, office workers, and residents within a buffer of a 50m radius from the transit stops within the Tacloban City University Belt Area. The demographic profile of the respondents was categorized according to their residency and/or workplace location near the transit stops.

Respondents were selected by the researchers based on their likelihood to provide relevant and valuable information and meet the researchers' criteria, including students, employed individuals, and commuters in the University Belt Area.

2.4 Research Instrument

This study examines transportation accessibility in the Tacloban City University Belt Area through structured questionnaires and GIS-based analysis. The questionnaire focuses mainly on the dynamics of transportation accessibility, specifically on the timestamp during weekdays, considering peak and off-peak hours, waiting time, and travel time to the transit system. It is divided into six parts: demographic information, regularly used mode of transportation, available mode of transportation, waiting time, travel time to transit stop, and multimodal commuter experience, including their overall experience during the daily commute, traffic congestion, parking, limited public transportation options, and safety concerns. Data regarding the transportation ecosystem – mode of transportation – was obtained from a traffic count survey. Utilizing Geographic Information System (GIS) technology, the research aims to create heatmap analyses to visualize spatial patterns of transportation demand and identify areas with varying levels of accessibility. Ultimately, the study sought to suggest a transportation accessibility strategy in the Tacloban City University Belt Area based on the collected data and GIS insights.

2.5 Data Gathering Procedure

Data Collection

The researchers drafted a letter of authorization to collect CCTV footage from different barangays to count the traffic volume of all vehicles passing through a specific intersection every 30 minutes using the classified traffic volume count survey from the Department of Transportation - Philippines. Traffic volume was measured using vehicles per hour (veh/hr) or vehicles per day (vpd), which comprises the transportation ecosystem data and, eventually, obtain the peak and off-peak hours based on the time interval with the highest number of vehicles. The researchers conducted a Ten (10) day traffic Count trial between 6 AM and 7 PM from the selected intersections.

Data collection was conducted through the administration of a questionnaire. This involved developing a structured set of questions to gather information regarding transportation options, waiting periods, travel times to transit stops, demographics, etc. Researchers visited schools and offices to distribute these questionnaires. Before administering the questionnaire, respondents were provided with a brief explanation of the study's objectives and the purpose of each question. They were then instructed to complete the questionnaire to the best of their knowledge. The data collected from participants' responses to this questionnaire will be used for further analysis.

Accessibility Score Assignment

This phase used the “waiting time and travel time to transit stops” data and the proximity of respondents to the nearest transit stop where they board a vehicle obtained from the survey. These data were added to identify the accessibility score (see Table 1) for each transit stop (Albacete et al., 2015).

Table 1. Accessibility Score Assignment

Accessibility Score	Travel time to Transit Stop and Waiting time (minutes)
0	>60
1	40-60
2	20-40
3	10-20
4	0-10

Heatmap Analysis

The intensity of accessibility within each transit in the university belt area is visualized using a heatmap analysis using the Quantum Geographic Information System (QGIS) to construct a transportation accessibility management strategy. Based on the amount of time spent waiting and traveling to the transit stops, the researchers employed the accessibility score. A heatmap analysis requires several steps to be taken. This entails obtaining the coordinates of every transit stop to generate a shapefile, adjusting the color ramp based on accessibility, as shown in Table 2, and defining a buffer to restrict the analysis radius inside the transit stop.

Color Code	Accessibility Score	Description
	0	Very low accessibility
	1	Low accessibility
	2	Medium accessibility
	3	High accessibility
	4	Very high accessibility

2.6 Data Analysis

Spearman's correlation was used to correlate the accessibility score and transportation ecosystem data. The researchers correlated the accessibility score to the number of vehicles, the accessibility score to the number of transportation infrastructure, and the accessibility score to the cost of transportation. The researchers also used ANOVA-Kruskal Wallis and Dunn's Test to compare the accessibility scores of each transit stop. The findings of this correlation were used to identify the gap in transportation ecosystem data regarding accessibility score per transit stop.

2.7 Ethical Considerations

For ethical reasons, the researchers sought participants' permission, the interviewees were recorded through an audio recorder to capture the data precisely. Moreover, the researchers understand that such information shall remain classified. Hence, the gathered data must be kept confidential between the researchers and other involved parties and must remain anonymous for their safety, which is by the Data Privacy Act of 2012 and its implementing Rules and Regulations (IRR) effective 2012, and other pre-existing laws, all personal information provided were used accordingly and exclusively and remained strictly for research purposes only. Hence, the gathered data must be kept confidential between the researchers and other involved parties and remain anonymous for their safety.

3.0 Results and Discussion

3.1 Transportation Ecosystem Data- Traffic Count Volume

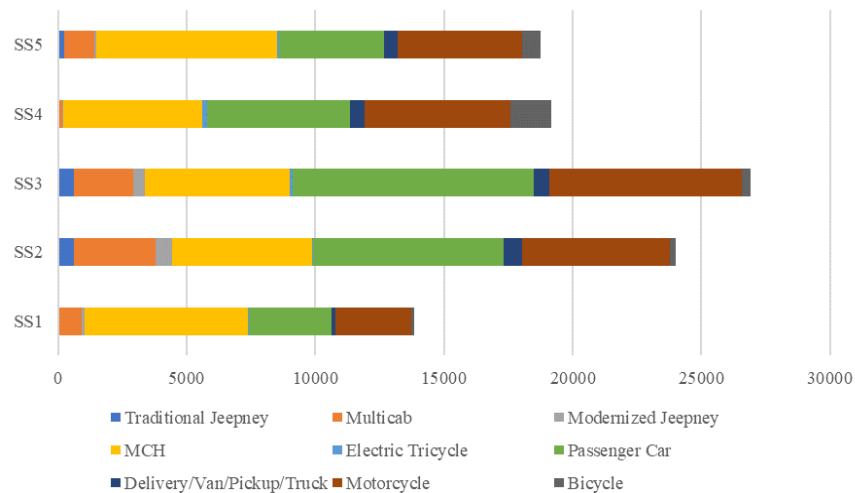


Figure 1. *Average Traffic Volume Based on the Type of Vehicle in Different Intersections*

An analysis of traffic data across five intersections within the Tacloban City University Belt Area, shown in Figure 1, reveals several key insights regarding vehicle types and their contribution to congestion. The study highlights the dominance of private vehicles, particularly passenger cars and motorcycles. The low volume of traditional jeepneys, modern jeepneys, and utility vehicles (UV) Express suggests that these modes of public transport may be limited or even absent in the area, potentially contributing to the reliance on private vehicles and MCHs. These findings align with Limos' study (2022), highlighting the negative consequences of private vehicle use, such as increased congestion, delays, and environmental concerns. Further investigation into public transport availability

and optimization strategies could mitigate traffic issues and promote sustainable commuting practices within the Tacloban City University Belt Area.

Table 3 shows the intersection throughput during morning and afternoon peak hours and off-peak hours. Overall, traffic volume is highest during the morning peak period (7 AM-9NN) and afternoon peak period (4:00 PM - 6:00 PM) across all intersections, which aligns with the beginning and end of the workday for many, leading to a higher concentration of commuters going to work and traveling home. Traffic patterns are influenced by factors such as work schedules and weekend effects (Mohammed et al., 2023). Thus, understanding these patterns is crucial for traffic management and intersection design, as they impact road capacity and congestion levels.

Table 3. *Intersection Throughput (Morning and Afternoon Peak Hours, Off-Peak Hours)*

Description	AM Peak (time)	PM Peak (time)	AM Off-Peak (Time)	PM Off-Peak (Time)
Sta. Cruz – Salazar Street	1,284 (8-9 AM)	1,319 (5- 6 PM)	535 (6-7AM)	1071 6PM-7PM)
Salazar – Avenida Veteranos	2,192 (7AM- 8AM)	2,418 (4- 5 PM)	1176 (6-7AM)	1996 (12NN-1PM)
Avenida Veteranos – Paterno Street	2,410 (7AM – 8AM)	2,516 (4 –5 PM)	1020 (6-7AM)	2266 (1-2PM)
Paterno Street – Sta. Cruz	1,600 (8 - 9AM)	1,925 (4- 5 PM)	104 (6-7AM)	1497 (6-7PM)
Athletic Road Intersection	1,603 (8- 9 AM)	1,785 (4- 5 PM)	97 (6-7AM)	178 (6-7PM)

3.2 Mode of Transportation

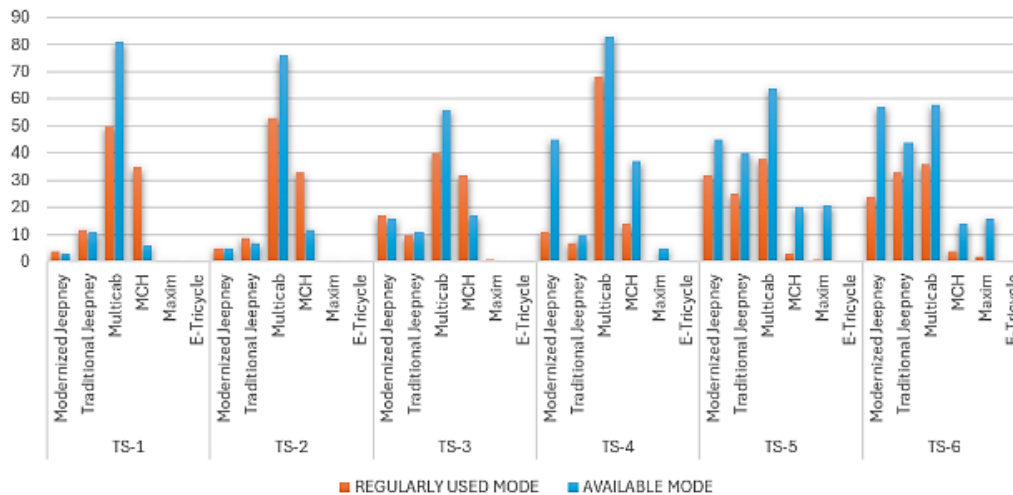


Figure 2. *Distribution of Regular Use Mode vs. Available Mode of Public Transportation per Transit Stop*

A distinct pattern emerges across multiple transit stops (TS-1 to TS-6), elaborated by the commuters' preference in specifying their need for transportation mode about the availability of such public service at various transit stops, as depicted in Figure 2. By their nature, public transportation modes are more available than commonly used at most public transit stops. There are always traditional jeepneys and modernized jeepneys, which are extensively utilized at transit stops TS-3 and TS-5) and serve as the most prospective transit option. At the same time, modes such as multicabs and modernized jeepneys have high availability relative to one another but relatively low usage at specific stops – suggesting the possibility of gaps between why the commuter wants to travel and what is available or what is available and what they choose.

Trends specific to transit stops are also visible. This equilibrium of availability and usage by commuters at TS-1 means that E-Tricycles and Maxim (app-based transportation services) meet commuters' expectations. On the other hand, TS-3 is characterized by its reliance on Traditional Jeepneys, which are available and widely used. As

for TS-6, it stands out, with low regular usage for all modes despite being available, potentially indicating a lower demand for commuters or an accessibility issue affecting this stop.

The gap between availability and usage can highlight inefficiencies or potential areas for improvement. Availability of specific transportation modes at a transit stop or station means those modes are available or provided for commuters to use there, and usage can be understood as the actual tendency of commuters to use these modes. In situations where availability considerably outstrips usage (like multi cabs in some locales), it points to underused supply. It potentially presents opportunities for remedies, including better route alignment, more efficient scheduling, and awareness campaigns to increase ridership. By understanding these dynamics, urban planners can better design transport services that match commuter preferences.

3.3 Waiting Time in each Transit Stop

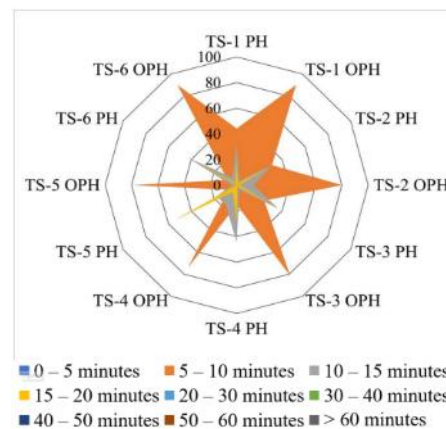


Figure 3. Respondents' Waiting Time in each Transit Stop
Note: PH stands for PEAK HOURS, while OPH stands for OFF-PEAK HOURS

The results present considerable differences in waiting times across stops of transit (TS-1 -> TS-6) for peak (PH) versus off-peak hours (OPH) presented and illustrated in Figure 3. Overall, waiting times are lower during off-peak hours, with most respondents indicating 5-10-minute rides as transportation flow is optimized. It usually takes longer at peak hours, about 10-15 minutes. Notable patterns include TS-1, with wait times for peak and off-peak matching between 5-10 minutes, and TS-2 and TS-4, which have mixed waits of 5-10 minutes and 10-15 minutes during peak, but shorter during off-peak. TS-3 is noticeably different, with longer waits (10-15 minutes) during peak hours and shorter waits (5-10 minutes) off-peak.

TS-5 stands out with longer waits (15-20 minutes) during peak hours, while it follows the trend of shorter waits (5-10 minutes) during all off-peak hours. TS-6, like many, follows the familiar pattern of longer peak-hour waits (10-15 minutes) and shorter off-peak waits (5-10 minutes). These results underscore the impact of peak-hour congestion on transit efficiency, and off-peak hours typically provide quicker service. The discrepancies from the expected travel times, especially at TS-5, could indicate localized inefficiencies or elevated demand at specific stops.

3.4 Time Travel to Transit Stop

Based on the data collected, the time needed to travel from each transit station and the far range shows that travel times for most transit stations (TS-1, TS-2, TS-3, TS-4, and TS-6) are in the 0-5-minute range. This trend suggests a well-planned transit system where stops are conveniently located for a significant portion of the population. The exception is TS-5, which experiences a dominant travel time of 5-10 minutes, suggesting either a more dispersed population or a less centralized transit stop location.

The TS-2 and TS-3 stops exhibit extremely low variability, as close to all respondents traveled 0-5 minutes, illustrating their exceptional accessibility. On the other hand, the TS-5 and TS-6 distributions are more spread out,

with respondents commuting 10-15 minutes or longer. This indicates an opportunity for optimizing stop placement or other infrastructure to minimize travel times.

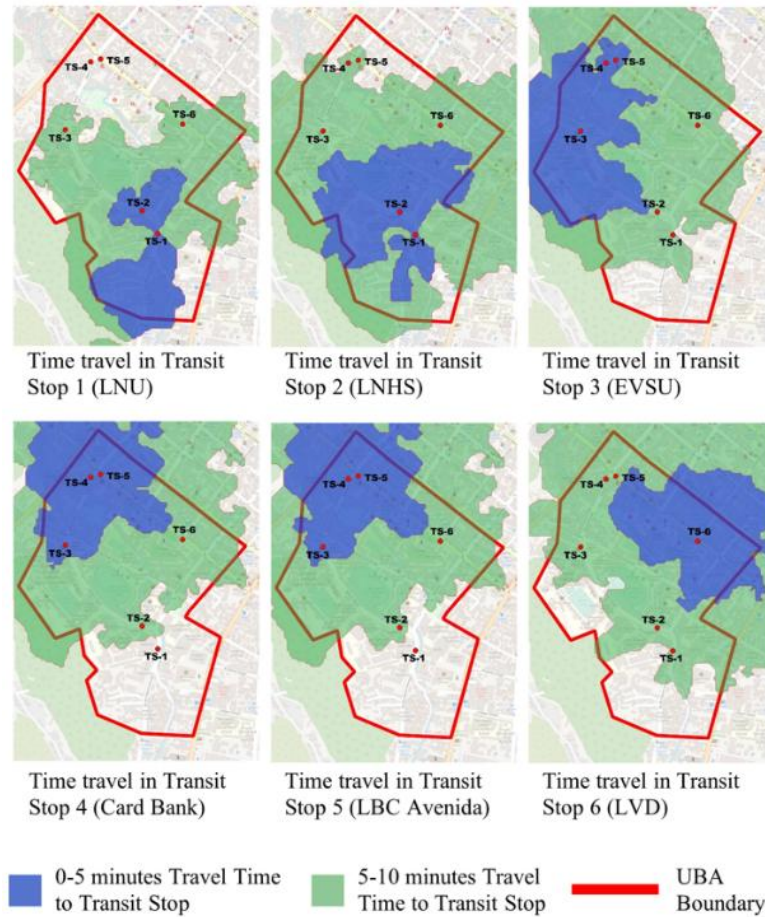


Figure 4. *QGIS-Generated Travel Time to Transit Stop*

The commutes from workplaces/schools are very similar to the ones from residences, supporting the conclusion that transit stops are more or less evenly distributed between residential and job areas. Stops TS-2 and TS-3 are standout examples of this, and their accessibility is experienced equivalently by both groups. Concurrent respondent data corroborated with QGIS modeling (see Figure 4), enhancing the authenticity of the findings. This agreement may indicate that GIS-based data can be a predictor of planning stop locations in the future.

3.5 Multimodal Commuter Experience

The research findings revealed that commuters experience stress daily, with mean scores ranging from 2.21 to 2.59. Stress is attributed to traffic congestion, crowded public transportation, delays, and long commuting times. The standard deviation ranges from 0.624338 to 0.811558, indicating low and high degrees of variability. Research consistently shows that commuting causes stress for workers, with factors like traffic congestion, long commute times, and unpredictability contributing to increased stress levels (Useche et al., 2023; Holland, 2016). The research findings also showed that vehicles are parked in designated spaces within the Tacloban City University Belt Area. Survey respondents agreed and moderately agreed that parking is available and that vehicles are appropriately parked in their areas. The mean scores for "Parking areas are available," "The vehicles are appropriately parked in their parking areas," and "The vehicles are appropriately parked in their parking areas" range from 1.00 to 1.37, indicating more significant variability in responses.

The findings also provided insights into how various areas or transit stops see the affordability, practicality, and ease of use of public transportation. Most respondents agreed or moderately agreed that using public transportation in their localities may satisfy their everyday mobility needs. Though opinions on transportation

vary slightly throughout various transit stops, it is also perceived as more straightforward and less expensive. TS-6 shows the highest agreement among all the transit stops, suggesting that locals are more eager to use public transportation. However, the mean score at the TS-3 transportation level is marginally lower, particularly regarding the cost-effectiveness category, suggesting that residents may view using public transportation as slightly less expensive than using alternative locations. Recent studies have explored public transportation perceptions and usage across diverse communities. Watthanaklang et al. (2024) found that service quality, particularly responsiveness, convenience, and safety, significantly impacts perceived accessibility and intention to use public transport in Thailand. Matowicki et al. (2024) emphasize the roles of price and travel time in shaping transport choices throughout four European nations. Examining various elements related to public transportation, these studies highlight the intricate dynamics underlying users' interactions with public transport, indicating that service characteristics, affordability, accessibility, and other aspects significantly impact how people perceive and utilize transit systems.

The study revealed that safety concerns among commuters in the university belt area need improvement. The mean scores for "I have not encountered any obstruction to my destinations" range from 2.11 to 2.96, suggesting that some commuters encountered obstructions. However, the mean scores for "sidewalks are present in the area," "Pedestrian lanes are enough to accommodate the number of pedestrians," "There is a need for traffic signals in the area," and "There is a need for traffic signals in the area" range from 3.30 to 4.38, suggesting that sidewalks are safe, visible, and easy to access. The standard deviation ranges from 0.73 to 1.40, with most statements having a higher standard deviation, indicating more diverse data points. Pedestrian safety and mobility in cities are continually at the forefront of studies. In Ethiopia, this has led to narrow sidewalks or obstructions in sidewalks that forced pedestrians to share the road with vehicles, thus compromising safety (Gebremariam et al. (2024). Likewise, a Malaysian study highlighted the importance of enhancing safety and urban amenities and minimizing obstacles on sidewalks in order to uphold world-class city standards (Rashid et al., (2018). To mitigate these concerns, researchers suggest wider sidewalks to include proper zoning accompanied by in-place mains for utilities, thoughtful placement of light poles and trees, and push-button traffic lights at crosswalks (Gebremariam et al., 2024).

3.6 Heatmap Analysis Based on Accessibility Scores

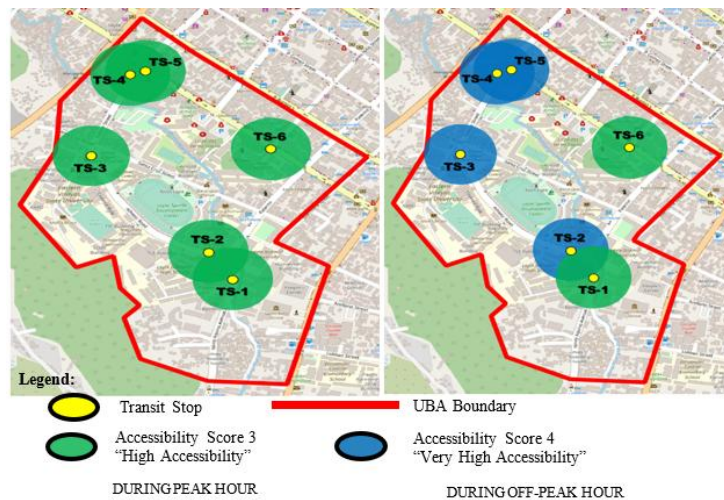


Figure 5. Heatmap of Accessibility Score in each Transit Stop during Peak Hour vs Off-Peak Hour

The heatmap analysis of transit stop accessibility (see Figure 5) reveals that the system performs well overall, with high accessibility scores across all stops during peak hours. However, none of the stops reach the "Very High Accessibility" level during these critical times, indicating room for improvement. During off-peak hours, stops such as TS-2, TS-3, and TS-4 excel, achieving very high accessibility scores, while TS-1, TS-5, and TS-6 maintain only high accessibility. This disparity suggests that specific stops benefit from better infrastructure or operational efficiencies while others lag, especially in off-peak scenarios. These findings highlight opportunities for enhancing

service quality, infrastructure, and commuter convenience, such as reassessing routes to ensure they serve high-demand areas more effectively, reducing travel distances and time, using real-time passenger data to allocate resources dynamically to stops with higher demand to alleviate accessibility scores of transit Stop Reaching "Very High Accessibility" during peak hours.

To improve and alleviate the underperformance of TS-1, TS-5, and TS-6 during off-peak hours, enhancing pathways, lighting, and signage leading to these stops to encourage usage during less busy hours is encouraged. In maintaining Very High Accessibility at TS-2, TS-3, and TS-4 during off-peak hours, ensure that schedules and service quality are maintained, avoiding cost-cutting measures that could impact these high-performing stops, and market these stops for off-peak activities, such as leisure or errands, to maximize the value of the infrastructure. Additionally, investing in infrastructure upgrades tailored to each stop's unique challenges, such as bus shelters, seating, or digital information boards, enhancing connections between transit stops and other transport modes (e.g., bike racks, ride-sharing hubs) to boost overall accessibility and using real-time data analytics to identify emerging issues and optimize operations accordingly can enhance overall performance, reduce variability among stops, and elevate accessibility scores, particularly during peak hours. Such improvements will foster greater commuter satisfaction and create a more sustainable and efficient urban transit network.

3.7 Correlation Analysis

The findings revealed a weak positive correlation ($r = 0.055$) between vehicle demand and accessibility scores during peak hours, but not significant ($r = -0.136$). This suggests that during peak hours, the demand for vehicles does not meaningfully influence accessibility scores. However, during off-peak hours, there was a weak negative correlation as areas with better accessibility saw slightly less vehicle demand. This implies a competitive relationship between vehicle usage and public transport accessibility, where higher reliance on personal vehicles might detract from public transport efficiency or usage. Moreover, it also showed that there is no significant relationship between peak accessibility scores and parking availability during peak hours, but a weak negative correlation ($r = -0.261$) between parking availability and accessibility scores during off-peak hours, indicating that when the availability of parking spaces increases, public transport becomes less accessible.

The study also showed a weak positive correlation between the affordability of fares and accessibility scores during peak hours, which means that as fare affordability increases, public transport becomes more accessible. However, during off-peak hours, there was a weak negative correlation. Here, To make public transport more affordable, accessibility scores may see a slight decline. Research on public transport accessibility and affordability reveals complex relationships between fare policies, infrastructure, and equity. Studies show reduced fares can significantly improve accessibility, particularly for disadvantaged groups like older people and low-income individuals (Vecchio et al., 2022; Silver et al., 2023). However, the correlation between fare affordability and accessibility may vary during peak and off-peak hours. Expanding infrastructure, such as metro networks, tends to benefit middle and high-income groups more than low-income populations (Vecchio et al., 2022).

Moreover, there appeared to be a weakly positive correlation between pedestrian accessibility and accessibility scores during peak and off-peak hours, with increased accessibility corresponding to decreased scores. This suggests a varying relationship, where improved pedestrian access during peak hours slightly benefits overall accessibility, but the opposite occurs during off-peak hours. These results align with and extend existing research on pedestrian accessibility and walkability, shedding light on these relationships' temporal and contextual nuances.

Jardim et al. (2023) highlighted the relationship between walkability indicators and pedestrian flow, suggesting that street conditions and proximity to points of interest influence pedestrian travel patterns. The current findings corroborate this, as improved pedestrian accessibility during peak hours—likely due to higher pedestrian flow and optimized pathways—appears to benefit overall accessibility scores. The findings also resonate with Merlin and Jehle (2023), who call for more detailed pedestrian networks and consideration of individual walking capabilities. Improved pedestrian access during peak hours may cater to a broader demographic, enhancing accessibility for those with varying abilities. However, during off-peak hours, the lack of activity or infrastructure usage may reduce the perceived benefits of pedestrian accessibility.

In conclusion, the findings contribute to the broader understanding of pedestrian accessibility by highlighting its temporal variability. While improvements in walkability can enhance accessibility during peak periods, the off-peak decline underscores the importance of addressing spatial and temporal inequalities in pedestrian infrastructure.

3.8 Comparative Analysis

The post-hoc analysis (Table 4) demonstrates statistically significant differences in accessibility scores among peak and off-peak transit stops, signifying variability in performance across the network. TS-2 became the best-performing stop at peak hours, attributed to better infrastructure or location advantages. At the same time, TS-5 and TS-6 have the lowest accessibility scores, which surface problems like congestion or lack of connectivity. At off-peak hours, differences become more evident between strategies, with TS-2 still outperforming and TS-5 falling further behind. Some stops continue to adapt to changes in commuter demand better than others, while specific stops were found to need improvements to maintain this accessibility over 24 hours. The findings point to the necessity of targeted interventions to improve underperforming stops, including better infrastructure, more frequent service, and enhanced connectivity. High-performing stops such as TS-2 provide insight into replicating successful strategies across the network. Additionally, optimizing transit schedules to accommodate temporal differences in demand can help balance accessibility across all stops.

Table 4. *Comparative Analysis Between Differences in the Accessibility Scores Among Different Transits*

Grp.	Mean Rank	H-value	p-value	Decision	Interp.
Accessibility Score – Peak					
TS-1	2.96	54.31	< 0.001	Reject the H_0	Significant
TS-2	3.15				
TS-3	2.97				
TS-4	2.70				
TS-5	2.70				
TS-6	2.60				
Accessibility Score – Off Peak					
TS-1	3.47	96.16	< 0.001	Reject the H_0	Significant
TS-2	3.89				
TS-3	3.61				
TS-4	3.69				
TS-5	3.18				
TS-6	3.34				
<i>*Significant at 0.05 level.</i>					

*Significant at 0.05 level.

Dunn's post-hoc test, shown in Table 5, underscores the spatial variability in accessibility during peak hours, with stops like TS-2 and TS-3 outperforming others due to potentially better infrastructure, connectivity, or service frequency. On the other hand, TS-4 and TS-6 are specific stops that need individual attention to make them more accessible. This mismatch between demand and supply would cause popular stops to be overcrowded while low-performing stops remain underutilized, lowering the overall system's efficiency.

Table 5. *Post-Hoc Test on Accessibility During Peak Hours*

Comparison	z	w_i	w_j	p	p_{bonf}
TS-4 – TS-3	-3.49	261	334	< 0.00	0.00
TS-4 – TS-5	-0.50	261	271	0.61	1.00
TS-4 – TS-2	-5.32	261	372	< 0.00	< 0.00
TS-4 – TS-1	-3.12	261	326	0.00	0.02
TS-4 – TS-6	0.80	261	244	0.42	1.00
TS-3 – TS-5	2.99	334	271	0.00	0.04
TS-3 – TS-2	-1.82	334	372	0.06	1.00
TS-3 – TS-1	0.37	334	326	0.70	1.00
TS-3 – TS-6	4.30	334	244	< 0.00	< 0.00
TS-5 – TS-2	-4.81	271	372	< 0.00	< 0.00
TS-5 – TS-1	-2.62	271	326	0.00	0.13
TS-5 – TS-6	1.30	271	244	0.19	1.00
TS-2 – TS-1	2.20	372	326	0.02	0.41
TS-2 – TS-6	6.12	372	244	< 0.00	< 0.00
TS-1 – TS-6	3.93	326	244	< 0.00	0.00

* $\alpha = 0.05$

Transit authorities must address these issues by improving infrastructure at underperforming stops — investing in better walkways, shelters, and signage. Balancing commuter loads is a complex exercise, as transit schedules need to be optimized to boost the frequency of service at these specific stops at peak hours, and resources need to be reallocated dynamically based on real-time demand data. Also, effective strategies from high-performing stops should be benchmarked and replicated on the network for equitable access. For example, TS-2 significantly differed from TS-6 ($p<0.001$), suggesting that strategic planning is necessary to replicate high-performing stops across the network.

The post-hoc test during off-peak hours (see Table 6) suggests significant variations in accessibility scores between transit stops, echoing some trends evident in the data collected during peak hours while emphasizing distinctive differences. TS-4 was also one of the least accessible stops, having significantly lower accessibility than both TS-5 and TS-1 and TS-6 ($p<0.05$)—this persistent shortfall during peak and off-peak hours, reflects systemic issues, including inadequate infrastructure or limited connectivity. TS-3 is also less accessible than TS-5 and TS-6 ($p\approx 0.04$), suggesting reduced accessibility during off-peak hours. TS-2, on the other hand, is much less accessible than TS-6 ($p<0.001$), further demonstrating TS-2's poor appropriateness for off-peak transit availability. The lack of marked difference between TS-4 and TS-5 indicates that, while still suboptimal, these stops have similar (and likely low even) levels of accessibility.

Table 6. *Post-Hoc Test on Accessibility During Off-Peak Hours*

Comparison	z	w_i	w_j	p	p_{bonf}
TS-4 – TS-3	0.38	340	331	0.69	1.00
TS-4 – TS-5	5.72	340	217	<.00	<.00
TS-4 – TS-2	-2.63	340	396	0.00	0.12
TS-4 – TS-1	2.95	340	277	0.00	0.04
TS-4 – TS-6	4.29	340	248	<.00	<.00
TS-3 – TS-5	5.35	331	217	<.00	<.00
TS-3 – TS-2	-3.03	331	396	0.00	0.03
TS-3 – TS-1	2.56	331	277	0.01	0.15
TS-3 – TS-6	3.92	331	248	<.00	0.00
TS-5 – TS-2	-8.37	217	396	<.00	<.00
TS-5 – TS-1	-2.78	217	277	0.00	0.08
TS-5 – TS-6	-1.42	217	248	0.15	1.00
TS-2 – TS-1	5.61	396	277	<.00	<.00
TS-2 – TS-6	6.94	396	248	<.00	<.00
TS-1 – TS-6	1.35	277	248	0.17	1.00

* $\alpha = 0.05$

Such accessibility issues during non-peak hours, especially at specific stops such as TS-4 and TS-3, show that systemic issues are at play beyond peak-hour congestion. Overall, temporal variations in accessibility needs instead fit the performance of TS-6 and TS-5 during these periods and demonstrate that location or even other factors can explain the success of tubes during these periods. However, reduced commuter volumes during off-peak hours may lead to underutilization of transit services, further emphasizing inefficiencies in the system. Specific service improvements should be implemented at low-performing stops to ensure improved accessibility and to maintain a reasonable frequency of service off-peak. Discounted fares or marketing campaigns can encourage off-peak transit use, particularly at stops with lower ridership. Also, making safety and accessibility commitments through investments in lighting, signage, and pedestrian paths at places like TS-4 can help resolve top barriers. Finally, evaluating the success factors of high-performing stops such as TS-6 and TS-5 can provide valuable insights for implementing similar improvements elsewhere. Transit planners can design a more equitable, efficient, and accessible transit system by addressing peak and off-peak challenges.

4.0 Conclusion

The University Belt Area in Tacloban City, known for its schools and educational institutions, business, recreation, and residence buildings, is facing transportation problems and traffic congestion. To study this problem, researchers conducted a broad analysis of the transportation accessibility in the study area, emphasizing six transit stops, which were TS-1 (LNU), TS-2 (LNHS), TS-3 (EVSU), TS-4 (Card Bank), TS-5 (LBC), and TS-6 (LVD). By employing surveys, traffic counts, and GIS-based heatmap analysis, the study uncovered large

variations in accessibility scores due to considerations like peak/off-peak hours, infrastructure quality, and commuter demand. The evidence provided sheds light on improving urban transportation networks and denotes the path for further research objectives that are required to evaluate the overall transportation efficiency and individual segments that can enable improvement.

The traffic volume analysis revealed that the transportation ecosystem is dominated by private vehicles, contributing to congestion, particularly during peak hours. While public transportation like traditional jeepneys and multicabs is available, it is underutilized in some stops like TS-6. The mode of transportation analysis highlighted mismatches between availability and usage, suggesting the need for better resource alignment with commuter preferences. Waiting time analysis revealed that longer waits at TS-5 and TS-6 during peak hours reflect inefficiencies in service allocation.

Travel time to reach each transit stop indicates that most of the transit stops can be accessed within 0–5 min travel time except TS-5, which requires longer travel times, and this could be a result of stop placement issues as well as in-place infrastructure. Multimodal commuter experiences showed that congestion, delays, and limited parking led to commuter dissatisfaction. The correlation analysis showed weak relationships within the vehicle demand, parking availability, and accessibility scores initially determined, emphasizing that an integrated network approach is required. A heatmap was generated, and it reflected accessibility scores that were high during peak hours, as no stop achieved a designation of "Very High Accessibility," while disparities were noted to be more pronounced in off-peak hours and especially at TS-5 and TS-6.

The comparative analysis showed statistically significant variances in accessibility scores among transit stops based on peak and off-peak periods. Stops such as TS-2 and TS-3 always scored better because of better infrastructure and connectivity, while stops like TS-4 and TS-6 scored lower, indicating systemic gaps. Such differences imply that some stops have a more favorable opportunity to adjust to commuter demand over the course of the day than others, which still need to improve access significantly to overcome persistent accessibility problems.

To mitigate the effects of these findings, the study suggests several specific interventions. The infrastructure needs to be upgraded with better pedestrian pathways, improved lighting, more bus shelters, and better signage. More units should be added to public transport, and more units should be scheduled at underperforming stops such as TS-5 and TS-6 to reduce congestion and wait time. Stricter policies regulating the use of private vehicles, such as congestion pricing or designated parking zones, can continue to enhance accessibility. The relevant heatmap analysis and comparative results should be incorporated within the long-term urban planning strategy to prioritize resource allocation and guide infrastructure investment meaningfully.

Future research must examine how meteorological factors, such as rain or extreme heat, affect accessibility in Tacloban City. A possible application of traffic simulation models to improve service schedules and optimize the distribution of resources would be possible. Urban management needs to adopt inclusive strategies incorporating social, cultural, and disability issues so that all population strata can access transport systems equally. Moreover, bringing together stakeholders, such as local authorities, private sector actors, and commuters' groups, in joint planning initiatives can ensure that transport policy responds to the local community's needs.

By implementing these recommendations, Tacloban City can develop a more efficient, equitable, and sustainable transportation system, enhancing commuter satisfaction and addressing long-standing mobility challenges. This study provides a robust framework for future interventions and serves as a model for improving urban mobility in other cities facing similar issues.

5.0 Contributions of Authors

HME – conceptualization, formal analysis, investigation, methodology, supervision, visualization, writing – original draft, writing – review & editing.
CBL, LR, PM, AP – editing, writing, supervising, data analysis, encoding, fieldwork.

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7.0 Conflict of Interests

The authors declare that there are no conflicts of interest regarding the publication of this paper. No financial, personal, or professional interests have influenced the research or its outcomes, and all work has been conducted with transparency and integrity.

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Improving Forest Management: A Case Study of DENR-CAR's Turned-over Logs

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Abstract. The Department of Environment and Natural Resources in the Cordillera Administrative Region (DENR-CAR) is committed to enhancing sustainable forest management practices, particularly concerning the utilization of turned-over logs derived from Tree Cutting Permits (TCPs). Recognizing the importance of optimizing resource use and minimizing environmental impact, this study examines current policies and practices surrounding these logs, seeking opportunities for improvement and greater efficiency. While existing guidelines, such as DAO 2003-18 and MMO 162, provide a valuable foundation, this research explores how to strengthen implementation further and ensure equitable utilization. A qualitative case study methodology was employed, utilizing semi-structured interviews with key stakeholders, document analysis, and thematic analysis to gather and interpret data effectively. The approach provided in-depth insights into the systemic challenges hindering effective log management, including unclear regulatory definitions, inefficient data tracking, absence of designated custodians, and weak enforcement mechanisms. The study's findings reveal a critical need for policy enhancements encompassing (1) implementing a prepayment mechanism for TCPs to streamline processes and reduce bureaucratic delays, (2) designating barangay Local Government Units (LGUs) as custodians to ensure localized and traceable management, and leveraging technology for efficient data monitoring and decision-making; and (4) fostering community participation in log utilization projects –such as school infrastructure and community development initiatives—ensures equitable benefits while promoting local stewardship. Strengthened monitoring and enforcement mechanisms and capacity building for relevant agencies are also proposed to mitigate non-compliance and resource misuse. This holistic framework offers actionable insights to improve log governance in CAR, promoting transparency, accountability, and technology-driven processes to achieve sustainable forest management and contribute to broader conservation goals.

Keywords: Cordillera Administrative Region; Forest management; Policy enhancement; Tree-cutting permits; Turned-over logs.

1.0 Introduction

Alarming rates of deforestation are in threat of dealing with the very lungs of our planet. Forest resources play a role in maintaining ecological balance, mitigating climate change, and supporting diverse life forms. Globally, the world is losing 10 million hectares of forests yearly (FAO, 2020), with tropical rainforests in regions like South America and Southeast Asia being the most affected. These forests, known for their rich biodiversity and role in carbon sequestration, face threats from agriculture, logging, and infrastructure development. To address these challenges, sustainable forestry methods have been established to manage forests for present and future generations without compromising the ability to meet their needs (Sayo, 2024).

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This study focuses on the sustainable management and disposal of turned-over logs derived from tree-cutting permits (TCPs). These logs, originating from construction projects such as roads, bridges, and flood control initiatives, represent a significant resource that, if managed effectively, can contribute to sustainable development. However, mismanagement of these logs can exacerbate environmental degradation and undermine sustainable forest practices. The research addresses existing policy gaps and proposes a holistic framework for the sustainable management of turned-over logs. This framework will cover economic, environmental, and social dimensions, including equitable allocation of resources, enhanced compliance monitoring, and strengthened enforcement mechanisms to ensure sustainability.

The United Nations Sustainable Development Goals (SDGs) recognize the urgent need for sustainable forest management. SDG 13 (Climate Action) emphasizes combating climate change, mainly through target 13.2, which integrates measures into national policies, strategies, and planning, including nationally determined contributions, long-term strategy, national adaptation plans, and others. SDG 15 (Life on Land) focuses on preserving and sustainably utilizing terrestrial ecosystems, including forests. This goal aligns with target 15.2 to promote the sustainable management of forests, combat desertification, halt and reverse land degradation, and ensure land restoration and forest regeneration (United Nations, n.d.). By managing turned-over logs, the government can contribute to achieving these targets and promoting sustainable forest management practices.

The Philippines, once a lush rainforest, is no exception. An essential component of forest management that many should have considered involves the disposal of turned-over logs from tree-cutting permits (TCPs). If not disposed of responsibly, these logs can contribute to environmental degradation and hinder efforts towards sustainable forest management. The Department of Environment and Natural Resources (DENR), the primary agency responsible for overseeing environmental resources—including the disposal of turned-over logs from issued tree-cutting permits—plays a crucial role. Recognizing the importance of proper forest product management, former President Fidel V. Ramos issued Malacañang Memorandum Order (MMO) No. 162 on August 19, 1993. This order provides guidelines for disposing of confiscated logs, lumber, and other forest products for public infrastructure projects. However, MMO 162 excludes turned-over logs from TCPs, creating a considerable policy gap that undermines sustainable forest management efforts. This omission leaves a critical resource unregulated, potentially exacerbating environmental degradation and reducing the opportunity to maximize these logs' economic and ecological value. Addressing this policy gap is crucial for ensuring the responsible use and equitable allocation of forest resources.

DENR Department Order No. 18, series of 2003, aimed to address this gap by guiding the donation of confiscated forest products, including those turned over to the DENR, such as logs covered by Cutting or Road Right of Way Permits. Despite these efforts, significant challenges remain, including (a) the need for clear and enforceable guidelines, (b) weak enforcement mechanisms, and (c) inefficient data management. These challenges have severe consequences, such as environmental degradation, economic losses, and social inequity. For instance, in regions where policies are unclear, uncontrolled deforestation has destroyed biodiversity-rich habitats, resulting in the extinction of species and the loss of ecosystem services. Additionally, poor log management has caused financial losses for local economies that could otherwise benefit from the sustainable use of these resources, as seen in areas where turned-over logs were mismanaged and wasted. Socially, the inequitable distribution of forest resources has disproportionately affected marginalized communities, denying them access to sustainable livelihoods and increasing their vulnerability to climate impacts.

This study seeks to bridge these gaps by proposing a comprehensive framework for managing turned-over logs that emphasizes economic value, environmental sustainability, and equitable resource allocation. This framework aligns with national and international standards and contributes to sustainable forest management by improving policy implementation, enforcement, and compliance monitoring.

The literature highlights the importance of sustainable forest management and disposal of turned-over logs. Adherence to management regulations is critical to achieving sustainable forest management objectives (Ankomah et al., 2022). Proper management requires clear and well-defined regulations to maintain ecological balance. Research demonstrates that the lack of enforceable guidelines for turned-over logs undermines

sustainable forest practices, as observed in the Cordillera Administrative Region (CAR). Erbaugh et al. (2020) emphasize forest landscape restoration, where local communities manage and restore forests, as a promising approach to aligning global agendas for climate mitigation, conservation, and sustainable development. This perspective supports the argument for properly managing turned-over logs to enhance forest ecosystem health in CAR. Additionally, Sotoudeh et al. (2021) argue that well-designed policies can foster ecological preservation and equity.

The sustainable disposal of turned-over logs from TCPs is essential for forest resource management, especially in regions facing increased deforestation and environmental degradation. While specific research on challenges and opportunities related to turned-over log management in the Philippines is limited, insights from global studies offer valuable guidance. Studies from Southeast Asia, particularly Thailand, Indonesia, and the Philippines, highlight the ineffectiveness of forest rehabilitation policies due to insufficient consideration of local contexts. These challenges include unclear forest boundaries, weak network structures, and ineffective leadership (Sharma, 2021). Effective forest management requires strong regulatory frameworks to address policy gaps and curb illegal logging. These frameworks should consider the unique challenges posed by turned-over logs and tailoring solutions to promote sustainability and equitable resource use. For instance, regions with well-defined policies, such as community-managed forest initiatives, have shown that integrating economic incentives with strict monitoring mechanisms can mitigate illegal logging while fostering sustainable practices. Involving local communities in decision-making processes and equitable benefit-sharing can promote sustainable practices and reduce deforestation (Uisso et al., 2023; Diansyah et al., 2021). Technological advancements can improve monitoring and enforcement (Hifume et al., 2024; Acuti et al., 2023). Furthermore, integrating Indigenous communities in forest conservation and climate change mitigation through their knowledge and practices may be fundamental in developing sustainable strategies for forest management (World Bank, 2023; Moutinho et al., 2022). These insights can guide the Philippines in developing sustainable strategies for disposing of turned-over logs and managing forest resources.

While existing research underscores the importance of sustainable forest management, there is a notable gap in addressing the specific challenges related to the management and disposal of turned-over logs from TCPs in the Philippines. This study addresses this gap by analyzing current policies, identifying challenges, and proposing strategies for improvement. By focusing on the sustainable disposal of turned-over logs, this research contributes to broader efforts to mitigate deforestation and promote sustainable forest management.

This study aims to develop a comprehensive policy framework for the sustainable management and disposal of turned-over logs from TCPs. This framework will address key components such as efficient resource allocation, robust compliance monitoring mechanisms, equitable benefit-sharing strategies, and the integration of technological innovations to enhance transparency and enforcement. This framework aims to improve existing guidelines, address implementation challenges, and promote transparency and accountability. By doing so, the study contributes to achieving national sustainable forestry goals and aligns with UN SDGs 13 (Climate Action) and 15 (Life on Land).

This research is significant in several ways. It addresses critical policy gaps by offering a data-driven framework for the sustainable disposal of turned-over logs. Policymakers can use these findings to develop effective regulations that balance environmental protection, economic viability, and social equity. For example, they could establish a program requiring turned-over logs in public infrastructure projects, such as community housing or schools, ensuring resource efficiency while reducing the environmental impact of new logging activities. The study provides valuable insights for environmental agencies to improve policy implementation and enforcement. The forestry sector can benefit from recommendations on responsible timber sourcing and sustainable log utilization. Ultimately, this research supports national sustainable forestry goals and contributes to global efforts to combat climate change and promote biodiversity conservation.

2.0 Methodology

2.1 Research Design

This study employed a qualitative research design, precisely a multiple case study approach. A multiple case study design is an in-depth exploration of a specific phenomenon within its real-life context, drawing insights

from several distinct cases to identify commonalities, differences, and patterns (Yin, 2018). This methodology is particularly suitable for investigating complex issues like managing and disposing of turned-over logs from tree-cutting permits, as it allows for a comprehensive analysis of various perspectives and practices. By examining multiple cases, this design provides a robust understanding of the phenomenon while enhancing the generalizability of findings through cross-case comparisons (Stake, 2006). The combination of document analysis and interviews in this research ensures a holistic approach to addressing the policy gaps and proposing practical recommendations.

2.2 Research Locale

The case study focused on the Cordillera Administrative Region. Although the findings give a good insight into the challenges and opportunities for sustainable turned-over log management in CAR, it may have to be more generalizable to other regions in the Philippines with different contexts. Furthermore, the availability of participants and bias may limit data collection. This research explored common challenges, best practices, and possible solutions through this in-depth comparative analysis of sustainable log management.

2.3 Research Participants

This study involved 11 participants, selected based on their direct involvement and expertise in managing and monitoring turned-over logs derived from tree-cutting permits. The participants included Community Environment and Natural Resources Officers (CENROs) and ten DENR field personnel responsible for monitoring compliance of the disposal of turned-over logs. Inclusion criteria required participants to have at least three years of experience managing or monitoring tree-cutting permits involving turned-over logs. Exclusion criteria ruled out individuals with limited experience in forest resource management or those not directly engaged in related policies. These participants were considered unique cases due to their specialized roles in overseeing critical aspects of tree-cutting permits, such as compliance monitoring and resource allocation, providing diverse insights into the challenges and opportunities in sustainable log management.

2.4 Research Instrument

The primary data collection methods included semi-structured interviews and document analysis. Semi-structured interviews were conducted using an interview guide with open-ended questions tailored to elicit detailed responses about the participants' experiences and perspectives. Sample questions included: *"What are the key challenges or limitations you have encountered or observed in the existing policies to the management and disposition of turned-over logs from tree-cutting permits?"* *"What specific policy enhancements or new guidelines would you recommend to improve the management of turned-over logs?"* and *"How can a data-driven, comprehensive policy framework improve compliance monitoring for the disposal of turned-over logs?"* These questions were designed to gather insights into the effectiveness of existing policies, identify gaps, and explore potential solutions. The document analysis involved reviewing policy documents, guidelines and reports on tree-cutting permits and turned-over logs to identify inconsistencies, gaps, and best practices.

2.5 Data Gathering Procedures

Data gathering was conducted over two months, from October to November 2024. The modality of data collection included face-to-face interviews where possible and virtual interviews for participants in remote locations. Before the data collection, formal letters of consent were sent to the DENR regional office to obtain permission for the study. Once approval was granted, participants were informed to participate by phone. Each interview lasted approximately 60–120 minutes and was recorded with the participant's consent for transcription and analysis. Document analysis was conducted concurrently, focusing on relevant policy documents, memoranda, and reports provided by DENR offices. The collected data were subjected to thematic analysis to identify recurring themes, patterns, and variations across the cases. The iterative data collection and analysis process continued until data saturation was achieved, ensuring the findings were comprehensive and deeply informed.

2.6 Ethical considerations

Before the interview, a consent letter was secured from the DENR department head. The purpose of the study was clearly explained to them so that they knew why the study was conducted and their rights as participants. To protect the confidentiality and anonymity of the participants, the research aimed to reduce potential harm and ensure their voices were heard in the findings. The participants were assured of the confidentiality of their

responses and that the published findings would not attribute a specific statement to an individual without explicit consent.

3.0 Results and Discussion

This case study outlines significant challenges and opportunities in managing and disposing of turned-over logs from tree-cutting permits. These challenges include a need for more precise policy guidelines, inadequate enforcement, efficient data management, and the absence of a designated custodian.

3.1 Current Practices and Challenges

Lack of Clear Guidelines

A fundamental weakness is the absence of a comprehensive policy addressing the tracking and disposal of turned-over logs. While MMO 162 provides guidance for confiscated forest products, it lacks the necessary specificity for these resources, creating a significant regulatory gap. This ambiguity, as emphasized by the Guardian of the Forests, can lead to further environmental degradation, including illegal logging and encroachments:

“The MMO 162 provides guidelines for the prioritization and requirements of the disposition of confiscated forest products. However, it lacks specific guidelines for handling turned-over logs, leaving a significant gap in the regulatory framework for managing these valuable resources. This can further lead to mismanagement of turned-over logs and may lead to further environmental degradation, such as illegal logging or encroachments.”

DAO 2003-18 indicates that the disposal of retrieved or turn-over forest products to the DENR aligns with MMO 162. However, this order needs more clarity and specific provisions for disposing of turned-over logs. This deficiency impedes effective monitoring, accountability, and equitable distribution. As the Guardian of the Forests stressed, the need for:

“Revise ambiguous provisions to ensure uniform interpretation and implementation across all DENR offices. Develop detailed standard operating procedures (SOPs) for the inventory, transport, and disposition of turned-over logs. Ensure that a portion of the revenue from the disposition of logs benefits affected communities, especially indigenous groups. Tie tree-cutting permits and the use of turned-over logs to reforestation or conservation projects.”

This lack of clarity can lead to disputes regarding ownership and utilization between local government units (LGUs), indigenous peoples, communities, and the DENR. As Nuesiri (2022) notes, clear regulations are crucial, but implementation and enforcement are equally complex, often hindered by capacity, resources, and political will. Furthermore, as Ankomah et al. (2022) highlight, regulatory gaps create opportunities for misuse, undermining sustainable forest management. This is compounded by corruption and low transparency, which participants repeatedly cited as significant obstacles.

Inefficient Data Management and No Designated Custodian

The absence of a designated custodian for turned-over logs creates a critical accountability gap. As Robinson (2021) states, the concept of environmental subjectivity conveys that identity, power, and access to resources are all intertwined. A designated custodian, particularly at the local level (e.g., barangay LGUs), would facilitate direct accountability and promote community-based resource management, mitigating conflicts and fostering sustainability, as emphasized by the Guardian of the Forests:

“No custodian means there will be no accountability for these resources. Lack of accountability can lead to mismanagement, illegal cutting, and corruption, defeating the very purpose of conservation of these forests and conservation with sustainable use. Designating a custodian for the turned-over logs would ensure proper tracking, storage, and utilization to reduce the risk of diversion and misuse.”

This aligns with Dawson et al.'s (2021) argument that empowering Indigenous Peoples and local communities to lead conservation efforts is crucial for effective and equitable environmental protection. Coupled with the lack of a custodian is inefficient data management, which hinders effective oversight and can lead to corrupt decision-making. As Stoyanovich et al. (2020) emphasize, responsible data management is crucial for ethical and practical Automated Decision Systems (ADS), which rely increasingly on data to make decisions, depends on responsible

data management. Accurate, reliable, and unbiased decisions that might be taken in the forest management process would be assisted by responsible data management. Data governance practices like data quality assurance, data privacy, and data security would forestall the risks resulting from harmful data management practices for the sustainable usage of forest resources. The Guardian of the Forests highlighted the need for robust tracking systems:

"We need systems to track logs from origin to disposal. Technology is available, but rural connectivity is a challenge."

While technologies like sensor technology and autonomous robots (Ehrlich-Sommer et al., 2023) and ADS applications like satellite monitoring offer significant potential, addressing fundamental issues like rural internet connectivity is essential. Implementing automated decision systems (ADS) can improve efficiency, but responsible data management practices are crucial to avoid unintended consequences. ADS are systems of algorithms that make decisions based on data with very little significant human intervention. ADS can be applied in forest management to detect illegal deforestation through satellite imagery, predict the spread of forest fires, or optimize timber harvesting operations. The inputs of such systems must be accurate, unbiased, and representative of the complex ecological and social factors that occur in forest ecosystems.

Challenges in Monitoring and Enforcement

Poor monitoring and lack of enforcement mechanisms contribute to non-compliance with permit conditions. Limited personnel and resources are required for effective monitoring and inspections. Weak governance, involving, among other things, political interference, corruption, and capacity constraint, further exacerbates these challenges. As emphasized by the Guardian of the Forests and Officer Silva:

"Limited personnel and resources make it difficult to monitor and inspect compliance with permit conditions promptly and properly dispose of turned-over logs, increasing the risk of non-compliance, illegal cutting, and poor forest resources management."

Weak monitoring systems are some of the factors that contribute to non-compliance with conditions of issued permits. Strong partnerships between law enforcement agencies and local governments can enhance the effectiveness of forest resource monitoring systems. According to Awolorinke et al. (2023), political interference will interfere with effectively regulating and protecting ecologically sensitive areas, including forest management. Other factors, such as corruption, capacity constraints, and resource limitations, might lead to weak governance. Also, Basu et al. (2023) identify that weak enforcement due to weak forest administration and indulgence of political parties by illegal encroachers has resulted in poverty-driven illegal logging, which has led to increasing deforestation and forest degradation.

Strengthening regulatory frameworks, investing in enforcement capacity, and promoting transparency and accountability can address such concerns. Sustainable forest management and conservation opportunities can be fostered through collaboration between government agencies, local communities, and civil society organizations.

3.2 Policy Enhancement and Improvement

To address these challenges, several key policy enhancements are recommended. Such recommendations include developing comprehensive guidelines for the disposition of turned-over logs that may have precise definitions, procedures, and accountability mechanisms for the system. Implement a payment system for logs derived from TCPs to expedite the process with responsible utilization. A capacity-building activity for barangay LGUs is to empower them to manage the disposal of logs for local projects. To involve the communities in the decision-making process and consider allocating turned-over logs for local projects to promote social equity and sustainability. Invest in enforcement capacity, including personnel and resources, to ensure compliance with regulations and guidelines. Implement robust monitoring systems and penalties for non-compliance. Implement sound monitoring systems and penalties to punish offenders. Data management utilization in monitoring through available technologies is bound to increase efficiency and transparency. However, areas with slow internet connectivity still need to be improved for data collection and subsequent analysis.

Payment Mechanism

The payment mechanism will streamline the process, ease the procedures, and reduce red tape in bureaucratic procedures. According to Basu et al. (2023), formulating effective forest governance policies, such as payments for ecosystem services, will also promote the sustainable use and management of forest resources. After a TCP is issued and an inventory of trees to be cut is completed, its value will be assessed, and a payment amount will be determined. Prepaying for logs can accelerate the process and empower barangay LGUs to manage the disposal of timber, promoting sustainable resource management and community development. Responsible usage can be granted by giving these logs by empowering the barangay LGUs to manage its disposal or through other appropriate community projects, wherein school infrastructure or furniture and fixtures are within the jurisdiction of the barangay jurisdiction only. Limiting the use of these logs to the barangay where they originated will ensure local benefits and prevent misuse, as emphasized by the Guardian of the Forests:

“The best way is to adopt the payment of the logs to lessen the process (red tape). Establish clear and uniform pricing standards for turned-over logs based on species, size, quality, and market conditions. Review and update log pricing schedules periodically to reflect current market values.”

Moreover, limiting the use of logs in the barangay will ensure that the benefits go directly to the local community and avoid potential conflicts or misuse. As emphasized by the Guardian of the Forests:

“If payment is adopted, the utilization of these logs/lumber should be limited in the barangay where the tree was cut or harvested.”

A well-thought-out payment system can make the bureaucratic process more streamlined through automation, such as permit issuance, inventory calculations, receipt generation, tracking of payments, and permit approval, thereby reducing excessive paperwork and manual processing. Latupeirissa et al. (2024) emphasize the role of digital technologies in streamlining government processes. For example, a study by the United Nations (2022) highlights how digital government initiatives, including automated payment systems, can improve efficiency and reduce administrative burdens. A transparent payment system can also negate corruption and properly utilize funds. The valuation guidelines can also be updated regularly to reflect current market prices and timber quality, ensuring fair compensation for logs and preventing losses for the government. For instance, a report by the World Bank (2020) emphasizes the need for accurate pricing mechanisms in environmental management to ensure efficient resource allocation and prevent undervaluation.

Empowering Barangay Local Government Unit (LGU) as Custodians

The guidelines may prioritize beneficiaries, considering the barangay LGU where the trees were cut or harvested. The Philippines places cultural values on forests, but more importantly, for Cordilleras, forests have been collectively owned and managed by the local communities using customary practices, and forests are considered essential and contiguous resources. These practices can be integrated into official processes to ensure sustainable forest management (Abayao, 2021). Unlike confiscated forest products, which often prioritized DepEd and other agencies, such unique circumstances of turned-over logs may require different considerations. A policy could grant barangay LGUs authority to utilize or dispose of the turned-over logs for local projects, such as schools or government initiatives, within the particular barangay jurisdiction. This policy empowers barangay LGUs and promotes local ownership, community development, and sustainable forest management. As emphasized by the Guardian of the Forests:

“The prioritization to utilize the logs should consider the barangay Local Government Unit or the authority to dispose of the logs from cutting permit issued to DPWH and other government agencies. Moreover, clearly outline the roles and responsibilities of each stakeholder (e.g., DENR officials, LGUs, contractors, log buyers, and community representatives) in managing logs. Require formal agreements that specify duties, deliverables, and penalties for non-compliance.”

Streamlining the Disposition Process

Simplifying and streamlining any process will avoid red tape, reduce bureaucratic delays, and expedite the process. As Rahmi and Wijaya (2022) mentioned, bureaucracy simplification is a critical component of bureaucratic reform, aiming to improve public service delivery and make bureaucracies more dynamic and

efficient. By streamlining processes and reducing unnecessary red tape, governments can enhance their responsiveness to citizens' needs and improve overall governance. As emphasized by Officer Silva:

"To mitigate waste and maximize the economic value of logs,' most especially for immediate needs such as during calamities, efficient processing methods should be implemented."

To streamline the disposition process for turned-over logs, centralizing the clearance authority under the Provincial Environment and Natural Resources Officers (PENROs) could be considered. The regional office could then implement strict monitoring to ensure all disposition processes comply with regulations and standards.

Strengthening Monitoring and Enforcement

Invest in robust data management systems to track the volume, origin, and disposition of turned-over logs. Implement strict penalties for non-compliance and leverage technology (e.g., digital tags, QR codes, RFID chips) for real-time tracking and traceability. Of course, technology can significantly improve monitoring and data management, but internet connectivity in rural areas must be addressed. As Mondejar et al. (2021) have noted, digitalization can contribute to sustainable manufacturing and increase access to healthcare for the marginalized. It can also affect global efforts toward climate change and biodiversity loss. As emphasized by the Guardian of the Forests:

"Impose strict fines, suspensions, or legal actions against violators, including DENR personnel, private entities, or buyers. Also, technology can revolutionize the way logs are managed, tracked, and disposed of. Key technological interventions include attaching digital tags to logs for real-time movement and location tracking. Further, using QR codes or RFID chips to ensure traceability throughout their lifecycle. Conduct periodic third-party audits to verify log inventories and reconcile records with on-ground data."

Strengthening community engagement with the supervision of the higher authorities can be one way to strengthen monitoring and enforcement of forest activities and reporting illegal activities; this can enhance surveillance efforts. A balanced approach to monitoring, combining top-down accountability with community engagement (Kahsay et al., 2023), is crucial for effective and sustainable forest management. Addressing internet connectivity issues in rural areas is also essential to fully realize the potential of technology in data management and monitoring.

4.0 Conclusion

The case study has exposed several critical challenges in the sustainable management of turned-over logs in the Cordillera Administrative Region, hindering sustainable forestry practices. A significant challenge in this regard is the need for clear and enforceable guidelines for the proper disposition of logs, which causes confusion and makes stakeholders accountable. Weak enforcement mechanisms limit effective monitoring and compliance with TCP conditions because of an insufficient workforce and resources. These findings agree with research studies by Ankomah et al. (2022), who assert that compliance with regulations is essential for sustainable forest management goals.

The lack of adequate data management systems to track the volumes, origins, and dispositions of the turned-over logs means less informed decisions. These results align with Stoyanovich et al. (2020), who highlight the importance of responsible data management for effective resource governance. Addressing these challenges is crucial for promoting sustainable forestry practices and achieving national and international environmental goals.

The study's implications highlight the urgent need for policy enhancements such as a multi-pronged approach encompassing (1) developing comprehensive and enforceable guidelines for all stages of log management, from inventory to disposal; (2) streamlining procedures, including implementing a prepayment system for logs derived from TCPs; (3) empowering barangay LGUs as custodians to foster local ownership and accountability; (4) investing in robust, technology-driven data management and monitoring systems, addressing existing connectivity challenges; and (5) strengthening enforcement capacity and promoting community involvement.

These recommendations, if implemented, will transform DENR-CAR towards an efficient and more sustainable system of managing turned-over logs into responsible utilization of forest resources, accountability of stakeholders, and contributing to the goals of achieving national sustainable forestry goals. The study proposes the integration of technology into data management and tracking systems. A technology-based system could increase efficiency and save costs in the long run. More importantly, it would enhance analysis capabilities while providing informed decision-making and improved monitoring of turned-over log disposition. Ultimately, the proposed policy recommendations shall focus on developing clear and enforceable guidelines, streamlined processes, and a payment system that could significantly impact CAR's sustainable forestry management efforts. These changes would promote transparency, accountability, and responsible utilization of forest resources.

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6.0 Conflict of Interest

The author has no conflict of interest to declare that they are relevant to the content of this research.

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Exploring Filipino Learners' Experiences with Speaking Anxiety in English

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Abstract. This study investigated the speaking anxieties experienced by Filipino high school students, addressing a gap in existing research by focusing specifically on their unique experiences and coping mechanisms. Employing a qualitative descriptive approach, the study explored the subjective experiences of ten Grade 11 Humanities and Social Science students through in-depth interviews. Data analysis revealed a diverse range of anxieties, including fear of negative evaluation, test anxiety, and communication apprehension. Key findings include the significant impact of cultural factors, the identification of distinct anxiety clusters for different speaking contexts (recitations, presentations, and oral examinations), and exploring effective coping strategies such as practice, relaxation techniques, and peer support. The study highlights the importance of creating supportive learning environments, addressing cultural influences, and implementing culturally sensitive interventions to mitigate speaking anxiety and enhance English language learning among Filipino students.

Keywords: EFL learners; HUMSS students; Qualitative research; Speaking anxiety; Thematic analysis.

1.0 Introduction

Speaking anxiety significantly hinders effective English communication among Filipino learners, impacting their language learning and academic performance. While English is one of the Philippines' official languages, many students experience considerable apprehension when speaking English, even with extensive exposure and educational use. This anxiety manifests in various forms, including fear of making mistakes, test anxiety, and communication apprehension.

Research across various contexts has consistently highlighted the detrimental impact of speaking anxiety on language learning. Studies by Mehdi and Kumar (2019) and Hulaifah and Sibuea (2023) emphasize how social pressure and fear of errors significantly impede language fluency and accuracy. Cabansag (2020), Olivera (2021), and Purcia et al. (2023) underscore the critical need for supportive learning environments and strategies to mitigate these anxieties. Several studies have identified key sources of speaking anxiety. Test anxiety, as explored by Damayanti and Listyani (2020) and Sinaga et al. (2020), significantly impacts speaking performance. Fear of negative evaluation is a prevalent concern, as evidenced by research conducted by Berowa (2018), Banagbanag (2019), Gatcho & Hajan (2019), Labicane (2021), Daymiel et al. (2022), Subekti (2018), and Amoah & Yeboah (2021). Communication apprehension, as highlighted by Gallego et al. (2021), Van Veen et al. (2024), and others, further exacerbates speaking anxiety. These anxieties often manifest as self-consciousness and a preference for written

assessments over oral communication (Ojanola, 2023). Learners employ various strategies to cope with speaking anxiety.

Consistent practice (Gumartifa & Syahri, 2021), therapeutic programs (Genelza, 2021), and effective language learning strategies (Rodriguez, 2023) are commonly adopted approaches. Enhancing self-assurance, engaging with academic literature, and dedicating ample study time can also be beneficial (Licaros et al., 2022). Interventions like Popsispeak have effectively reduced public speaking anxiety and improved oral communication skills (Pontillas, 2020). Creating a supportive learning environment, providing constructive feedback, and fostering a positive learning atmosphere is crucial for addressing student anxieties and enhancing their communication abilities (Milan, 2019). However, research specifically focusing on the experiences of Filipino students in overcoming speaking anxiety remains limited. While existing studies provide valuable insights into the prevalence and impact of speaking anxiety in general, a deeper understanding of the unique challenges and coping mechanisms employed by Filipino students is crucial. This study aims to address this gap by investigating the specific anxieties experienced by Filipino students during English communication, particularly during recitation, reporting, and oral examinations. It will delve into their feelings, perceptions of their anxieties, and their perceived speaking skills.

This research has significant implications for improving English language teaching methodologies in the Philippines. By understanding the specific anxieties experienced by Filipino students and their impact on learning, educators can develop more effective and culturally sensitive instructional approaches. This may involve incorporating anxiety-reducing strategies into classroom activities, creating more supportive and inclusive learning environments, and providing targeted interventions to address the unique needs of Filipino learners. The findings of this study can contribute to a more informed and practical approach to English language teaching in the Philippines, ultimately enhancing student learning outcomes and fostering greater confidence in English communication.

2.0 Methodology

2.1 Research Design

This study employed a qualitative descriptive approach to investigate Filipino learners' experiences with speaking anxiety in English. This approach provides a rich and comprehensive summary of the phenomenon as experienced by participants, using their own words and perspectives. This aligns with the researcher's goal of understanding the complexities of speaking anxiety among Filipino learners in its natural state without attempting to manipulate or influence the phenomenon.

2.2 Research Locale

This study was conducted at Cavite National High School, Senior High School, in Cavite City, Cavite Province, Region IV-A (CALABARZON).

2.3 Research Participants

Ten Grade 11 Humanities and Social Science (HUMSS) students from a specific educational setting participated in this study. These participants, identified as Participants A through J, were purposefully selected based on the following criteria: current enrollment in the Grade 11 HUMSS strand, demonstration of academic achievement, self-reported or teacher-observed difficulty with English conversation despite their academic performance, and attainment of a grade of 85 or higher in three core Grade 11 English subjects: Oral Communication in Context (OCC), Reading and Writing Skills (RWS), and 21st Century Literature from the Philippines and the World (CLPW). Three language teachers from the school assisted in the selection process to ensure that the chosen participants met all established criteria.

2.4 Research Instrument

The primary research instrument used in this study was a researcher-made, semi-structured interview guide. This guide was designed in three parts. The first part explored the manifestations of anxiety experienced by participants during various speaking activities, such as recitations, reports, and oral examinations. The second part investigated the potential causes of this anxiety, focusing mainly on fear of negative evaluation, test anxiety, and general communication apprehension. The final part of the interview guide explored the strategies that

participants employed to counteract their speaking anxiety. The guide incorporated a mix of general, specific, and open-ended questions, emphasizing open-ended questions (eight in the final section) to encourage detailed responses. To ensure the validity and appropriateness of the instrument, the interview guide was validated by three master teachers from the research division.

2.5 Data Gathering Procedure

Data were collected through in-depth interviews with ten Grade 11 HUMSS students, selected with the assistance of three language teachers. Semi-structured interview guides were developed to explore participants' experiences with speaking anxiety. These guides focused on three key areas: 1) Manifestations of anxiety, such as specific situations that trigger anxiety during recitations, reports, and oral examinations; 2) Causes of anxiety, including underlying factors like fear of negative evaluation, test anxiety, and communication apprehension; and 3) Coping strategies employed by participants to counteract speaking anxiety. The interview guide questions were validated by three master teachers from the research division. To allow participants ample time for reflection, they received the interview guide questions a week before the interviews. Data analysis was conducted using a modified thematic approach (Braun & Clark, 2006; Caulfield, 2023). This involved a six-phase process: 1) Familiarization with the data; 2) Generating initial codes; 3) Searching for themes; 4) Reviewing themes; 5) Defining and naming themes; and 6) Producing the report. This iterative process identified recurring patterns and underlying meanings within the interview data.

2.6 Ethical Considerations

This research study followed ethical guidelines. The response thoroughly examined the topic to ensure it did not cause harm to the respondents. After completing the proposal defense, the researcher meticulously followed the feedback provided for revisions. After accepting the revision process, the researcher requests the school principal to conduct the study. Also, she sought assistance from other master teachers in their division to validate her study. Subsequently, she asked permission to use the data-gathering procedure by sending a request letter to college officials. The University Board of Ethics in Research and other relevant offices directed her to obtain a letter. Once the researcher received approval from the UREC, she reached out to the participants through Facebook Messenger to ask for confirmation of the participants. Once the participants confirmed their participation, the researcher sent the interview questions via Facebook Messenger. During the interview, the researcher asked the participants' permission to transcribe their responses with the assurance of sending them back to them. While in the FGDs, the researcher informed that the session would have an audio recording with the assurance that confidentiality was violated. The participants agreed to the transcription and recording processes. As discussed in the consent forms, the participants' information was not reflected in the transcription of the recorded interview. To maintain their anonymity, the researcher classified the participants as Participants A to J. The researcher followed the Philippine Data Privacy Act of 2012 to ensure the participants' privacy. All data collected from the study was kept strictly confidential.

3.0 Results and Discussion

3.1 Manifestations of Anxiety Experienced by Participants

Table 1 reveals a diverse range of anxieties experienced by students during class recitations, extending beyond linguistic challenges.

Table 1. *Manifestations of Anxiety Experienced by Participants in Recitations*

Themes Generated	Initial Codes
Linguistic Self-Confidence	Sentence Construction Anxiety
	Language Dependence Anxiety
	Self-Doubt and Grammar Anxiety
Fear of Negative Evaluation	Nervousness Despite Positive Feedback
	Fear of Embarrassment
	Anxiety Leading to Stuttering and Avoidance
Cognitive and Situational Challenges	Impromptu Speaking Anxiety

While difficulties with sentence construction and a preference for using their native language (Filipino) were prevalent, as highlighted by Participants A and B, these anxieties were intertwined with deeper concerns about performance and self-perception. For instance, Participant D's "Self-Doubt and Grammar Anxiety" underscores the significant impact of grammar-related self-doubt, corroborating the findings of Bactol et al. (2023). This

anxiety, often manifesting as fear of grammatical errors, can significantly impede fluency and confidence. Notably, Participant E's "Impromptu Speaking Anxiety" highlights the heightened anxiety associated with spontaneous English speech, suggesting a need for more structured and scaffolded opportunities for oral participation.

Furthermore, the table reveals a complex interplay between internal and external factors in shaping student experiences. While external validation, such as positive feedback, can be beneficial, it does not always mitigate internal anxieties, as evidenced by Participant C's "Nervousness Despite Positive Feedback." This finding emphasizes the importance of addressing underlying anxieties, such as fear of judgment and self-doubt, beyond simply providing external validation. The behavioral manifestations of these anxieties, such as hesitation, avoidance of recitation, and even stuttering (Participant G), align with the research by Sedova & Navratilova (2020) and Hilliard et al. (2020), which explore the impact of anxiety on student engagement and performance. These behaviors hinder individual student progress and create a less inclusive and supportive classroom environment.

Regarding coping strategies, the preference for using a familiar language (Filipino) might reflect a deep-seated reliance on a more comfortable linguistic environment, potentially stemming from limited exposure to English outside the classroom. This suggests a need for increased opportunities for authentic language use and immersion experiences. Furthermore, the finding that "a favorable attitude from the teacher was the most favored coping mechanism" (Flores, 2024) highlights the crucial role of teacher support and encouragement in mitigating student anxieties. This finding suggests that fostering positive teacher-student relationships and creating a supportive and inclusive classroom climate are essential for addressing student anxieties effectively.

Table 2 reveals a range of anxieties experienced by participants during presentations and reports, extending beyond common fears of public speaking.

Table 2. Manifestations of Anxiety Experienced by Participants in Reports	
Themes Generated	Initial Codes
Preparation and Competence Anxiety	Preparation-Related Anxiety with Reassurance from Practice Nervousness Despite Preparation Pre-Exam Anxiety and Fear of Uncertainty
Performance Anxiety Under Pressure	Unfamiliar Questions Anxiety Unfamiliar Questions and Nervousness Extreme Nervousness and Pressure Fear of Stuttering and Inadequate Explanation
Linguistic Insecurity	Fear of Incorrect Answers and Language Barrier

While "Preparation-Related Anxiety" was prevalent, with participants finding relief through practice and the use of aids like index cards (Participant A), aligning with the findings of Lin and Hwang (2018) and Reitz et al. (2019), the table also highlights the significant impact of unexpected challenges. "Unfamiliar Questions" emerged as a primary source of anxiety for (Participants B and D), emphasizing the need for more robust question-and-answer preparation strategies. This suggests that educators should go beyond simple Q&A sessions and incorporate exercises that challenge students to think critically, anticipate potential questions, and formulate nuanced responses.

Furthermore, the table underscores the complex nature of presentation anxiety. Despite adequate preparation, "Nervousness" persisted for some participants (Participant C), highlighting the need for strategies that address underlying anxieties, such as self-doubt and fear of failure, beyond simply improving presentation skills. The significant impact of "Language Barriers" on presentation anxiety, mainly when speaking in English, was a recurring theme, echoing the concerns raised by Macayan et al. (2018) and Mateo and Suganob (2024). Participants expressed concerns about "Fear of Incorrect Answers" and "Language Barriers," suggesting a need for more language support, such as focused vocabulary building, pronunciation practice, and opportunities for peer feedback in English. This also highlights the importance of creating a supportive and inclusive classroom environment where students feel comfortable making mistakes and learning from their experiences.

The participants' experiences also highlight the significant impact of "Extreme Nervousness and Pressure," mainly when speaking in English (Participant G), aligning with Lin and Hwang (2018). This finding suggests that the

pressure to perform, particularly in high-stakes situations or when speaking in a second language, can significantly exacerbate presentation anxiety. Addressing these anxieties requires a multifaceted approach beyond traditional presentation skills training. Educators must focus on creating a supportive learning environment that minimizes pressure, encourages risk-taking, and provides ample opportunities for practice and feedback. Incorporating innovative approaches, such as those suggested by Önal (2019) and Reitz et al. (2019), such as utilizing digital tools and interactive learning environments, can enhance student engagement, reduce anxiety, and improve the overall presentation effectiveness of the learners.

Table 3 reveals a range of anxieties experienced by participants during oral examinations, extending beyond typical test anxiety.

Table 3. Manifestations of Anxiety Experienced by Participants in Oral Examination

Themes Generated	Initial Codes
Physical and Cognitive Manifestations of Anxiety	Stuttering and Forgetfulness Nervousness Leading to Stuttering Nervousness and Mental Blocks
Preparation Incongruence	Incorrect Responses Despite Preparation Nervousness Despite Preparation Pre-Examination Nervousness
Content Uncertainty Anxiety	Fear of Uncertain Topics Uncontrollable Nervousness and Self-Doubt Familiarity with Words and Nervousness

While "Stuttering and Forgetfulness" (Participant A), "Nervousness Leading to Stuttering" (Participant B), and "Mental Blocks" (Participant G) highlight the significant impact of anxiety on cognitive function, aligning with Estrada-Madronero (2019) and Cristobal and Lasaten (2018), the table also reveals deeper concerns related to uncertainty and the impact of language barriers. The significant role of "Fear of the Unknown" in exacerbating anxiety is evident. Participants expressed anxiety related to "Uncertain Topics" (Participant F) and "Unfamiliar Words" (Participant E), suggesting that the perceived unpredictability of the examination significantly contributes to student stress. This resonates with Grieve et al. (2021) and Sotiriadou et al. (2019), who emphasize the detrimental impact of uncertainty and lack of preparedness on performance.

Furthermore, the study highlights the persistence of anxiety despite preparation. Participants such as C, I, and J reported experiencing "Nervousness Despite Preparation," indicating that adequate preparation alone may not fully mitigate anxiety in all cases. This finding suggests that underlying factors, such as perfectionism, fear of failure, and low self-esteem, may contribute significantly to anxiety levels. The significant impact of "Language Barriers" on oral examination anxiety is also evident. Participant I expressed concerns about "Fear of Incorrect Responses" and "Language Barriers," reflecting the challenges students face in navigating the complexities of oral communication in a second language. This finding aligns with Kilag et al. (2024), who emphasize the crucial role of language proficiency in mitigating language learning anxiety.

However, it is crucial to acknowledge that language anxiety is not solely a linguistic issue. Cultural factors can also influence it, such as the emphasis on error-free performance and the potential for social stigma associated with language mistakes. Addressing these anxieties requires a multifaceted approach beyond simply increasing preparation time. Educators should implement structured review sessions and practice exams to help students build confidence and reduce uncertainty by providing opportunities to practice and receive feedback in a low-pressure environment. It is crucial to foster a positive and inclusive classroom environment where students feel safe to make mistakes and learn from their experiences. Utilizing task-based learning and active learning strategies can enhance student engagement and reduce anxiety by making learning more interactive and less stressful. Offering individualized feedback and guidance on anxiety management techniques, such as deep breathing exercises, mindfulness techniques, and positive self-talk, can help students develop effective coping strategies and build resilience.

Figure 1 presents a thematic map that visually illustrates the diverse manifestations of anxiety experienced by participants across three key academic activities: recitation, oral examinations, and report presentations. The thematic map reveals distinct clusters of anxieties associated with each activity. Recitation, characterized by

themes such as "Linguistic Self-Confidence," "Fear of Negative Evaluation," and "Cognitive and Situational Challenges," highlights the immediate pressures and uncertainties inherent in spontaneous speech. Students may experience anxiety from concerns about their language proficiency, the fear of making mistakes or being judged by peers and instructors, and the cognitive demands of formulating responses on the spot. This cluster suggests that recitation anxiety is deeply intertwined with the social and cognitive demands of the activity itself.

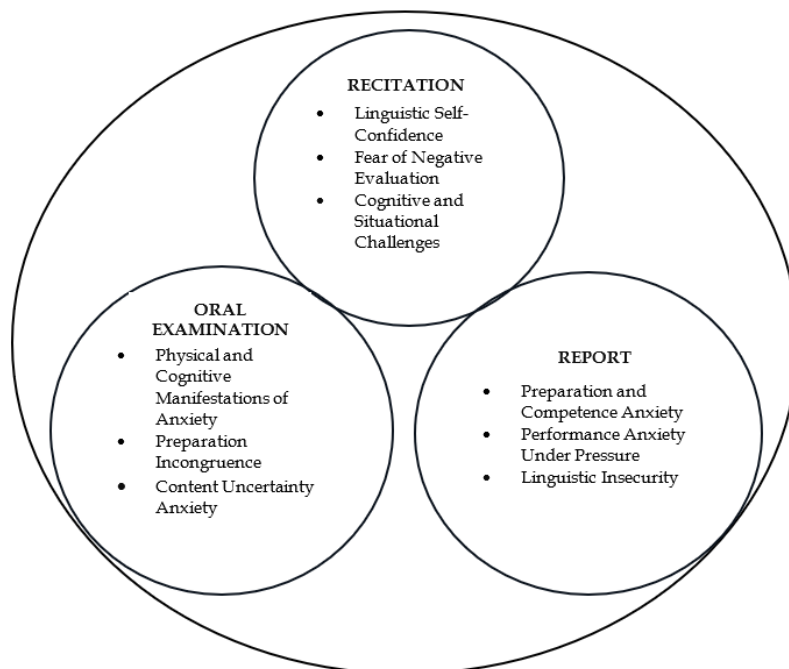


Figure 1. *Manifestations of Anxiety Experienced by Participants*

In contrast, oral examinations were characterized by "Physical and Cognitive Manifestations of Anxiety," "Preparation Incongruence," and "Content Uncertainty Anxiety." This cluster suggests that oral examinations present unique challenges for students. The "Physical and Cognitive Manifestations of Anxiety" theme indicates that anxiety can manifest not only as emotional distress but also as physiological symptoms that can interfere with cognitive function. The "Preparation Incongruence" theme highlights the gap between perceived preparedness and the actual examination experience, emphasizing the importance of preparing content and developing strategies to manage unexpected situations and maintain composure under pressure. The "Content Uncertainty Anxiety" theme underscores the significant impact of uncertainty and the fear of encountering unfamiliar questions or topics on student anxiety levels.

Report Presentations, characterized by "Preparation and Competence Anxiety," "Performance Anxiety Under Pressure," and "Linguistic Insecurity," highlight the unique challenges associated with this form of assessment. "Preparation and Competence Anxiety" suggests that students may experience anxiety related to the adequacy of their research, the quality of their presentation materials, and their ability to convey their findings effectively. "Performance Anxiety Under Pressure" emphasizes the social and evaluative pressures associated with public speaking, which can significantly impact student confidence and performance. "Linguistic Insecurity" suggests that language fluency, grammar, and pronunciation concerns can also contribute to presentation anxiety. This thematic map provides a valuable visual representation of the diverse and interconnected nature of student anxieties across different academic activities. By understanding these distinct clusters of anxieties, educators can develop more targeted interventions and support strategies to help students overcome their fears and achieve their educational goals.

3.2 Causes Participants' Attribution of Their Anxiety in Speaking

Table 4 delves into the significant role of "Fear of Negative Evaluation" in driving student anxiety during English oral communication. Participants expressed a range of anxieties, including "Nervousness in Response to Unfamiliar Questions" (Participant E) and "Fear of Unfamiliar Topics" (Participant F), highlighting the anxiety associated with encountering unexpected challenges. These anxieties, along with "Fear of Making Mistakes Despite Preparation" (Participant I), "Pressure and Focus from the Audience" (Participant G), "Fear of Stuttering and Miscommunication" (Participant H), and "Ongoing Struggle and Worry Despite Experience" (Participant I), all stem from a more profound fear of judgment and its potential consequences. Participants expressed concerns about being judged by their peers and instructors, fearing negative consequences such as low grades or public humiliation. This fear often manifested as a heightened awareness of audience scrutiny, leading to "Pressure and Focus from the Audience" (Participant G) and a fear of "Stuttering and Miscommunication" (Participant H).

Table 4. *Causes Participants' Attribution of their Anxiety in Speaking, particularly Fear of Negative Evaluation*

Themes Generated	Initial Codes
Fear of Performance Inadequacy	Nervousness in Response to Unfamiliar Questions
	Fear of Unfamiliar Topics
Audience-Induced Anxiety	Fear of Making Mistakes Despite Preparation
	Pressure and Focus from the Audience
	Fear of Stuttering and Miscommunication
Persistent Self-Doubt	Ongoing Struggle and Worry Despite Experience

These findings align with Daymiel et al. (2022), who note that speaking performance can deteriorate under the weight of audience observation and perceived judgment. The study also reveals the persistent nature of "Self-Doubt" despite adequate preparation. Participant I, despite thorough preparation, experienced ongoing anxiety and the fear of making mistakes, emphasizing the enduring impact of fear of negative evaluation on student performance. This finding supports Subekti (2018) and Amoah & Yeboah (2021), who assert that psychological factors like the fear of making errors can significantly impact language performance. This persistent self-doubt may be exacerbated by cultural factors emphasizing perfectionism and avoiding mistakes, leading to a heightened fear of failure and a reluctance to take risks in communication.

Addressing the anxieties stemming from fear of negative evaluation requires a multifaceted approach. Educators should prioritize creating a supportive and encouraging learning environment where students feel safe to take risks and learn from their mistakes. Implementing constructive feedback mechanisms, shifting the focus from identifying errors to providing specific and constructive feedback on strengths and areas for improvement, can help reduce the fear of negative evaluation and promote a growth mindset. Integrating mindfulness and anxiety management techniques, such as incorporating mindfulness, relaxation, and deep breathing exercises, can help students manage their stress and anxiety during oral communication tasks. Gradually exposing students to speaking tasks in low-stakes settings, starting with low-pressure activities such as peer discussions and small group presentations, can help build confidence and reduce anxiety before progressing to more challenging tasks. Equipping teachers with the skills to recognize and address student anxieties, such as providing emotional support and offering alternative assessment methods, can create a more supportive and inclusive learning environment.

Table 5 explores the causes of student anxiety during oral examinations, focusing on participants' attributions.

Table 5. *Causes Participants' Attribution of their Anxiety in Speaking particularly Test Anxiety*

Themes Generated	Initial Codes
Cognitive Overload	Fear of Forgetting Words
	Unfamiliar Vocabulary
Emotional and Physical Response to Stress	Physical Symptoms of Anxiety
	Fear of Failure and Uncontrollable Nervousness
Psychological Uncertainty	Concealed Anxiety and Uncertainty
	Nervousness Affecting Performance

Key themes emerged from the data, including "Cognitive Overload," "Emotional and Physical Response to Stress," and "Psychological Uncertainty." "Cognitive Overload" manifested as a significant concern, with participants

expressing anxiety related to "Fear of Forgetting Words" and struggling with "Unfamiliar Vocabulary" (Participants A and E). This finding aligns with Damayanti and Listyani (2020), who emphasize the crucial role of vocabulary knowledge in reducing speaking anxiety. "Emotional and Physical Response to Stress" emerged as a prominent theme, with participants reporting "Physical Symptoms of Anxiety" such as trembling and cold sweats (Participant C) and experiencing "Fear of Failure and Uncontrollable Nervousness" (Participant D).

These findings resonate with Pabro-Maquidato (2021) and Soriano and Co (2022), who emphasize anxiety's physiological and emotional manifestations during oral communication. This highlights the need for educators to recognize and address students' emotional and physical well-being during high-stakes assessments. Finally, in "Psychological Uncertainty," the study revealed the presence of "Concealed Anxiety and Uncertainty," with participants experiencing "Nervousness Despite Preparation" and internalizing their anxiety (Participants F and B). This finding aligns with Giray et al. (2022), who observed that students may experience significant internal anxiety despite appearing outwardly confident. This highlights the importance of creating a safe and supportive learning environment where students feel comfortable expressing their fears and concerns.

Educators should implement a multifaceted approach to effectively address student anxieties during oral examinations. Enhancing vocabulary knowledge through strategies like vocabulary-building exercises, journals, and authentic materials can reduce anxiety related to unfamiliar words. Building student confidence requires creating a supportive classroom environment, providing positive feedback, and emphasizing effort and improvement over grades. Addressing stress's physical and emotional manifestations involves incorporating mindfulness exercises, relaxation techniques, and stress management strategies into the curriculum. Providing regular practice opportunities, such as simulated exams and peer feedback sessions, helps students develop confidence and reduce anxiety related to the uncertainty of performance. Lastly, equipping teachers with the skills to recognize and address student anxieties, such as providing emotional support and offering alternative assessment methods, is crucial for creating a more supportive and inclusive learning environment.

Table 6 reveals multifaceted causes of communication apprehension, including cognitive, emotional, and linguistic factors.

Table 6.
Causes Participants' Attribution of their Anxiety in Speaking particularly Communication Apprehension

Themes Generated	Initial Codes
Cognitive and Linguistic Struggles	Cognitive Load
	Self-Doubt and Grammar Concerns
	Language Preference and Nervousness
	Hesitation and Language Preference
Emotional Impact and Behavioral Responses	Physical Impact of Fear and Anxiety
	Anxiety and Stuttering
	Fear of Embarrassment
Preparation Incongruence	Nervousness Despite Preparation
	Discrepancy Between Preparation and Performance

Key themes emerged: "Cognitive and Linguistic Struggles" (e.g., "Fear of Forgetting Words" and "Unfamiliar Vocabulary" experienced by Participants A and E), "Emotional and Physical Response to Stress" (e.g., "Trembling" and "Cold Sweats" reported by Participant C, and "Fear of Embarrassment" and "Uncontrollable Nervousness" experienced by Participant D), and "Confidence and Learning Dynamics" (e.g., "Self-Doubt" regarding "Grammar Concerns" and "Hesitation" due to "Language Preference," and "Nervousness Despite Preparation" experienced by Participants I and J, and a "Discrepancy Between Preparation and Performance" reported by Participant H). "Cognitive and Linguistic Struggles" highlighted the crucial role of vocabulary knowledge (Damayanti & Listyani, 2020). "Emotional and Physical Response to Stress" resonated with Pabro-Maquidato (2021) and Soriano & Co. (2022), emphasizing the physiological and emotional manifestations of anxiety. "Preparation Incongruence" underscored the importance of strategies beyond memorization, such as active learning (Gallego et al., 2021). These findings align with existing research on the multifaceted nature of communication anxiety (Gallego et al., 2021; Van Veen et al., 2024) and the impact of "Fear of Making Mistakes" and "Negative Evaluation" (Aulia, 2022; Fauzi, 2021). Implications for educational practice include enhancing vocabulary knowledge, building student confidence, addressing stress, providing practice and feedback, and equipping teachers with the skills to recognize and address student anxieties.

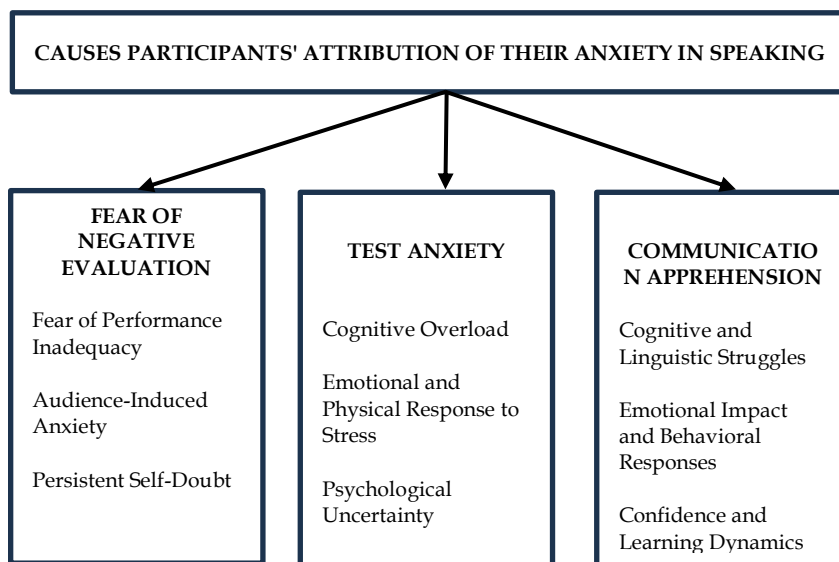


Figure 2. *Thematic Map: Causes Participants' Attribution of Their Anxiety in Speaking*

Figure 2 presents a thematic map that categorizes the causes of speaking anxiety into three primary domains: "Fear of Negative Evaluation," "Test Anxiety," and "Communication Apprehension." "Fear of Negative Evaluation" encompasses themes such as "Fear of Performance Inadequacy," "Audience-Induced Anxiety," and "Persistent Self-Doubt," highlighting the significant impact of perceived or actual judgment on student anxiety. Participants expressed concerns about failing to meet expectations, the pressure of audience scrutiny, and the fear of negative evaluation, significantly impacting their self-confidence and overall performance. "Test Anxiety" is characterized by "Cognitive Overload," "Emotional and Physical Response to Stress," and "Psychological Uncertainty." This cluster highlights the stress and cognitive difficulties associated with formal assessment settings, including concerns about "Fear of Forgetting Words," "Nervousness Leading to Stuttering," and "Physical Symptoms of Anxiety." The unpredictability and high-stakes nature of these situations further exacerbate anxiety and impact student performance. "Communication Apprehension" encompasses "Cognitive and Linguistic Struggles," "Emotional Impact and Behavioral Responses," and "Confidence and Learning Dynamics." This cluster highlights the challenges associated with communicating in a second language, including concerns about "Language Preference and Nervousness," "Self-Doubt and Grammar Concerns," and "Hesitation and Cognitive Preparation." Furthermore, it emphasizes the emotional and physical manifestations of anxiety, such as "Anxiety and Stuttering" and "Fear of Embarrassment," and their impact on overall confidence and learning. This thematic map effectively visualizes the interconnectedness of these different aspects of anxiety, providing a clear framework for understanding the multifaceted nature of speaking anxiety in students. It highlights how these three primary domains interact and influence each other, creating a complex interplay of factors contributing to student anxiety during oral communication.

3.3 Strategies Used by the Participants to Counteract their Speaking Anxiety

Table 7 shows a diverse range of strategies employed by participants to counteract their speaking anxiety. Notably, many participants utilized a combination of practical and emotional coping mechanisms. For instance, Participant A integrated "Practice and Exposure" techniques, such as conversing with friends and watching American movies, with "Relaxation Techniques," like listening to music and deep breathing exercises. This multifaceted approach highlights the importance of combining skill-building with emotional regulation in addressing speaking anxiety. Furthermore, participants employed various cognitive and behavioral strategies. Participant D effectively utilized "Speech Pacing" and "Mirror Practice" to improve clarity and build confidence. While finding "Slow Speaking Limitations" ineffective, Participant E emphasized the importance of "Focus and Learning" as a key to overcoming language barriers. This highlights the individual nature of anxiety management strategies and the importance of personalized approaches.

Table 7. *Strategies Used by the Participants to Counteract Their Speaking Anxiety*

Themes Generated	Initial Codes
Practical Language Skills Enhancement	Practice and Exposure Relaxation Techniques Speech Pacing Slow Speaking Limitations Focus and Learning Mirror Practice and Media Exposure Language Immersion
Psychological and Emotional Management	Breathing Exercises, Self-Acceptance Calmness and Clarity Perceived Confidence
Interactive and Social Strategies	Familiar Faces Topic Familiarity and Feedback Peer Support and Feedback Mirror Practice and Eye Contact

Participants also demonstrated a range of emotional coping mechanisms. Participant H effectively utilized "Self-Acceptance" by acknowledging and accepting potential grammatical errors, prioritizing effective communication over perfection. Participant I emphasized "Calmness and Clarity," highlighting the importance of maintaining composure and utilizing deep breathing techniques to improve cognitive function and communication effectiveness. Some participants employed strategies aimed at projecting confidence. Participant J, for example, utilized "Perceived Confidence" by maintaining eye contact and smiling to mask nervousness and alleviate inner tension. This demonstrates the psychological impact of outward behavior on inner emotional states. Finally, social support emerged as a significant factor for several participants. Participant B emphasized the comforting presence of "Familiar Faces" during presentations, while Participant C highlighted the value of "Peer Support and Feedback" in a safe and non-judgmental environment. These findings underscore the crucial role of social interaction and support in fostering confidence and reducing anxiety. These findings align with existing research on language learning. For instance, the use of affective and social language learning strategies, as discussed in Cabansag (2020), is evident in the participants' utilization of peer support and relaxation techniques. Moreover, the confidence-boosting effects of tailored strategies like media exposure and mirror practice, as supported by Olivera (2021), are evident in the strategies employed by several participants. Furthermore, the impact of emotions on language learning, highlighted by Purcia et al. (2023) and Bactol et al. (2023), is reflected in the participants' self-acceptance and emotional management strategies.

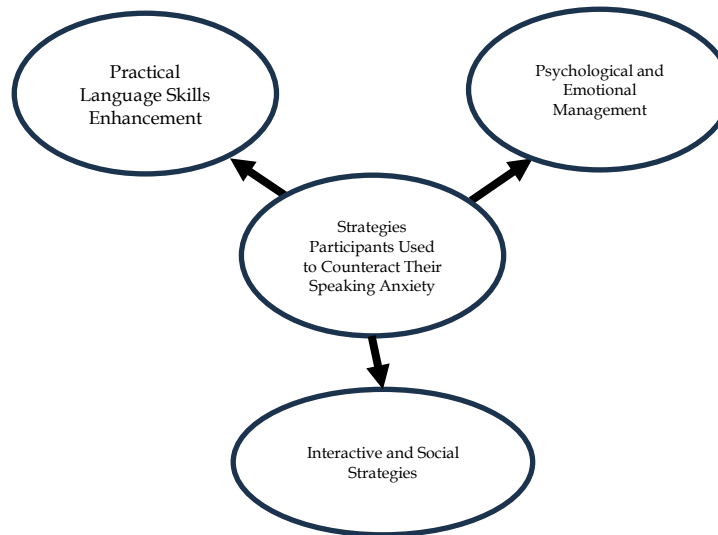


Figure 3. *Thematic Map: Strategies Used by the Participants to Counteract their Speaking Anxiety*

Figure 3 presents a thematic map that visually categorizes strategies employed by participants to manage speaking anxiety into three distinct constructs: "Practical Language Skills Enhancement," "Psychological and Emotional

Management," and "Interactive and Social Strategies." This visual representation effectively captures the diverse approaches participants utilize to cope with their anxieties, highlighting their interconnectedness while emphasizing their unique characteristics. "Practical Language Skills Enhancement" encompasses strategies aimed at directly improving language proficiency, such as "Practice and Exposure," "Speech Pacing," "Slow Speaking Limitations," "Focus and Learning," "Mirror Practice," and "Media Exposure." These strategies demonstrate a proactive approach to addressing speaking anxiety by improving language skills and building fluency. This aligns with communicative language teaching principles, emphasizing the importance of active language use and authentic language input for effective language learning. "Psychological and Emotional Management" emphasizes coping mechanisms that address the emotional and psychological aspects of speaking anxiety. These strategies include "Relaxation Techniques" such as breathing exercises and mindfulness practices, "Self-Acceptance" of imperfections, and cultivating a sense of "Calmness and Clarity" during communication. These strategies suggest that participants recognize the significant impact of emotional and psychological factors on their speaking performance and actively seek ways to manage their anxiety. This aligns with research on the effects of emotion regulation on language learning (e.g., MacIntyre & Gregersen, 2024), highlighting the importance of managing anxiety and cultivating a positive emotional state for successful language acquisition."

Interactive and Social Strategies" highlight the importance of social interaction and support in mitigating anxiety and enhancing language proficiency. These strategies include "Familiar Faces," "Topic Familiarity and Feedback," and "Peer Support and Feedback." This emphasis on social interaction and support likely reflects the importance of social and cultural factors in language learning. In many cultures, including Filipino culture, collaborative learning and peer support are crucial in social and academic development. The visual representation of these constructs as distinct circles effectively emphasizes their unique nature while acknowledging their interconnectedness. Depending on their needs and preferences, participants may employ strategies from one or more of these domains. For example, some participants may primarily rely on "Practical Language Skills Enhancement" strategies, while others may find "Psychological and Emotional Management" techniques more effective. This flexibility in strategy use suggests that effective anxiety management is a personalized process requiring individuals to identify and utilize the strategies that best suit their needs and learning styles.

4.0 Conclusion

This study provides valuable insights into the multifaceted nature of speaking anxiety among Filipino learners. By identifying key manifestations, causes, and coping strategies, the research contributes significantly to our understanding of this critical aspect of language learning. The findings highlight the diverse range of anxieties experienced by learners across different speaking contexts, including recitations, presentations, and oral examinations. These anxieties are deeply intertwined with cultural values, such as the emphasis on social harmony and respect for authority, which can significantly influence student experiences. Furthermore, the study underscores the crucial role of Fear of Negative Evaluation, Test Anxiety, and Communication Apprehension in shaping speaking anxiety. These factors interact complexly, impacting learners' cognitive, emotional, and behavioral responses.

The identified coping strategies, including practical language skills enhancement, psychological and emotional management, and interactive and social strategy, offer valuable guidance for learners and educators in mitigating the impact of speaking anxiety. Future research could explore the effectiveness of specific intervention strategies in addressing speaking anxiety among Filipino learners. Longitudinal studies could track the impact of these strategies over time, providing valuable data on their long-term efficacy. Additionally, further research could investigate the interplay between cultural factors, individual differences, and speaking anxiety within diverse learner populations. The findings of this study have significant implications for language teaching practices, informing the development of more effective and supportive learning environments that address Filipino learners' unique needs and anxieties. By incorporating these findings into teacher training programs and classroom instruction, educators can create more inclusive and supportive learning environments that foster language development and reduce speaking anxiety among their students.

5.0 Contributions of Authors

Julieth T. Tapado conducted this research under the guidance of Ma. Junithesmer D. Rosales, DEM. The author was responsible for all aspects of the research, including conceptualization, methodology, data collection, data analysis, writing of the original draft, review and editing, and preparation of the final manuscript.

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This research did not receive any external funding.

7.0 Conflict of Interests

The researcher declares no conflicts of interest. The researcher had no financial or personal interests, including but not limited to employment, consultancies, honoraria, stock ownership, or expert testimony, that could have influenced this research's design, conduct, analysis, or interpretation. The study was conducted objectively and without any undue influence from external factors.

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Development of Communicative Competence in English Language Curriculum of ESL Secondary Schools

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Abstract. This study aimed to describe the English Language Curriculum of English as a Second Language (ESL) secondary schools and examine learners' communicative competence development. The researcher utilized a qualitative systematic literature review with the inclusion of studies that (1) assessed the implementation of English Language Curriculum in secondary schools, (2) conducted in countries implementing the K-12 Curriculum, (3) published in the year 2014 up to the present, concerning to language or publication type; and (4) involved teachers and learners as the participants and respondents. The research began with electronic searches of bibliographic databases and relevant journals, supplemented by citation chasing, internet searches, and targeted exploration of specialized websites. Next, citations were reviewed to identify relevant studies and excluded irrelevant ones. The researcher employed thematic synthesis, a three-step process: (1) line-by-line coding of the extracted data; (2) development of descriptive themes closely aligned with the primary text; and (3) generation of analytical themes through the addition of interpretative constructs and hypotheses. Three themes emerged from the review: "Salient Features," delineating the characteristics of the English language curriculum across different countries. "Steering Towards the Development of Communicative Competence of Learners" focuses on the contribution of curriculum to learners' communicative competence. Lastly, "Soundness and Strength of the Curriculum" presented supporting data on the curriculum's effectiveness. With these findings, the researcher hopes it may help teachers and administrators develop and enhance the programs and policies to help improve the English curriculum's facilitation.

Keywords: Curriculum; English Language; Communicative competence; Listening; Speaking.

1.0 Introduction

In the 21st- century, English has become an indispensable part of the educational curriculum. Also, it is widely considered the lingua franca of the world. It is the standard language in various fields, such as international business, technology-revolving, and higher education (Domingo, 2020). With approximately 1.4 billion native and non-native English speakers worldwide, international business, diplomatic relations, tourism, aviation, and technology have predominantly used English. It also emerges as the most used language in scientific studies and one of the most sought-after foreign languages to learn. With this, it is considered the language of opportunity and thus the world's language (Nanquil, 2021).

English's ubiquity fosters communicative competence, a synthesis of grammatical principles, and knowledge of language use in social contexts to perform communicative functions (Salvador et al., 2023). Moreover, communicative competence encompasses grammatical competence (knowledge of inter-sentential relationships) and discourse competence (knowledge of rules and norms governing speech act timing and realization) (Obaidul et al., 2013). However, most students in English as a Second Language countries find communication skills challenging (Roslaniec, 2018). In particular, the Philippines has been acknowledged globally as an English-speaking country and was ranked 14th in the global English Proficiency Index (EPI). However, there is still a need to improve the English language teaching and learning and eventually develop English as a vital skill of the Filipino workforce in the global area (Cabigon, 2015; Baclig, 2020).

In response, the Philippines implemented the K to 12 Curriculum in 2013; the goal of English language teaching was focused on producing graduates who apply the language conventions, principles, strategies, and skills in interacting with others, understanding, and learning other content areas, and finding themselves in their future endeavors. Also, the outcome-based curriculum targets communicative competence and multi-literacies as its expected outcomes for 21st-century learners (Department of Education, 2016). One commendable feature of the current English curriculum is the specification of various standards (i.e., essential standards, grade level standards, content standards, and performance standards) that learners across levels need to attain. The feature shows that among the 21st-century skills, much of the focus is on effective communication. One strength of the current English curriculum is its emphasis on holistic assessment, which refers to an ongoing collection of qualitative and quantitative feedback from various sources (Barrot, 2018).

The K to 12 English Curriculum Guide 2016 integrates language across domains in Senior High. This includes grammar and reading comprehension, enabling learners to progress from foundational to advanced language use. Eventually, English proficiency in the Philippines is weakening due to graduates' declining English language competency. The Philippines had the lowest reading comprehension in the 2018 Program for International Student Assessment (PISA) and the lowest in the 2019 International Mathematics and Science Study (Puente, 2022). It has been found that a strong English language foundation in elementary and secondary education leads to tertiary-level English proficiency. However, more than ninety percent of college graduates in the Philippines still need to be equipped with English proficiency, as revealed in the test conducted by Hopkins (Domingo, 2020).

The aforementioned factors can hinder curriculum implementation, preventing teachers from fully practicing principled teaching due to a lack of essential 21st-century language pedagogy principles. The curriculum's lack of specificity and clarity may contribute to a mismatch between teachers' and learners' instructional goals. As such, policymakers should clarify provisions and specify how the new English curriculum translates into classroom practices. The necessity of incorporating examples of classroom practice after each outcome statement can show the relevance of various components (Rahman, 2014).

Another potential challenge is shifting teachers' views of their roles as learning facilitators, students' roles, and the teaching-learning- assessment process. Pre-service teacher training and education courses must include training and orientation. These trainings should be continuous and developmental to provide them sufficient support and knowledge in implementing the changes. Since teachers interpret curriculum in the light of their teaching style and embedded framework, training should also focus on helping teachers embrace new ideas in teaching English (Barrot, 2018).

In addition, limited instructional time is a concern. Learners spend only 160 instructional hours over the 40-week academic year -- four hours per week of contact. This reduction to fewer than 200 annual contact hours -- the minimum needed for measurable progress (Barrot, 2018) -- is a problem. Moreover, with only four instructional hours per week, teachers struggle to cover eight to ten different learning competencies in one week. To address this, lower-grade English curricula prioritize fostering positive communication attitudes rather than initiating formal English language education (Salvador et al., 2023).

The Department of Education acknowledged the need for regular curriculum assessment and faster facility provision, as these key elements influence Filipino learners' performance. Despite all the government's efforts, Filipino learners are less successful in learning English than expected. In other words, learning English as a second

language remains a challenging task, requiring sustained, collaborative effort from learners and teachers (Ying et al., 2021). On another page, learning English becomes difficult because the learners do not feel the immediate need to use English outside the classroom, and no environment will make them familiar with the language. Furthermore, many learners disregard learning and mastering a foreign language, and only a few succeed because they use strategies to learn the language (Akbari, 2015). It is revealed in the study of Blas et al. (2018) that attitude, motivation, emotions, and the learner's background could affect English Language proficiency. The study showed that highly motivated students achieved more than less motivated students.

Moreover, most learners reportedly encountered communication problems that affected their studies. Communication problems included speaking skills related to oral presentations made by learners and classroom participation while listening skills consisted of lecture comprehension and note-taking skills. The abovementioned skills relate to the competencies necessary to master English (Alhassan et al., 2021). A study concluded that the common problems learners face include fear of making mistakes, incorrect pronunciation, lack of understanding of grammatical patterns, limited vocabulary mastery, minimum opportunities, students' interest, mother tongue use, frequent practice, and less discipline (Rahayu, 2015). Additionally, the study by Blas et al. (2018) revealed that self-confidence and self-esteem contribute to the success of learning the language.

Similarly, a case study by Alhassan et al. (2021) showed that teachers have difficulty teaching the subject because of their slow understanding of basic concepts. Meanwhile, a study also revealed that students failed to write better because the teacher did not provide input. Teachers correct the papers and assign scores but provide no feedback. The study suggested that teachers should provide positive feedback and encourage learners to practice writing and reading rather than judge learners' mistakes (Novariana et al., 2018).

Meanwhile, since the new English curriculum consists of elements from the tertiary curriculum, the implementation of the new curriculum also involved an inevitable transition of faculty from tertiary to senior high and junior high to senior high. This transition took most faculty to adjust and adapt new methodologies in teaching, which caused a negative toll on senior high school learners. In particular, some learners were unprepared for a sudden shift and curriculum change as they experienced difficulties keeping up with the complexity of the topics. Consequently, as grammar and sentence construction are necessary for English proficiency, learners' weak foundation in these areas affects their general ability to comprehend, construct, write, and speak English (Aranda, 2022).

Recognizing the merits of the previous findings by Lasala (2014), Tuan (2017), Magcamit (2018), and Calopez (2019), the researcher deemed it significant to assess learners' communicative competence, especially at the Senior High School level. While these related studies aimed to deepen understanding of communicative competence, few proposed a program to address learners' language learning needs directly. The previous findings proved that learning the English language challenges the participants. Understanding these challenges may help teachers and administrators develop and enhance the programs and policies to help improve the English curriculum's facilitation. Determining the experiences of senior high school learners can improve teachers' methodologies and approaches inside the classrooms.

As an English language teacher, the researcher observed that both written and oral communication in English was challenging among senior high school learners. Exposed to the varied learning circumstances of the learners and compelled by a sense of commitment to augment teaching outputs, the researcher ventured into finding practical solutions to students' difficulties in English language learning. In conjunction, the researcher aims to provide inputs for developing an evidence-based curriculum that is firmly established, teacher- and learner-friendly and effectively balances macro-level policy with micro-level implementation.

2.0 Methodology

2.1 Research Design

This review utilized a qualitative systematic literature review design. A systematic literature review is a laborious and thorough process that starts with exploring published literature and ends with conducting an analysis concerning a myriad of collected references on a specific topic (Chen et al., 2016; Grewal et al., 2016). It is a type of

literature review that seeks to identify all the available evidence about a specific topic to reduce the effect of bias on the review findings (Booth & Papaioannou, 2016).

2.2 Research Criteria

The selection of studies was made according to a set of inclusion criteria, which include (1) assessing the implementation of English Language Curriculum in secondary schools; (2) conducted in countries implementing the K-12 Curriculum; (3) published in the year 2014 up to the present, concerning language or publication type; and (4) involved teachers and learners as the participants and respondents.

2.3 Data Gathering Procedure

The literature search included electronic searches of bibliographic databases and relevant journals, citation tracking, internet searches, and examination of specialized websites. The search yielded numerous citations and abstracts; however, many were excluded because they were irrelevant to this review. The author reviewed citations and determined if the cited studies were potentially applicable. The researcher retrieved the full-text documents on the relevant studies. After determining a study's eligibility, the researcher reviewed it again to confirm that it met the inclusion criteria.

While identifying potentially relevant studies, the researcher searched significant databases such as ERIC, JSTOR, and Wiley Online Library. The researcher also manually searched Google Scholar to identify additional publications that were not indexed in traditional databases. The search terms include identified keywords such as English Language, Curriculum, Communicative Competence, and Secondary Schools and also examined the reference lists of articles eligible for inclusion in the review. Moreover, during the initial search, the researcher manually searched for full-text articles corresponding to abstracts identified as eligible. The researcher conducted the initial database searches and screened the titles and abstracts presented. Afterward, articles that passed the full-text screening stage were reviewed against the inclusion criteria. This process resulted in 26 studies remaining for further review.

2.4 Data Coding and Analysis Process

The researcher used thematic synthesis to identify key analytical themes. This method is a flexible approach to qualitative evidence synthesis designed to explore people's perspectives and experiences. It is particularly suitable for exploring participants' views of interventions and identifying factors influencing their success (Matney, 2018). The researcher extracted the author and year of publication, study setting, research aims, sample characteristics, methods used, and the results or findings from each study. The researcher employed thematic synthesis to analyze the extracted data from each study inductively. This process consists of three steps: first, conducting line-by-line coding of the extracted data; second, developing descriptive themes that closely reflect the original text; and third, generating analytical themes by introducing new interpretive constructs and hypotheses. Line-by-line coding involves carefully reading each sentence or paragraph and assigning one or more codes. Descriptive themes were then developed by identifying relationships between codes and organizing them into conceptual groupings. Generating analytical themes overlaps with developing of descriptive themes often, which adequately respond to the research question (Thomas et al., 2017).

2.5 Ethical Considerations

The primary data consisted of peer-reviewed journal articles. To maintain ethical research practices, all sources were cited in the reference section using a consistent citation format. In-text citations accurately reflected the reference list.

3.0 Results and Discussion

3.1 Salient Features

A secondary school English Language curriculum, where English is a second language, is defined by several key characteristics that set it apart. These Salient Features form the curriculum's unique identity and are crucial to its design and implementation. They act as the defining elements that shape the entire learning experience. As an instrumental subject, English helps students develop communicative competence and contributes to broader competencies needed for practical work and learning throughout life. The main objective of the English Language

Curriculum is to enable learners to formulate and develop their communicative competency through practicing listening, speaking, reading, writing, and linguistic knowledge (Hanoi, 2018).

The current English Language Curriculum in Indonesia is organized around macro-skills, communicative skills, and interpersonal development. It focuses on language and learning since it covers some grammatical features combined with or inserted in other language skills. However, the curriculum emphasizes linguistic knowledge, with communicative skills only partially developed through a lexical syllabus (Mulyani, 2018). While the Indian language curriculum emphasizes English language learning, contradictory policies prioritize state languages, creating tension in its promotion. English is ambiguous, simultaneously valued, and viewed with suspicion (Jayendran et al., 2021). Secondary students typically receive up to five hours of English instruction per week. While India has a national curriculum, schools are not mandated to use uniform textbooks; some schools utilize a wider range of resources. Among the language skills, reading and writing are emphasized more than listening and speaking (Meganathan, 2019).

In Japan, diverse English teaching strategies have been developed across different regions (Inagawa, 2015). A shift from grammar-focused, teacher-centered instruction to a communication skills approach is underway, encouraging more active student interaction (Jennings, 2018). The ongoing educational policy reforms aim to motivate learners to engage in the learning process with lessons based on active learning (Yamamoto, 2021). At the secondary level, entrance examinations assess English proficiency, which frequently tests vocabulary and grammar (Saito et al., 2022).

Moving on to China, English is one of the major courses taught from primary school to university level (Wu, 2020). Its English Curriculum standards are programmatic documents guiding English education and teaching, which help teachers to fully understand the tasks and help them play a better role in teaching English. It briefly discusses the importance of English, the effects of compulsory English education, and the dual nature of instrumental and humanistic approaches to English curriculum design (Chen, 2023). The curriculum aims to cultivate learners' language, cultural awareness, critical thinking skills, and learning ability (Ministry of Education, 2022).

Singapore's education system prioritizes English language proficiency for communication and employment (Loh & Pang, 2022). The curriculum emphasizes reading, writing, speaking, and listening skills. Learners learn to communicate effectively, express their ideas coherently, and appreciate various forms of literature. Moreover, emphasis is placed on language acquisition, grammar, vocabulary, comprehension, and communication skills (Ministry of Education, 2020).

Australia considers English language study a central point to the learning and development of learners. Its English language curriculum includes literature study, facilitating effective communication in written and verbal modes, appreciating and using the English language in all its variations, and developing a sense of its richness and power (Nguyen, 2014).

In the Philippines, the K to 12 English Curriculum Guide 2016 integrates language across domains in Senior High School. Grammar, structure, and reading comprehension instruction enables learners to progress from foundational to advanced language skills. In a more profound sense, the English Language Curriculum consists of Oral Communication in Context and Reading and Writing Skills in the senior high school curriculum. The two subjects are taught for 80 hours per semester. The oral communication curriculum develops students' listening and speaking skills, complementing their reading and writing abilities. Senior high school students are expected to integrate communication and language skills, using oral and written texts across various genres and contexts for personal and professional use (Barrot, 2018).

With the characteristics mentioned above of the English Language Curriculum across countries that are implementing K-12 curriculum, there is an excellent emphasis on appreciating and learning the English language by heart. Many English language programs focus on developing learners' speaking and writing skills but also emphasize the broader applications of English in professional and future pursuits. Recognizing the significant benefits, numerous countries integrate English language instruction into their curriculum from primary school through university.

3.2 Steering Towards Development

Steering towards Development embodies how the curriculum contributes to developing learners' communicative competence. It is inclined that the curriculum's methods directly influence the development of communicative competence, much like the steering wheel of a car's direction.

Communicative competence blends grammatical accuracy with understanding how language functions in a social context to achieve communicative goals. It also involves effectively combining utterances and communicative functions within a larger discourse (Canale & Swain, 1980, as cited in Salvador et al., 2023). It is one of the most essential notions in languages for specific purposes. At its core, communicative competence encompasses not only a speaker's knowledge of linguistic and sociolinguistic rules but also their ability to apply this knowledge effectively during interactions (Whyte, 2019).

Research by Tuan (2017) revealed low communicative competence, particularly in discourse, among Vietnamese English language learners. This deficiency was linked to limited English language exposure and insufficient emphasis on discourse in English language instruction. The study attributed the low discourse competence, in part, to the treatment of English as a foreign language, hindering the development of overall language proficiency.

A study in Mandaue City, Philippines, assessed the communicative competence of senior high school students, finding their oral and written skills acceptable. However, Lasala's (2014) research indicated that improvements in communicative and sociolinguistic competence were still needed.

Furthermore, research conducted at Bacolod City disclosed that female students perform better in written and oral communication than male students. Overall, high school learners know and use basic grammar rules with occasional errors and simultaneously can speak clearly and comprehensively with minimal difficulty. Additionally, the results revealed significant differences in the respondents' linguistic and discourse competence when grouped according to sex. Finally, based on the important findings, a remedial program in English focusing on written and oral communication in an actual setting was proposed to improve the communicative competence of senior high school students (Salvador et al., 2023).

Furthermore, Bautista and Del Valle's (2023) research indicated high levels of communicative competence among the learners. The respondents proved that they frequently used the English language at home, on different platforms, and in the community. In addition, a significant positive correlation exists between communicative competence and oral language proficiency. As a result, they could accurately apply their communicative competence at home, on different platforms, and in the community.

Similarly, research in San Jose Del Monte, Bulacan, showed very satisfactory levels of English language competence among learners across linguistic, sociolinguistic, and discourse dimensions. Despite significant challenges in English communication, learner engagement with the language remained high (Samosa et al., 2021).

A study conducted in Davao City revealed a significant relationship between communicative adaptability and cognitive communication competence. Conversely, the relationship between communication apprehension and cognitive communication competence proved inconsistent. Through multiple linear regression, the findings corroborated the three domains of communicative adaptability and communication apprehension: social confirmation, appropriateness, and apprehension in small groups significantly predict cognitive communication competence (Canada & Miralles, 2023).

Overall, the implementation of the English Language Curriculum for Senior High School students has significantly influenced the development of their communicative competence. The curriculum has effectively fostered the development of various aspects of communicative competence, including linguistic, sociolinguistic, and discourse competence. However, particular areas require increased attention to ensure the balanced development of all aspects of communicative competence, thereby maximizing students' future potential.

3.3 Soundness and Strength

The soundness of a curriculum provides its foundational structure, like a human skeleton. It refers to the curriculum's fundamental building blocks and design. In contrast, the strength of a curriculum lies in its effectiveness in secondary schools—its practical application. Today, evidence-based practices are crucial across all fields, including the English Language curriculum. The analysis of Mulyani (2018) concluded that Indonesia's English language curriculum is appropriate and effective for classroom instruction. The curriculum successfully achieves its primary goals while addressing learners' needs and interests.

In India, it lacks dedicated assessment systems for English language proficiency. English assessment is partially integrated into the Continuous and Comprehensive Evaluation (CCE) and is used across all subjects (National Training Council, 2017). A recent survey highlighted the urgent need to improve reading skills in both regional languages and, mainly, English. Classroom assessments reveal a significant lack of focus on speaking and writing skills. Furthermore, a study found limited opportunities and training for aspiring English teachers (Anderson & Lightfoot, 2021).

Meanwhile, a study established that English education under the guidance of the curriculum standards attaches high importance to stimulating learners' autonomy and cultivating their self-regulated learning ability. This finding has significant implications for future English as a Foreign Language (EFL) teaching and learning in China. A policy focusing on self-regulation could increase engagement among English learners in schools (Zou et al., 2024). However, other factors hinder the curriculum's effectiveness in China, including insufficient learner engagement and a lack of content understanding that would facilitate better English comprehension (Guerrero, 2019).

In the Philippines, a study revealed that Senior High School students demonstrated proficient English language skills, particularly in grammar and reading comprehension. Despite English not being their native language, their performance in these areas was commendable, indicating mastery of fundamental linguistic units crucial for English language acquisition (Manuel, 2022)

In another study, the learners described their everyday English learning experience inside the classroom as challenging because of various factors. Since this group of learners is the first batch to receive the new English curriculum taken from the tertiary curriculum, they first experienced the transitory period of the contents and topics of English subjects. This situation has posed a significant challenge to some learners because, from more straightforward and effortless issues from junior high, they have now taken more profound and complex topics in senior high. In addition, some learners expressed apprehension about learning English, viewing it as unnecessary given their predominant use of Filipino or Tagalog at home. As the Department of Education projected, subjects in the new curriculum, such as Reading and Writing and Oral Communication, contributed to newly developed proficiencies in learners' oral speaking and research writing. The findings revealed that some learners struggled to adapt to the sudden curriculum changes, finding it challenging to keep pace with the more complex topics (Aranda, 2022).

This suggests that teachers' effectiveness and efficiency in implementing the curriculum might be linked to various countries' initiatives to invest in teacher training and development. Moosa and Shareefa (2019) found that teacher efficacy and knowledge significantly impact curriculum implementation. Furthermore, a study indicated that positive attitudes among master teachers contribute to improved learner performance (Rattanaprom, 2019).

Implementing the curriculum requires effort from different areas, including the teachers and the learners. The effectiveness of the curriculum is heavily reliant on the efforts provided by the implementing body and the response of the receiving body. It is a give-and-take scenario in which the success and effectivity are well-determined if both parties comply with the objectives set.

Local and international studies suggest that successful curriculum implementation relies on utilizing facilitating factors as strategies. Conversely, unaddressed hindering factors lead to less successful outcomes. This curriculum's effectiveness in fostering learners' communicative competence varies wildly, depending heavily on

the implementation of objectives and other aspects. Success requires the collaborative efforts of teachers and learners, working within the framework established by the educational body that designed the curriculum.

4.0 Conclusion

The salient features of the English language curriculum are simultaneously the same and different across different countries. In common, the curriculum focuses on developing learners' competence in speaking and writing. The adoption of these curricula reflects a global trend, including within the Philippines, toward enhancing the communicative competence of senior high school students to facilitate their future academic and professional pursuits in English-speaking contexts. A review of relevant literature reveals a dichotomy in curriculum design: some curricula demonstrably support the development of communicative competence, while others require significant revision to align with stated objectives. The efficacy of any given curriculum is ultimately determined by empirical evidence demonstrating its effectiveness in achieving intended learning outcomes. Consequently, a critical analysis of existing curricula necessitates identifying best practices to be maintained alongside areas requiring modification and increased support for effective implementation.

The above findings proved that learning the English language challenges the participants. Understanding these challenges may help teachers and administrators develop and enhance the programs and policies to help improve the English curriculum's facilitation. Determining the experiences of senior high school learners can improve teachers' methodologies and approaches inside the classrooms. Moreover, the result of this study can enlighten teacher education institutions to emphasize the development of English learning materials and teacher training. Future research could profitably investigate learner outcomes about curriculum objectives. Such studies would be valuable in identifying levels of achieved competence, areas of strength, and weakness, thus contributing significantly to our understanding of curriculum effectiveness. Further research exploring teacher experiences with the curriculum would also enrich the field, broadening the scope of existing knowledge and providing valuable insights into practical implementation. This dual focus on learner performance and teacher perspectives would offer a more comprehensive understanding of the curriculum's impact.

5.0 Contributions of Author

This research leverages the researcher's expertise in teaching the English language to provide an interdisciplinary analysis of language curricula. Employing a methodology that combines literature review, document analysis, and manuscript writing, the study integrates perspectives from language teaching and curriculum development to offer a nuanced understanding of the secondary school English language curriculum and its effectiveness in fostering learner communicative competence.

6.0 Funding

This research was conducted independently and without external funding. The author's personal interest in exploring the English Language Curriculum motivated the study, and all research activities, including data collection, analysis, and manuscript writing, were self-funded.

7.0 Conflict of Interest

The author declares no conflicts of interest related to this research. The study was conducted independently without financial or personal ties that could influence the findings or interpretations.

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Narratives of Feminism among Gen Z Filipino Women

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Abstract. Research on Gen Z women's perspectives on modern feminism is scarce in the Philippines despite its unique patriarchal culture. This study fills the gap by exploring how Filipino Gen Z women navigate work and family dynamics through a feminist lens. Using a phenomenological descriptive approach, the research involved fourteen (n=14) co-researchers in Bacoar, Cavite, aged 20–26. Data were collected through semi-structured online interviews, selected via snowball sampling. A combination of latent narrative and thematic analysis was employed to analyze the responses. The findings reveal that Gen Z Filipino women perceive modern feminism as central to promoting (1) gender equality and inclusivity and (2) women's empowerment and autonomy. However, they face significant challenges, including (3) enduring stereotypes and (4) societal and cultural expectations that hinder the full realization of feminist ideals. Despite these barriers, respondents view feminism as (5) a transformative force capable of reshaping societal norms and advancing genuine gender equality. This study contributes to the understanding of how global feminist ideals intersect with local traditions in the Philippines, offering insights that may inform policies and initiatives aimed at fostering gender equality in culturally conservative contexts.

Keywords: Filipino women; Generation Z; Modern feminism; Phenomenological study; Thematic analysis.

1.0 Introduction

The rise of modern feminism has significantly shifted how women, mainly Gen Z women born between 1997 and 2012, perceive their roles in society, family, and work (Feger, 2024; Saladino, 2020). In the Philippines, feminist movements have gained momentum, focusing on women's empowerment and gender equality. Over time, these movements have made significant strides in advancing economic, political, and social equality. However, challenges such as unequal political representation, limited economic opportunities, and the persistence of patriarchal violence continue to hinder women's full participation in society (Hega et al., 2017). Despite these advancements, the evolving role of Filipino Gen Z women remains underexplored, especially in terms of how modern feminist ideals shape their work and family dynamics.

Global research on Generation Z and feminism has focused on this generation's distinct characteristics and challenges. Gen Z women, in particular, are often seen as driven and valuable in the workforce, yet they face criticism for being perceived as lazy, entitled, or unprofessional (Di Meglio, 2023; Bieleń & Kubiczek, 2020). In the Philippines, however, Gen Z is viewed as romantic and ambitious, prompting companies to reconsider their work policies to attract and retain this new generation of workers (Dagooc, 2023). Furthermore, a 2021 Pew Research Center survey reveals a global trend among Gen Zers to delay or forgo traditional family roles, prioritizing career and wellness instead, which challenges societal norms within Filipino families.

While these global trends are important, limited attention has been given to how Filipino Gen Z women specifically navigate their feminist ideals in the context of family and work, particularly within the Philippines' unique cultural and socio-political landscape. Much of the existing literature on feminism in the Philippines centers on broader historical and structural issues. However, it overlooks the specific ways in which young Filipino women engage with feminist principles in their day-to-day lives. This gap in the literature calls for an examination of how modern feminism influences Filipino Gen Z women's perspectives and experiences, especially within a society still shaped by traditional gender roles and patriarchal norms.

Bacoor, Cavite, in the Philippines, presents a unique blend of urban and rural landscapes, diverse economic activities, numerous educational institutions, and a rich cultural heritage (Bacoor City, Cavite Profile – PhilAtlas, 1990). Despite these favorable conditions, online information from Bacoor that addresses feminism and Generation Z perspectives is scarce. The local government's gender and development initiatives have evolved, emphasizing equality for all individuals, regardless of gender. Projects aligned with these goals, such as women's welfare programs, reproductive health services, and career development activities, reflect a local commitment to gender equality. According to the 2015 Census, Bacoor has a substantial population in the Gen Z age range, with 56,997 individuals aged 15–19 and 9.40% of the population (56,464) aged 20–24. This demographic, alongside high social media engagement and active community involvement, makes Bacoor an excellent location to explore how young women embrace and apply feminist principles. These factors offer valuable insights into the shifting dynamics of gender equality within a society undergoing rapid transformation.

This study is grounded in intersectional feminism, a framework that recognizes how overlapping social identities—such as gender, race, class, and ethnicity—shape individuals' experiences of oppression and access to power. For Filipino Gen Z women, this perspective is crucial as their feminist experiences are not only shaped by gender but also by cultural, social, and economic factors unique to the Philippines. By focusing on the intersection of gender and generation, this research aims to provide insights into how feminist ideals influence Filipino Gen Z women's work and family dynamics.

The primary goal of this research is to examine how modern feminism shapes Filipino Gen Z women's perspectives on work and family dynamics. Given the gaps in existing literature, particularly in the Philippine context, this study seeks to explore how feminist ideals are interpreted and enacted within a society still grappling with traditional gender expectations. By addressing this gap, the study aims to contribute to global discussions on feminism while offering recommendations for fostering a more inclusive and equitable society for the next generation of Filipino women.

2.0 Methodology

2.1 Research Design

A qualitative research design was employed to explore Gen Z Filipino women's perspectives on modern feminism and its influence on work and family dynamics. Phenomenological inquiry, based on the work of Edmund Husserl (Stanford Encyclopedia of Philosophy, 2013), was used to explore participants' lived experiences and the significance of those experiences, aiming to uncover the essence of modern feminism from their perspectives. Descriptive phenomenology was chosen to describe these experiences without interpretation or bias, focusing on how participants make sense of their world. The narrative, thematic analysis with a latent approach was used to uncover implicit meanings and themes within the participants' stories. Initial coding helped identify explicit themes, and deeper analysis revealed latent themes that provided insights into the participants' perspectives and experiences.

2.2 Research Locale

The study was conducted in Bacoor, Cavite, Philippines, a city known for its blend of urban and rural landscapes, diverse economic activities, and cultural richness. According to the 2015 Census, the city has a significant Generation Z population, with a notable number of individuals aged 15–19 and 20–24, making it a relevant setting for exploring these issues.

2.3 Research Participants

Participants were selected through snowball sampling, where each participant referred another Generation Z woman they knew personally. Fourteen women, aged 20 to 26 and residing in Bacoar, participated in the study. While this method provided efficient access to the target group, it may have limited the diversity of perspectives, as the sample may reflect participants' social networks. To mitigate this, participants were encouraged to refer women from varied backgrounds, helping broaden the sample's diversity. However, future research could consider using stratified random sampling to enhance the diversity of participants further.

2.4 Research Instrument

The researchers developed an interview guide to collect data from the participants, seeking input from members of the University Research Board (URB) to validate the questionnaire. The URB's comments and suggestions were incorporated into the final version of the guide.

2.5 Data Gathering Procedure

Data were collected through a structured survey, following institutional protocols and with prior approval from the University Research Board. Participants were initially recruited through email invitations, and data were gathered in stages through snowball sampling. This approach expanded the sample as new themes emerged, and data saturation was achieved after 14 participants.

2.6 Ethical Considerations

Ethical considerations were meticulously addressed throughout the research. An informed consent statement was presented at the beginning of the survey, ensuring that participants were fully aware of the study's purpose and rights before participating. The consent process emphasized the protection of participants' anonymity and the confidentiality of their responses. By committing to these ethical standards, the researchers ensured that all data were handled with the utmost care and that participants' privacy was maintained throughout the study. This approach was designed to foster trust and integrity in the research process while upholding ethical research practices.

3.0 Results and Discussion

3.1 Gen Z Filipino Women's View Modern Feminism

Gender Equality and Inclusivity

A prominent theme from the interviews is the perception of modern feminism as a powerful vehicle for achieving gender equality and inclusivity. Many participants articulated that feminism is fundamentally about establishing equal rights for all genders. GF2 expressed,

"Modern feminism is about believing in and working towards equal rights for all genders, aiming to eliminate gender-based inequalities and create a fairer and inclusive society."

This perspective highlights a broader understanding of feminism as inclusive, motivating women and men to fight for gender equality. The importance of men's involvement in feminist causes was underscored, with GF11 acknowledging that *"gender inequality affects not only women but also society as a whole."* This acknowledgment emphasizes that gender equality is a societal issue that requires participation from all individuals, regardless of gender, thereby fostering a more inclusive movement.

These insights exemplify how modern feminism advocates for women's rights and encourages a collaborative approach to dismantling traditional gender norms, ultimately leading to a more equitable society. Furthermore, participants noted that modern feminism has contributed to a shift in traditional gender roles, promoting shared responsibilities and equal decision-making within households. This evolution is supported by Pew Research, which indicates a significant rise in women entering the labor market and an increase in dual-income households (Blazina, 2022). As a result, there has been a greater emphasis on equitable distribution of household tasks, including both housework and childcare responsibilities. As GF2 emphasized,

"It is recognizing that both mothers and fathers can be nurturing caregivers and supporting the freedom for individuals to choose roles based on personal preferences and abilities rather than societal expectations."

This statement reflects a move towards a more balanced approach, challenging the notion that caregiving and household responsibilities should primarily be women's work and advocating for gender equality. GF11 added,

"...modern feminism has promoted equal decision-making authority for women within families, which has helped me and my partner make joint decisions and work together as equals in managing our household and finances."

These statements reflect a broader trend toward gender equality in domestic responsibilities and decision-making processes, underscoring the importance of collaboration and shared authority in fostering inclusivity within family dynamics. Additionally, respondents linked modern feminism to the recognition of historical gender oppression and the ongoing fight for justice. As GF1 explained, feminism is

"acknowledging that women have historically endured oppression and injustice as a result of their gender."

As a result, according to GF11, "modern feminism is a social, political, and cultural movement that advocates for gender equality and challenges the patriarchal systems..." Therefore, as GF12 emphasized, feminism is centered on the "rights of women," addressing crucial issues like "workplace discrimination, reproductive rights, and violence against women." According to the Cambridge Dictionary, feminism refers to the rights of women to be treated equally to men in all areas of society. As stated by the UN, women's rights are human rights (UN Human Rights, 2014), which include the right to live free from violence, slavery, and discrimination, to be educated, to own property, to vote, and to earn a fair and equal wage.

Modern feminism has also brought attention to the wage gap between men and women, which has led Gen Z female workers to seek employment in companies that offer equal pay and opportunities for both genders (How Gen Zers Are Bringing the Optimism on Gender Equity, 2024). GF11 shared,

"Firstly, modern feminism has taught me to be aware of the gendered dynamics in the workplace and to challenge them when necessary. For instance, I once noticed that a male colleague was being paid more than a female colleague for the same work despite the female colleague having more experience and qualifications. I realized that this was a clear case of gender-based wage discrimination and decided to speak up about it. I brought the issue to the attention of our HR department and advocated for the female colleague to receive equal pay. As a result, the company took action to address the pay gap, and the female colleague received a well-deserved raise".

This anecdote highlights how Gen Z workers, particularly women, are cognizant of wage gaps and motivated to address them because wages are a primary driver for this generation. Flores (2024) found that Gen Zs are deeply motivated by financial incentives, aiming to cover daily expenses and "enjoy the fruits of their labor." This alignment between their awareness of gender-based wage disparities and financial priorities underscores why equal pay is a non-negotiable aspect of their career choices and professional advocacy, tying feminist values to their practical motivations and career goals.

Moreover, modern feminism has increased awareness of workplace harassment and abuse (Hega et al., 2017). The #MeToo movement, which one respondent mentioned, has played a key role in highlighting the prevalence of sexual misconduct in the workplace. The respondent stated,

"The #MeToo movement has highlighted the prevalence of sexual misconduct in the workplace and has led to a shift in the way organizations address these issues. Many organizations are now taking a zero-tolerance approach to sexual harassment and are implementing policies and procedures to prevent it from happening in the first place."

As a result, Gen Z women are increasingly reluctant to work in environments where such misconduct is prevalent and instead seek companies that prioritize creating a safe and respectful workplace culture.

Women's Empowerment and Autonomy

GF1 highlighted that "feminism entails autonomy, allowing individuals to explore any endeavor regardless of gender constraints." This autonomy encompasses the freedom to make autonomous decisions, whether regarding one's body, life choices, or career path, reinforcing the importance of consent to respect individual autonomy and personal boundaries. Empowerment is further linked to feminism's role in fostering a supportive environment

among women, where imperfections are embraced and displayed confidently. As GF5 noted, feminism cultivates the “freedom to make autonomous decisions,” which promotes “a culture of women supporting and empowering women”. These statements directly align with the study of Madrona et al. (2023), which highlights the strong preference of Filipino youth for “Openness to Change,” including stimulation and self-direction. This finding indicates a desire for novel experiences, independence, and self-determined goals. The emphasis on autonomy in feminism resonates with these values, providing a cultural framework through which Filipino Millennials and Zoomers navigate personal and professional aspirations. Moreover, GF3 shared a matriarchal perspective, stating that

“...some women's perspective is way more than that ... women are now above men because of the main reason that we, women, are child bearers.”

This statement reflects a matriarchal viewpoint, wherein women are seen as dominant, an interpretation supported by historical research linking matriarchy to motherhood and societal resource distribution (Matriarchal Studies, n.d.). The belief that women hold primary political and familial power challenges traditional patriarchal structures, which typically position men as the leaders (Population Media Center, 2024b).

Empowerment through autonomy manifests in the workplace as Gen Z female workers prioritize jobs that allow for a healthy work-life balance. As GF11 observed,

“Modern feminism has emphasized the importance of work-life balance and flexible work arrangements. Women are no longer expected to sacrifice their personal lives for their careers.”

This focus on autonomy encourages women to pursue their well-being alongside their professional goals, with flexible options like remote work or adjustable hours making it easier to balance work and personal responsibilities. Feminism advocates recognizing shared responsibilities between men and women beyond the workplace (Rodriguez, 2017). This emphasis on flexible work arrangements aligns with the findings of Racolța-Paina & Irini (2021), who observed that besides wages, among the most expected elements from the workplace include a flexible work program, with the main argument being that most Generation Z employees are enrolled in a higher education program.

Autonomy also drives the push for leadership roles, as GF11 shared

“Women are no longer expected to conform to traditional gender norms, such as being submissive or nurturing. Instead, they are encouraged to pursue leadership roles and take on positions of authority.”

This shift has led to a more diverse and inclusive workplace, where women are encouraged to succeed in male-dominated fields, including IT and criminology. GF6 echoed this sentiment:

“It defeats the thought of di yan trabahong pambabae; hence, it gives women a chance to explore further and find their passion.”

Modern feminism has thus empowered women to challenge societal expectations, pursue leadership, and carve out opportunities in fields where they were previously underrepresented (Santosh, 2024). The statements of the respondents reveal a significant shift in reproductive decision-making dynamics, particularly concerning women's autonomy and agency. They highlighted that women, as the primary caregivers during pregnancy, are asserting their right to decide whether to have children, emphasizing bodily autonomy. As GF7 explained,

“Women may decide if they want to have a child or not since they are the ones who are caring for the babies; it is their body.”

Modern feminism has brought attention to reproductive rights; as GF1 stated,

“...The relevance of family planning and reproductive health has been underlined by modern feminism. As a result, women now have more access to contraception and reproductive health services, giving them more choice over their reproductive life.”

This advocacy has improved access to family planning resources, empowering women with greater control over their reproductive decisions and enhancing their autonomy. This shift in reproductive autonomy provides a more complex layer to the findings of Agdagdag et al. (2024), which identified reluctance to have children due to challenges like parenthood difficulties, career prioritization, and environmental complexities. While these factors reflect practical and social reasons for delaying or avoiding pregnancy, the emphasis on bodily autonomy adds a more profound, personal dimension to these choices, underscoring that women's decisions are shaped not only by external factors but also by their inherent right to control their own bodies and reproductive futures.

Moreover, the shift in household power dynamics reveals an intriguing divergence from traditional gender roles, highlighting how evolving norms and female solidarity influence decision-making within families. GF3 observed,

"...the household's father will not have the last words to say. Always the mother. In today's generation, the mother has the first and last things to say and to do. So rather than counting the efforts of both parties, the father of the household will always be the one who will follow the mother's order."

This statement underscores a household where women, including mothers and daughters, hold significant authority. Similarly, GF3 added,

"We are three women in the household. It speaks for itself; we have the upper hand. Even if our father is the 2nd eldest in the family (mom is the eldest), my sister and my voice will always be heard."

These remarks point to a broader trend of female empowerment and collective agency that goes beyond the individual maternal authority highlighted in previous studies. Supporting this shift, a 2008 Pew Research Center study in America found that women lead decision-making in 43% of surveyed couples, compared to just 26% where men hold that role, while 31% share the responsibility equally. This data highlights the growing recognition of women's leadership within family dynamics and a move toward more equitable decision-making processes, further advancing women's autonomy in the domestic sphere. However, research in the Philippines suggests that mothers with lower education levels exhibit higher maternal authority and communicate more with their children, and mothers with lower incomes tend to be less authoritative (Bernal et al., 2022); the respondents' experiences mentioned above present a more nuanced perspective. Here, power dynamics seem less tied to socio-economic factors and more influenced by a redefinition of familial roles and the solidarity among women within the household. This divergence enriches the findings by illustrating that maternal authority is context-dependent; it may vary based on socioeconomic circumstances, evolving cultural norms, and internal family dynamics. The respondents' experiences show that female empowerment within the household can transcend traditional socio-economic boundaries, suggesting a broader cultural transformation.

3.2 Challenges of Gen Z Filipino Women about Their Feminist Perspectives

Persistent Stereotyping

Stereotyping emerges prominently in the respondents' narratives, reflecting the persistence of gender biases both in the workplace and within personal relationships. Gender stereotypes continue to limit opportunities for women, often originating from the opposite sex and even within the same gender. GF6 recalled,

"A manager once told me that women are good at multi-tasking; hence, being a supervisor is the best fit for us, but we cannot be in a higher position than that because men can do critical thinking better than we are. Hence, the highest post in our company fits only men."

This statement exemplifies the deeply ingrained bias that women are less capable in leadership roles due to perceived deficiencies in critical thinking, perpetuating the stereotype that women are "*fragile*" or less competent in decision-making. This bias is further reflected in the Women in Power study, which found that while 75% of respondents expressed trust in women leaders, there remains a skepticism about the impact of more female politicians. This reluctance, especially in lower-income and Mindanaoan communities, could stem from unmet political promises or a lack of representation (Del Mundo, 2022). Similarly, the study on female managers in Metro Manila revealed that although women exhibited strong personality traits like openness and conscientiousness, these traits did not always correlate with higher leadership levels (Barcelona, 2022). While women are trusted in

leadership roles, these findings highlight the persistent barriers and biases that women continue to face—both in public office and the workplace—reinforcing the stereotype that women are less capable or suited for higher leadership positions. Thus, despite demonstrated leadership potential, the intersection of gender biases and societal expectations continues to limit women's advancement in both politics and management.

Further reinforcing these stereotypes, some superiors assume women are less committed to their careers, prioritizing family over professional growth. This leads to missed opportunities, as bosses hesitate to invest in women, expecting them to prioritize family. These assumptions undermine women's career advancement and reflect broader societal expectations that women must balance work with caregiving responsibilities. Respondents highlighted how traditional gender roles often require women to manage household chores, marginalizing their input in decision-making. As GF11 shared,

"balancing work and family life can be particularly stressful, involving negotiating flexible work arrangements and juggling our schedules to accommodate our children's needs,"

Highlighting women's ongoing struggle in challenging traditional gender norms and striving for equality at home and in the workplace. The findings of the 2021 study *Women in the Philippine C-Suite* conducted by UN Women Asia and the Pacific support these observations, revealing how deeply rooted Filipino cultural values of close family ties intensify women's challenges. These values often compel individuals to prioritize family obligations over career advancement. For example, single respondents in Mindanao, many of whom serve as breadwinners, feel pressured to place family first. Married respondents and those with children further underscore how family responsibilities influence career decisions, with women disproportionately bearing the caregiving burden. Traditional gender roles also hinder women's access to leadership programs, with only 74% of women compared to 82% of men participating in such programs. Additionally, many women, especially in the Visayas (52%), experience guilt over neglecting caregiving duties. Despite women in Mindanao (94%) emphasizing the importance of work-life balance, societal expectations continue to perpetuate stress and inequity, limiting their professional opportunities and reinforcing traditional gender norms.

Additionally, while some respondents acknowledged workplace harassment, they provided limited information on the types of harassment they face. However, studies by Stewart and Davison (2019) highlight why Generation Z, particularly women, may be more vulnerable to workplace harassment. Many Gen Z workers may not fully understand what constitutes sexually harassing behavior and may be reluctant to report incidents, especially when the harasser is a supervisor. This reluctance is compounded by the blurred lines between work and social relationships, with younger workers often connecting with supervisors on social media platforms. The informality of these digital interactions can increase their vulnerability to harassment as they may seek approval without fully recognizing the power dynamics involved. These concerns are supported by findings in the Philippines, where one in seven women report experiencing sexual harassment at least once a week. However, the issue remains underreported due to fear of retaliation. The banking industry has been particularly noted for creating a hostile work environment for women. For instance, the Philippine National Bank conducted a case study highlighting how beauty standards influence the hiring of frontline employees, such as tellers, and how male-dominated upper management contributes to this issue. Additionally, a study by the Lloyd's Register Foundation and Gallup revealed that 22% of women and 18% of men in the Philippines have faced sexual harassment at work, with many reporting that the harassment occurred multiple times. Among women who experienced workplace harassment, 13% reported sexual harassment, 9% experienced psychological and physical harassment, and 12% faced all three forms of harassment, according to a report published by *Phil Star Global* (2023).

Deeply Rooted Social Norms and Cultural Expectations

Many respondents shared how deeply ingrained societal expectations and cultural norms create resistance to change, particularly when traditional gender roles are challenged. As GF12 noted,

"Some family members resist or feel uncomfortable with changes that challenge traditional gender roles and expectations."

This resistance can arise from long-standing beliefs about the roles of men and women, often rooted in cultural and societal norms. A lack of awareness about feminist ideals also contributes to the challenges women face in implementing gender equality within the family. As GF1 stated,

"It may be difficult to argue for feminist ideals and gender equality if family members are unaware of these concepts. It could be difficult to encourage a more gender-neutral style of parenting, for instance, if a youngster does not comprehend why both parents must provide care".

Family Pressure from extended relatives presents another significant barrier to challenging traditional gender roles. As GF11 described,

"One of the biggest challenges has been societal expectations and pressure from extended family members who may not share our values and beliefs. For example, we have faced criticism and skepticism from some family members who disagree with our decision to share childcare responsibilities or believe that women should prioritize domestic work over paid employment".

Despite efforts to share childcare responsibilities or prioritize paid employment over domestic work, individuals often face criticism and skepticism (Pew Research Center, 2020). In response to these challenges, some respondents demonstrated Resilience and Collaboration. They remain committed to their values and work with their families to find solutions that align with their beliefs. They also seek support from like-minded friends and community members, emphasizing the importance of open communication to foster a more equitable and supportive family environment. This collaborative problem-solving and reliance on a supportive network reflect the respondents' determination to navigate these challenges while staying true to their feminist ideals. However, not all respondents felt empowered to challenge these cultural norms openly. Some admitted to avoiding family conflicts, opting to remain silent rather than confront opposition. As GF8 expressed, *"No, I would rather stay silent than cause a family conflict,"* reflecting the problematic choices women may face when navigating deeply rooted cultural expectations within their families. This narrative demonstrates the tension between advocating for change and maintaining familial harmony, underscoring the complexities of navigating familial expectations while striving for change (Pew Research Center, 2020).

Supporting these experiences, a study commissioned by Oxfam Pilipinas and conducted by The Women and Gender Institute (WAGI) sheds light on the deeply rooted gender norms in Filipino households. The research found that women still shoulder the majority of unpaid care work, even while holding full-time jobs, with a significant increase in responsibilities during the COVID-19 pandemic. These societal expectations continue to reinforce women's traditional roles as primary caregivers and men as breadwinners, contributing to the challenges women face in balancing work and family life. However, the study also highlights the potential for change, particularly in the BPO sector, where many women are employed, offering an opportunity to shift these gender norms and promote greater gender equality in the workplace and at home.

3.3 Gen Z Filipino Women's Vision of Modern Feminism in Work and Family Dynamics *Transformative Movement*

With the rise of Generation Z and their use of social media for feminist advocacy, modern feminism has become a powerful force for change. The National Organization for Women Foundation highlights the central role of social media in connecting feminists globally and raising awareness about gender inequality. Generation Z feminists, in particular, have spearheaded this movement, leveraging online platforms to amplify their voices and drive activism forward (Alfonseca, 2023).

Christian Nunes, President of the National Organization for Women, emphasized how the fourth wave of feminism prioritizes inclusivity and allyship, aiming for genuine equality for all women. This wave seeks to address the limitations of previous feminist movements, which often marginalized certain groups. By embracing a more inclusive approach, modern feminism has empowered women to tackle diverse issues affecting women and girls worldwide (Alfonseca, 2023). Respondents from the study also acknowledged this influence, noting that modern feminism promotes equality in parenting roles, reproductive rights, and healthy family dynamics based on mutual respect and shared responsibilities.

One key aspect of modern feminism's transformative impact is its emphasis on reproductive autonomy and healthcare access. Respondents affirmed that the movement advocates for women's autonomy in their bodies and reproductive health decisions. This includes access to contraception, safe and legal abortions, and maternal healthcare. Additionally, modern feminism stresses the importance of involving men in family planning and reproductive rights discussions, ensuring that gender equality encompasses all aspects of family life.

Modern feminism's impact extends beyond individual families to broader societal structures. Respondents expressed optimism about its potential to bring Unity to Filipino families, fostering more harmonious relationships by encouraging balanced roles and responsibilities. As GF6 put it,

"The world would be better if modern feminism can influence ALL families."

This statement suggests modern feminism influences women's roles and promotes healthier, more equitable family dynamics. However, the transformative nature of modern feminism is not without its challenges. One respondent acknowledged that modern feminism may cause systematic upheaval as it disrupts entrenched societal norms. They recognized both the positive outcomes and the potential drawbacks of such disruption, GF3 stating,

"...Modern feminism helps many people but also affects a lot. Everything will change when you change things that were supposed not to be moved."

This sentiment captures the tension between progress and resistance in the face of societal transformation. This includes the potential for a decline in birth rates, as modern feminism advocates for women's autonomy in making decisions regarding education, career, and reproductive rights. When women have greater access to education and career opportunities, alongside the right to make decisions about their reproductive health, they may choose to postpone or forego marriage and childbirth. This increased autonomy and choice can contribute to lower birth rates as women prioritize personal and professional goals over traditional expectations of early motherhood. For instance, the case of South Korea, which currently holds the lowest fertility rate globally, has been linked to the rise of feminism. Critics suggest that feminism fosters bitterness, worsens gender relations, and dissuades young women from embracing motherhood (Motin, 2024).

Similarly, US Census Bureau data illustrates a significant decline in birth rates from 1990 to 2019, with only a slight increase between 2020 and 2023. Interestingly, while Gen Z and millennials exhibit lower fertility rates, there is a notable rise in childbirth among women over 35. It remains to be seen whether this trend will continue with Gen Z as they age. However, the pattern suggests a growing tendency to delay marriage and family planning, with an increasing desire among some to opt out of having children altogether (Dugan, 2023).

Furthermore, GF14 also suggests that modern feminism could contribute to an increase in marital dissolution. By challenging traditional power dynamics, feminism empowers women to leave marriages or partnerships that are unequal or unsatisfying. This shift encourages women to pursue relationships that reflect their values of equality, potentially leading to more frequent separations when those expectations are unmet. Historically, women were dependent on men for resources and survival due to their roles in pregnancy and childcare, with motherhood being an unavoidable aspect of life for sexually active women. However, today's women have gained the ability to control their fertility, plan their families, and focus on professional aspirations. Women now earn 57.3% of bachelor's degrees, 60.1% of master's degrees, and 53.5% of doctoral degrees while also making up 51.5% of the paid workforce. This newfound independence has transformed their relationships with men, as they no longer rely on men for survival or reproduction. Although women's workforce participation is associated with greater life satisfaction, better health, and increased company innovation, it has also contributed to evolving relationship dynamics, which can lead to divorce and conflict (Parker et al., 2022).

Modern feminism also advocates for Gender Equity and Inclusion within the workplace. Respondents noted the importance of fostering a more diverse and inclusive work environment where individuals of all genders can express qualities traditionally associated with the opposite gender. By challenging rigid gender norms, modern

feminism encourages workplaces to adopt diversity initiatives, training programs, and mentorship opportunities that support equity. As GF1 said,

“Both men and women will gain from a more varied, inclusive, and egalitarian workplace as a result of these changes.”

Additionally, modern feminism has brought attention to the need for a better Work-life Balance. Respondents emphasized the importance of flexible work arrangements, paid family leave, and caregiver support as part of this movement. By promoting policies that enable individuals to balance professional and personal obligations, modern feminism aims to create healthier, more supportive environments for everyone. Finally, modern feminism is a driving force for addressing systemic gender bias. Respondents suggested that it may lead to the development of new laws and policies targeting sexism, exploitation, and oppression. As GF3 noted,

“There will be more laws about this in the future, more talks about this, more against and support for feminism.”

This aligns with the existing legal framework in the Philippines, where various laws protect women’s rights and promote gender equality. For instance, the Expanded Maternity Leave Law (RA 11210) provides more time for women to recover after childbirth. At the same time, the Anti-Sexual Harassment Act (RA 7877) protects women from harassment in the workplace. The Magna Carta of Women (RA 9710) is a comprehensive law that ensures the recognition and protection of women’s human rights, especially for marginalized groups (Cudis, 2019). These laws reflect the government’s acknowledgment of the challenges women face and demonstrate how modern feminist advocacy has already contributed to legislative efforts aimed at addressing gender inequalities.

4.0 Conclusion

The study emphasizes the significant role modern feminism plays in shaping the lives of Gen Z Filipino women, particularly in promoting gender equality and inclusivity. This generation is leading efforts to challenge traditional gender roles, advocate for equal rights, and foster shared responsibilities within the workplace and family dynamics. However, despite progress, persistent challenges such as societal stereotypes and cultural resistance continue to hinder the full realization of gender parity. Participants were selected through snowball sampling, which, while effectively accessing the target group, may have limited the diversity of perspectives as it primarily reflected participants’ social networks. To address this, participants were encouraged to refer women from diverse backgrounds, and future studies could benefit from using stratified random sampling to enhance diversity. Moreover, the online interview format may have limited the depth of responses, as face-to-face interactions could provide richer insights. To further support the advancement of gender equity, it is recommended that institutions prioritize implementing inclusive policies, promote leadership opportunities for women, and encourage open dialogue about dismantling patriarchal norms. Empowering Gen Z women to continue leading these efforts will be critical to ensuring a more equitable future for Filipino families and society.

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The authors indicate equal contribution to each section. The authors reviewed and approved the final work.

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The Permeates of Artificial Intelligence (AI) in Language Education: A Thematic Synthesis

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Abstract. This study examined the integration of Artificial Intelligence-powered learning tools in language education in the Philippines using the thematic analysis method outlined by Thomas and Harden. The analysis covers multiple qualitative research studies, systematically identifying, analyzing, and interpreting key themes across the data. The findings revealed four primary themes: perceived usefulness, creativity, daunting challenges, and ethical hurdles. AI tools significantly improved language proficiency among students and educators by offering valuable resources for writing support, fostering creativity, and streamlining administrative tasks. However, challenges related to technological infrastructure, data privacy, and academic integrity were identified, emphasizing the need for responsible AI implementation. Ethical concerns regarding cultural sensitivity and potential academic dishonesty were also highlighted. The study underscores the importance of developing comprehensive policies and training programs to address these challenges while promoting effective AI integration in the classroom. This research contributes to understanding AI's role in reshaping language education in the Philippine context, emphasizing the need for continuous evaluation and adaptation of educational practices.

Keywords: Academic integrity; Artificial Intelligence; Creativity; Educational technology; Language education, Philippines.

1.0 Introduction

Artificial Intelligence (AI) was first introduced by John McCarthy in 1955 as machines that use language, form abstractions, and solve problems. Since then, AI has developed as a branch of computer science, with contributions from researchers from various fields (Nurhasan et al., 2022), including education (Elgohary & Al-Dossary, 2023). Leaders worldwide agree that AI can accelerate the achievement of Sustainable Development Goals (SDGs) in education, requiring a global framework and responsible governance across public, private, and societal sectors. Klutka et al. (2018) highlight the benefits of AI in education, including improved outcomes, lower costs, and reduced completion time, thereby enhancing learning and knowledge absorption.

Accordingly, the advent of Artificial Intelligence (AI) - powered learning tools in the precipice of the fourth industrial revolution of education poses significant concerns among educators about the efficacy of the simulation of human-inspired intelligence if it is harmful or detrimental in both teaching and learning processes, particularly in language learning. The rise of technology in education has facilitated this emergence, particularly in the innovative teaching methodologies. Lu (2019) reckons that AI has evolved from Computer Assisted Language Learning (CALL) in the 1960s to Intelligent CALL (ICALL) in language teaching and learning. These methodologies enhance student engagement and promote inclusive, culturally relevant learning environments,

equipping learners with the skills necessary for effective communication and intellectual development (Santos, 2022). On the one hand, the CALL initiative, developed by the Growth with Equity Program (GEM) through the U.S. Agency for International Development (USAID), is an exemplary case of technology application in language education. Launched in 2010, this program aimed to boost English language competencies among college students in the Philippines, particularly in Mindanao, focusing on critical language skills such as reading, writing, speaking, and listening (Ulangkaya, 2021). This initiative's DynEd Computerized Language Instruction software features elements like progress tracking, frequent assessments, and interactive multi-sensory engagement, providing a robust support system for students to learn English. On the other hand, MALL is emerging as an effective tool for teaching English in the Philippines. Mobile devices with specialized software offer Filipino language learners accessible resources and foster meaningful teacher-student interactions. This student-centered learning approach empowers learners to progress at their own pace, increasing motivation and autonomy in their studies (Wang & Gunaban, 2023). To enhance the effectiveness of MALL in the Philippine educational paradigm, developers and educators should prioritize improvements in app functionalities while addressing existing challenges to ensure that MALL remains a viable educational tool (Llego, 2023).

Countries within the ASEAN region, including Singapore, Malaysia, and Thailand, are leading the way in adopting AI for language education. Numerous studies highlight that AI-infused language learning platforms significantly boost student engagement and improve language competencies. Initiatives like the Adaptive Digital Interactive Framework for Education (ADIFE) have been instrumental in enhancing digital literacy and language skills among students (Barrot, 2020; David, 2023; De La Torre et al., 2023; Estrellado, 2023; Santiago et al., 2023). These advancements emphasize the need for educational policies incorporating technology to elevate language learning outcomes across diverse contexts.

Integrating AI-driven educational tools is becoming essential for transforming language instruction. Broadly, AI in language education in the Philippines has become a game-changer in its instructional processes as the prevalent increased availability of language tools, including Grammarly, quillbot, ChatGPT, and the like, are providing more opportunities for students and even teachers to process and revolutionize the human tasks of editing, proofreading, and researching (Brown et al., 2020; Calderwood et al., 2020; Clark et al., 2018; Tlili et al., 2023). Adopting a human-centered approach to AI in language education offers the Philippines a unique opportunity to enhance human capabilities and prepare students for the future job market. The transition to AI-enhanced methodologies via CALL in the Philippines aims to provide students with practical English language skills vital for everyday interactions. However, there is a troubling decline in English proficiency among Filipino students, which negatively impacts their career opportunities and professional relationships (Dela Cruz, 2024). The government has encouraged the Department of Education and the Commission on Higher Education to develop and implement more effective technological strategies to improve English language proficiency, promoting various educational innovations to enhance global competitiveness. The challenge is compounded by the growing population gap in the country, with the demand for educational resources outpacing the capacity of traditional methods and existing infrastructure. This demographic shift emphasizes the need for scalable, adaptive learning tools like AI to bridge this gap and ensure equal access to quality language education across diverse regions, including underdeveloped and rural areas.

Historically, the Philippine Department of Trade and Industry launched the National AI Roadmap in 2021 to assess the potential and challenges associated with AI across various sectors, including education. Essential factors include advancements in digitization, infrastructure, research and development, and workforce training (Galvez et al., 2019). Despite these advancements, many educators struggle with assessing and evaluating student coursework, highlighting the need for AI to facilitate these processes. Galvez et al. (2019) suggest that incorporating AI into assessment frameworks can alleviate some of the burdens teachers face, allowing them to dedicate more time to enhancing instructional quality. According to Llego's (2023) research, AI can improve communication among educators, parents, and students by automating administrative tasks, including scheduling and attendance monitoring. Furthermore, Santiago et al. (2023) argue that AI can revolutionize the writing process in language education, enhancing the quality and efficiency of written communication. This dual potential underscores the importance of careful consideration when implementing and assessing AI tools in educational settings.

AI also presents opportunities for personalized and immersive learning experiences, leveraging adaptive learning technologies, real-time feedback on written assignments, and interactive educational games. Incorporating these resources into classroom instruction can enrich the learning experience for students while providing crucial support for educators (Llego, 2023). However, research conducted at Mindanao State University-Maguindanao reveals that while CALL initiatives enhance the verbal skills of new learners, their impact on students who are already familiar with these tools may be limited (Ulangkaya, 2021). Conversely, Dalan (2024) points out that the Philippines faces considerable challenges integrating AI tools into language education due to its sociocultural complexities and linguistic diversity. Technologies like Grammarly and Turnitin, primarily designed for English language contexts, may need to adequately address Filipino educators' needs. Moreover, data privacy, accessibility, and ethical considerations must be prioritized. Further research is essential to customize AI tools for the unique educational landscape of the Philippines.

Despite these affirmations, a knowledge gap remains in the literature regarding the specific application and effectiveness of AI-powered language learning tools within the Philippine context. While some of the research confirmed and catapulted the contributing critical drivers of AI in the transformation of the educational landscape (Bates et al., 2020; Chen, 2020; Verma, 2018; Estrellado & Miranda, 2023), some studies also extol their ambivalence of AI that it may create a severe fret to teachers and learners who may be accustomed to the dependency of technology (Abdous, 2023; Pikhart, 2020; Sumakul et al., 2022). Concomitant to AI's popularity in the academe, this calls for collaborative efforts to leverage its benefits while addressing challenges it may cause. To understand this underlying phenomenon of educational-technological experience, teachers and students in the language class must acquaint themselves with these technological advances to keep abreast of the roadmap for personalized, adaptive, and ubiquitous learning (Santiago et al., 2023). To realize this vision, the educational system must emphasize human-machine collaboration, a key element in achieving high-quality education in a rapidly changing technological environment.

This thematic synthesis aims to closely review the use of AI-powered learning tools in language education in the Philippine context. Such tailoring is integral to the language education that promotes lifelong learning among its modern language recipients. The need for AI studies in language teaching and learning in the Philippine context prompted the researcher to conduct such reviews and analyses. By synthesizing multiple studies about AI in language education, this study may provide insights into the use of AI in English language education, offering a comprehensive understanding of the current landscape of education for sustainable development in the country and, at the same time, guiding future research and practice. Hence, this thematic synthesis study was culled in its conceptualization.

2.0 Methodology

2.1 Research Design

This paper utilized a thematic synthesis research design. This design is employed within a systematic review to synthesize the findings of multiple qualitative studies. Specifically, this method involves systematic data coding and the generation of descriptive and analytical themes, similar to primary qualitative dataset analysis (Thomas & Harden, 2008).

2.2 Research Locale

The main focus of this paper's thematic synthesis is to determine the development of artificial intelligence (AI) in language learning in the Philippines. Hence, exhaustive relevant research articles on AI in Language Education in the Philippines were obtained across multiple electronic databases as there were only a few studies on AI in Language Learning in the country that are particularly indexed in the Philippine e-journal and Andrew Gonzalez Philippine Citation Index. Specifically, the researcher obtained these articles from Google Scholar, Proquest, ERIC, PubMed, ResearchGate, and Philippine e-journal. The search strategy using Boolean search incorporated a combination of keywords such as "AI in the Philippine Language Education," "Artificial Intelligence," "English Language Learning," and "Language Education." The inclusion criteria of the analyzed research articles are as follows: a) they must be qualitative research studies, must have been published in 2018 or earlier, must be authored by a Filipino to understand the context of the present study, and must be from peer-reviewed journals.

On the other hand, research articles written using quantitative methods, authored by foreign researchers, published after 2018, and not published by peer-reviewed journals were excluded from the process of thematic synthesis.

2.3 Data Gathering Procedure

In analyzing the different research articles obtained from the web, the researcher followed three stages of synthesis designed by Thomas and Harden. This includes coding the text, developing descriptive and analytical themes, and generating new interpretive constructs or hypotheses beyond primary studies. As to the detailed process of how the coding and theming are used for the articles being examined and analyzed, the study draws the process of Clarke and Braun (2006; 2012).

2.4 Ethical Considerations

The review was not subject to ethical approval as it was based on previously published studies. However, peer review plays a significant role in maintaining methodological transparency and reproducibility in systematic reviews by providing a detailed evaluation of the review's rigor and transparency through critical appraisal and quality assessment tools. The research was deemed trustworthy using Lincoln and Guba's (1985) criteria of credibility, transferability, dependability, and confirmability. Multiple data sources were analyzed, themes were cross-checked to ensure credibility, and the Philippine educational context was described. An audit trail was maintained throughout the research process, ensuring dependability and replication. Confirmability was established by grounding findings in data and minimizing researcher bias through regular peer review. These trustworthiness strategies ensure the study's reliability and validity.

3.0 Results and Discussion

The research on AI-powered learning technologies in language instruction in the Philippines is presented in a thematic synthesis. As shown in Table 1, the synthesis is divided into three phases using Thomas and Harden's framework: coding the text, creating analytical and descriptive themes, and developing new interpretive constructs. This method comprehensively explains the perceived benefits, inventiveness, difficulties, and moral dilemmas related to AI tools in language training.

Table 1. *Thematic Synthesis using Thomas and Harden's Framework*

Themes	Stage 1. Coding the Text	Stage 2. Developing Descriptive and Analytical Themes	Stage 3. Generating New Constructs/Hypotheses
Theme 1: Perceived Usefulness	- AI tools like Grammarly, Quillbot, and ChatGPT help teachers and students improve writing and language skills. - Teachers find AI tools valuable for writing support and correction (Santiago et al., 2023; Dalan, 2023).	- AI tools are perceived as valuable for enhancing English skills and reducing teachers' burden of correcting basic errors. - Both students and teachers benefit from the variety of functions AI tools offer (paraphrasing, plagiarism checking, grammar correction).	- AI tools provide a corrective mechanism for learning and writing empowerment for students and teachers. - The growing integration of AI tools suggests a shift towards technology-enhanced language learning, potentially redefining language education in the Philippines.
Theme 2: Creativity	- AI supplements human creativity by enhancing interaction with content (Santiago et al., 2023). - AI allows for automated tasks, enabling more creative student output (Eslit, 2023).	- AI fosters creativity by freeing teachers and students from routine tasks, encouraging innovative use of language tools. - Interactive and immersive digital platforms help students engage in creative language learning.	- Combining AI tools with human instruction enables more adaptive, creative, and intercultural learning opportunities. - AI can transform language education by promoting collaborative, creative problem-solving in the classroom.
Theme 3: Daunting Challenges	- There is a lack of infrastructure in rural areas and concerns about data privacy and AI reliability (Dalan, 2023; Manire et al., 2023). - AI tools raise concerns about cheating and over-reliance on technology (David, 2023).	- Infrastructure and technological barriers prevent equal access to AI in education. - Ethical concerns about AI in education include academic dishonesty and dependence on AI (Galvez et al., 2019).	- While AI has potential, unequal access, data security, and ethical concerns create significant barriers to widespread adoption. - Critical examination of AI use in language education is needed to prevent misuse and ensure its responsible integration.
Theme 4: Ethical Hurdles	- Academic dishonesty due to AI use (Subingsubing, 2023). - Ethical concerns regarding cultural sensitivity in language tools (Oracion, 2020; Eslit, 2023).	- AI creates ethical concerns, such as plagiarism and misaligning AI-generated speech patterns with local linguistic norms. - AI-driven tools require cultural adaptation for meaningful language learning in diverse linguistic environments.	- There is a need to develop culturally sensitive AI tools that reflect the local language context, including Philippine English pronunciation. - Institutions must create stricter policies and promote responsible AI use to address ethical dilemmas.

Theme 1: Perceived Usefulness

The emergence of AI-powered educational tools has significantly enhanced teachers' and students' English language proficiency in language education. These tools, which include paraphrasers, grammar checkers, plagiarism detectors, and AI content validators, play a critical role in academic development. Santiago et al. (2023) underscore the importance that faculty places on writing support resources, noting that they are utilized for various tasks such as paraphrasing and proofreading. This finding suggests that such tools are not merely supplementary but are becoming integral to the educational process in enhancing teaching efficacy and learning outcomes. Concurrently, De La Torre et al. (2023) emphasize that AI tools are instrumental in improving students' literacy skills, further validating their role in education. In this context, schools in the Philippines stand to gain immensely from these AI resources, which provide vital support for educators, thus fostering a more effective teaching environment.

Dalan (2023), in a comprehensive review of AI in Philippine language education, identifies essential AI tools such as Grammarly, Quillbot, and ChatGPT. Grammarly is particularly noteworthy as a widely used application that offers real-time feedback on grammar, punctuation, style, and clarity through its adaptive algorithms. The tool not only aids students in identifying errors but also equips educators with the means to enhance student writing through targeted feedback. This dual benefit highlights AI tools' collaborative potential in improving education quality. Similarly, Quillbot is an AI-powered paraphrasing tool that allows users to rephrase text while preserving its original meaning. This helps students and teachers refine their language skills and reduce instances of plagiarism. This capability is crucial in a learning environment where original thought and expression are valued, enabling a more honest approach to academic writing. Also, ChatGPT facilitates interactive dialogue-based experiences, offering learners immersive opportunities to practice language use in context. These tools are vital in the digital age, enabling the academic community to transcend traditional teaching methodologies. As we explore the functionalities of these tools, it becomes evident how they reshape educational practices and outcomes, shifting the paradigm from rote learning to a more engaged, interactive approach.

Students frequently utilize computer-based writing platforms like Grammarly to overcome various writing challenges, effectively identifying and correcting errors. This functionality is equally beneficial for educators, who can leverage Grammarly to assist students in academic writing, focusing on verb tense, subject-verb agreement, and pluralization (Javier, 2022). By correcting fundamental mistakes, Grammarly allows educators to dedicate more time to addressing significant issues such as content coherence and argumentative structure, illustrating its practical impact on teaching strategies. As Barrot (2020) indicates, students can minimize minor errors in their submissions by employing Grammarly during the editing and revision phases, thus improving the overall quality of their writing. Similarly, Quillbot enables students and teachers to rewrite, paraphrase, and synthesize text, reducing plagiarism risk. Estrellado (2023) notes that Quillbot assists in refining written content, offering features such as paraphrasing, grammar checking, AI detection, plagiarism checking, summarization, and translation. These capabilities enhance the clarity and organization of narratives produced by students and teachers alike, further reinforcing the educational value of AI tools.

Furthermore, ChatGPT provides personalized assistance and resources to students, addressing critical needs in second language learning, particularly in the Philippine context (Barrot, 2023). This tool supports teachers and students with varying degrees of complexity in assignments, ensuring the production of grammatically sound and comprehensible writing. ChatGPT's ability to generate diverse essay topics based on users' interests is an adaptive feedback platform for writing and research, illustrating its versatility in meeting educational demands. The collective utilization of these AI-powered tools is perceived as beneficial for teaching and learning. Their established presence in Philippine educational settings illustrates their practicality and potential to empower language learning, confirming that integrating AI tools enhances individual proficiency and transforms educational practices to better meet modern learners' demands. This finding indicates a significant shift toward a more resourceful and technology-enhanced educational landscape, where AI is seen as an essential ally in fostering language proficiency and academic success.

Theme 2: Creativity

AI-driven learning tools significantly enhance creativity among teachers and students within the realm of language education in the Philippines. According to Santiago et al. (2023), AI should complement human

creativity, emphasizing capturing emotional depth and unique perspectives. This perspective suggests that while AI tools can provide substantial support, they must be integrated thoughtfully to enhance, rather than replace, the creative capabilities of educators and learners alike. The thoughtful integration of AI fosters an environment where users of these tools may witness improvements in their creative skills, encouraging more profound engagement with content and facilitating more productive exchanges.

Integrating AI technologies in language instruction can potentially transform creative practices for teachers and students. By streamlining administrative tasks and improving workflows, these tools can elevate the quality of education and contribute to enhanced learning outcomes, particularly in language acquisition. For instance, AI can effectively automate repetitive tasks in educators' daily routines, such as grading papers and managing emails, which allows students to redirect their efforts toward more creative endeavors (Internet of Things, 2024). This shift frees up valuable time for educators and inspires students to explore their creativity without the burden of administrative overload.

Eslit (2023) posits that language learners can engage more creatively with digital technologies, leveraging interactive narrative applications, collaborative annotation platforms, and virtual book clubs. These technologies stimulate creative expression and enable collaborative learning experiences that enrich the educational landscape. By participating in such innovative platforms, students can explore new ways to articulate their thoughts and ideas, enhancing their language skills through creativity. This indicates that applying technology in educational settings can lead to more prosperous, more immersive learning experiences that foster innovative thinking.

Toh and Floresca-Cawagas (2018) stress that intercultural communication skills are increasingly essential in today's interconnected world. Language instruction is vital in nurturing these skills, enabling students to interact meaningfully with individuals from diverse cultural backgrounds. Educators can facilitate this engagement by designing multicultural classroom activities, virtual pen-pal programs, and exchange initiatives. Such initiatives broaden students' perspectives and promote empathy and respect for diverse cultures—essential traits in a globalized society. This highlights the dual role of AI as not only a tool for enhancing language skills but also as a means of fostering cultural awareness and sensitivity.

As evidenced by teachers' experiences in the Philippines, as noted by Nguou (2022), AI applications in language and literature education can pave the way for innovative ideas and impactful classroom outcomes. The application of AI can inspire teachers to develop unique lesson plans and creative assignments that engage students in novel ways. By utilizing AI tools for brainstorming and content generation, educators can craft more dynamic and interactive learning environments that encourage students to take ownership of their educational journeys. Language education is pivotal in preparing students for a globalized, AI-driven future. AI-powered learning tools are crucial in shaping students' intellectual growth, promoting multilingualism, and equipping them for the workforce. By embracing AI within language education, educators cultivate a generation of learners who are academically proficient, empathetic, adaptable, and ready for the future. The emphasis on creativity, facilitated by AI technologies, ensures that students are not only consumers of knowledge but also active contributors to the learning process, enriching their educational experience and preparing them to navigate the complexities of a rapidly changing world.

Theme 3: Daunting Challenges

Despite AI's promising benefits in language education, the Philippines faces significant challenges regarding its technological infrastructure and readiness to implement AI in educational settings, particularly in underprivileged and rural areas. Dalan (2023) asserts that successful AI integration in language instruction requires robust infrastructure and support to ensure equitable access and participation. This interpretation emphasizes that without foundational resources and training, the full potential of AI tools may remain untapped, particularly for marginalized communities.

Using AI algorithms in language assessment and instruction raises ethical concerns about privacy, bias, and transparency. As highlighted by Manire et al. (2023), there is an urgent necessity to safeguard sensitive student information, underscoring that data privacy and security are paramount. Educators must navigate these complexities, as concerns about the quality and reliability of AI-generated content can doubt the legitimacy and

effectiveness of AI-driven language learning initiatives. In this context, educators must critically assess the relevance and suitability of AI tools and platforms for their specific educational contexts, considering language proficiency levels, learning objectives, and cultural considerations. This assertion underscores the need for a nuanced approach to AI integration, where educational stakeholders evaluate tools beyond surface-level functionality.

Moreover, Meng (2023) notes that cloud storage solutions are vital for effective algorithm deployment, facilitating the development of tailored teaching materials and strategies for English language instruction. However, reliance on cloud technologies can introduce additional vulnerabilities, particularly in regions with inconsistent internet access, highlighting the urgent need for infrastructure improvements across educational institutions. As outlined in a Philippine article by David (2023), the proliferation of AI-powered learning tools has raised alarms about potential academic dishonesty within educational institutions. These tools can facilitate essay writing, artistic creation, and other tasks previously deemed exclusive to human capabilities. Educators worry that students might misuse applications like ChatGPT to produce literature summaries, leading to a "cheating epidemic" in Philippine schools. This concern emphasizes the dual-edged nature of AI, where its advantages can inadvertently encourage academic dishonesty if not managed effectively.

In this vein, Galvez et al. (2019) acknowledge that teachers' concerns regarding AI in language instruction are valid and reflect a broader barrier to adoption in the Philippines. Some language teachers' lack of technological proficiency exacerbates this issue, creating a gap in effective AI integration. Educators' attitudes toward AI can influence instructional delivery, with some potentially becoming overly reliant on AI or depending on tech-savvy students for guidance. This statement highlights the importance of fostering a balanced relationship between educators and technology, where AI is a supportive tool rather than a crutch. Consequently, AI can function as a double-edged sword for educators, presenting numerous challenges alongside its revolutionary potential for personalized language learning experiences. The critical need for professional development, training, and infrastructure investment cannot be overstated if AI is to be leveraged effectively in the classroom.

In summary, for AI to be utilized responsibly and effectively in language education, it is crucial to address the opportunities and challenges it presents. This includes fostering a supportive environment where educators are empowered to integrate AI meaningfully into their teaching practices while safeguarding ethical standards and ensuring all students have access to these transformative resources.

Theme 4: Ethical Hurdles

While AI has the potential to enhance students' linguistic capabilities, it also introduces significant ethical challenges that warrant careful consideration. AI-powered learning tools provide immediate feedback and corrections for written outputs; however, concerns about academic integrity persist (Subingsubing, 2023). This issue is particularly relevant in the context of plagiarism, which has become increasingly prevalent with the rise of AI technologies. The indistinguishable nature of AI-generated content complicates the ability to attribute authorship accurately, thus posing a fundamental challenge to the principles of originality and intellectual honesty in academic settings. This situation emphasizes the necessity for educators and institutions to establish clear guidelines on acceptable use and to educate students about the ethical implications of relying heavily on AI-generated material.

Eslit (2023) highlights another ethical concern associated with AI applications in language instruction. Technologies employing automatic speech recognition (ASR) and natural language processing (NLP) enable students to refine their phonetic skills, promoting motivation and engagement through their feedback mechanisms. However, it remains essential to consider cultural sensitivity and contextual appropriateness when employing AI language systems, particularly in linguistically diverse environments like the Philippines. The phonetic patterns utilized in ASR and NLP often reflect Western articulations, which may need to align with how English is pronounced in the Philippines (Oracion, 2020; Manire, 2023). This misalignment could lead to misunderstandings or misrepresentations of the language, undermining students' ability to communicate effectively within their cultural context.

Language teachers must address ethical dilemmas related to cultural relevance and appropriateness. By critically evaluating their tools, educators can ensure that AI applications are practical and respectful of their classrooms' linguistic and cultural nuances. This could involve integrating local dialects and cultural references into AI tools, enhancing their relatability and effectiveness for Filipino students. Although the Philippines is positioned to harness AI's potential for improved language learning outcomes (Umali & Paderon, 2019), the ethical issues associated with AI must be confronted head-on. Stricter regulations and a culture of responsible AI usage are necessary in language education and across all educational contexts. Given the potential for ethical pitfalls and an over-reliance on AI-generated content, policymakers, educators, and stakeholders must collaborate in establishing frameworks that prioritize ethical considerations while leveraging the benefits of AI. This proactive approach will help create a more balanced and responsible integration of AI technologies, ensuring they serve as tools for enrichment rather than as crutches that compromise academic integrity and cultural relevance.

4.0 Conclusion

This paper provides valuable insights into three aspects of integrating AI-powered learning tools into language teaching in the Philippines, contributing to an expanding body of research on this topic. Although AI tools like Grammarly, Quillbot, and ChatGPT have been part of language education for some time, this study highlights how these technologies help automate mundane tasks while fostering the creativity necessary for engaging learning environments. Utilizing the thematic synthesis method developed by Thomas and Harden, the research sheds light on various challenges, including data security, inadequate infrastructure in rural areas, and ethical dilemmas related to academic integrity and cultural sensitivity. These findings emphasize the urgent need for comprehensive policies and ongoing evaluations to address these issues effectively.

By concentrating specifically on the Philippines, this research addresses a gap in the literature regarding the emerging integration of AI in education. It highlights these technologies' transformative potential while raising awareness of the challenges that must be confronted. However, the study is limited by its reliance on secondary sources, which may need to fully reflect the diverse experiences encountered in different educational contexts. Additionally, it does not consider the rapid technological advancements that could further influence AI's role in education. Future studies should consider collecting longitudinal data to assess the long-term effects of AI tools on student performance and teacher practices. Investigating the creation of culturally relevant AI tools that align with local linguistic contexts will also be crucial. Furthermore, evaluating the effectiveness of ethical guidelines will be essential to tackle issues of academic dishonesty and the potential over-reliance on AI-generated content.

5.0 Contributions of Authors

This research was solely conducted by Kurt S. Candilas, who conceptualized the study, developed the methodology, conducted the analysis, and authored the manuscript.

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Exploring Governance Satisfaction Among Rural Barangay Leaders in the City of Calamba, Philippines

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Abstract. This study investigated the quality of governance among rural barangay chairmen and its impact on constituents' satisfaction in the City of Calamba. It aimed to evaluate how well principles of good governance—such as accountability, transparency, responsiveness, fairness, legitimacy, effectiveness, and participation—are practiced. This study aimed to address these gaps by examining the qualities of leadership and governance practices at the barangay level. By identifying the strengths and weaknesses of barangay leadership in promoting good governance, this study contributed to the broader discussion on local governance and its significance in national development. A causal research design was employed, using a self-administered questionnaire to gather data from 17 barangay chairmen and 340 constituents, totaling 357 respondents. Findings indicated that good governance was rated as "Extremely Manifested" across all measured dimensions, with high satisfaction levels among constituents regarding policy implementation, fund disbursement, and barangay operations. However, even though the findings indicate that transparency and responsiveness are manifested, these principles do not significantly influence constituents' satisfaction with good governance in rural barangays of Calamba City. On the other hand, a significant positive relationship was found between the level of good governance practices and constituents' satisfaction. Governance in rural barangays of Calamba City shows a strong commitment to budget accountability, with a need to strengthen adherence to treasury regulations for comprehensive governance excellence. These findings highlight the effectiveness of current governance practices and suggest areas for continued focus to overcome governance challenges and promote sustainable development. The results revealed that there was a significant relationship between the levels of manifestation and constituents' satisfaction.

Keywords: Accountability; Barangay; Governance; Satisfaction.

1.0 Introduction

Governance, as the practice of employing reason and strategic decision-making to manage state and government functions effectively, continues to evolve in response to the growing complexity of public administration and the increasing demands of modern society. Good governance is recognized as a cornerstone for national growth, prosperity, and social cohesion. It facilitates sustainable development, empowers citizens, and strengthens democratic institutions. Central to this endeavor is the role of bureaucracy—the primary administrative mechanism that operationalizes governance by executing government objectives and programs efficiently. Bureaucracy and governance are intertwined, sharing similar goals of serving the public interest and fostering societal well-being.

In the Philippine context, effective governance is particularly critical due to the country's socio-economic challenges and its history of political instability. Governance in the Philippines is seen as a tool for administrative efficiency and a mechanism for transformative social change. This is especially important at the grassroots level, where local government units (LGUs) are pivotal in empowering citizens and fostering accountability. Among LGUs, barangays—the smallest political units—are uniquely positioned to directly address community concerns, implement development initiatives, and ensure that government services reach even the most marginalized populations.

Despite the recognized importance of governance, the Philippines continues to face significant challenges in ensuring responsiveness, accountability, and citizen participation in public administration. Inefficiency, corruption, and inadequate representation persist, undermining public trust and the democratic process (Office of the Ombudsman & United Nations Development Programme, n.d.). The Philippines' position in the global good governance index declined, falling three places to 66th out of 104 countries. This marked the Philippines' lowest performance since the annual index began in 2021, when it ranked 61st. In 2022, the country was ranked 63rd (Atienza, 2023). Effective governance requires the active participation of civil servants who adhere to principles of impartiality, fairness, and accountability in their roles. Equally, citizens must remain vigilant in evaluating leadership quality, particularly during elections, to ensure that capable and ethical individuals are entrusted with public office.

Globally, governance is understood as a framework within which institutions and individuals interact to promote societal development, particularly among the most disadvantaged (United Cities and Local Governments Asia-Pacific, 2021). The World Bank emphasizes the significance of robust public institutions in delivering essential services, fostering economic growth, and engaging citizens in governance processes (World Bank Group, 2019). Similarly, the United Nations advocates for collective global efforts to transform governance mechanisms, addressing modern challenges through collaboration and innovation (United Nations, 2022). In this global discourse, good governance emerges as a guarantor of human rights, the rule of law, and societal dignity—a vision that remains highly relevant to the Philippine setting.

At the barangay level, good governance is essential to fostering participation, transparency, accountability, and efficiency in local decision-making and service delivery. Barangay officials, particularly the barangay chairperson, play a vital role in shaping their communities by acting as role models and implementing development initiatives. Their ability to lead impartially and uphold ethical governance practices significantly impacts the quality of life of their constituents. However, gaps in leadership quality, lack of transparency, and insufficient adherence to governance principles have been observed in many barangays, hindering their potential as drivers of local development.

Existing literature underscores the importance of grassroots governance in achieving broader national goals. Studies highlight the role of barangays in mobilizing community participation and delivering essential services. However, few address the specific leadership qualities at the barangay level that contribute to effective governance. Furthermore, while global frameworks provide valuable insights into the principles of good governance, their contextual application at the barangay level in the Philippines remains underexplored.

This study aims to address these gaps by examining the qualities of leadership and governance practices at the barangay level, specifically focusing on Calamba City. By identifying the strengths and weaknesses of barangay leadership in fostering good governance, the research seeks to contribute to the broader discourse on local governance and its role in national development. The significance of this study lies in its potential to inform policy recommendations and capacity-building initiatives for barangay leaders, ensuring that they can effectively serve their constituents and uphold the principles of good governance.

2.0 Methodology

2.1 Research Design

This study employed a quantitative research design using a causal approach to examine the relationship between good governance among rural barangay chairmen and constituents' satisfaction. This approach facilitated the collection of numerical data, which was subsequently analyzed using statistical techniques. According to Creswell

(2014, as cited in Savin-Baden & Major, 2023), a causal approach is essential for understanding the mechanisms underlying observable phenomena, aiming to determine whether changes in one variable directly influence changes in another. One limitation of this design was the reliance on self-reported data, which may be prone to response bias or social desirability bias, potentially affecting result accuracy. To address this limitation, the study ensured the anonymity and confidentiality of respondents during data collection, encouraging honest and unbiased responses.

2.2 Research Locale

The study focused on good governance in 17 rural barangays in the City of Calamba: Barandal, Batino, Bubuyan, Bunggo, Burol, Camaligan, Kay-Anlog, Laguerta, Mabato, Makiling, Masili, Maunong, Palo-Alto, Punta, Puting-Lupa, Saimsim, and Ulango. These barangays are on the city's outskirts and are characterized by low population densities. Most residents are engaged in agricultural and animal husbandry-related livelihoods, reflecting the rural economic landscape of the area.

2.3 Research Participants

A simple random sampling technique was employed to ensure representative selection from the population. According to Noor et al. (2022), simple random sampling provides every individual an equal chance of inclusion, as the selection is entirely random. A total of 357 respondents were determined using a 0.714 effect size and a 95% confidence level, calculated through the G*-Power sample size computation application. The participants comprised 17 barangay chairmen and 340 constituents, with 20 respondents selected per barangay to provide a balanced representation.

2.4 Research Instrument

The primary data collection tool was a researcher-designed survey questionnaire, which included sections on the respondents' profiles, the manifestation of good governance, and constituents' satisfaction levels. The first section gathered demographic and background information such as type (Barangay Chairman or Resident), barangay, age, gender, civil status, occupation, educational attainment, years of residency, and, for barangay chairmen, years or terms in public service. The second section was divided into two parts: Section A assessed the perceived level of good governance across indicators like accountability, transparency, responsiveness, fairness, legitimacy and voice, and performance, as evaluated by both barangay chairmen and residents.

The instrument underwent a rigorous validation process; five experts evaluated it (three from LCBA and two external validators). During pilot testing, it was also subjected to Cronbach's Alpha Reliability Test to assess reliability. A statistician analyzed the reliability results, and revisions were made in consultation with the adviser to address ambiguities and redundancies, ensuring the instrument's validity and reliability before final administration.

2.5 Data Gathering Procedure

Upon obtaining the necessary permissions, the survey questionnaires were administered personally to the participants, including barangay chairmen and residents. Completed questionnaires were collected, and the responses were meticulously tallied. The data was then organized and analyzed using statistical software. Inferential statistical methods, including significance tests, were applied to compare assessments between barangay chairmen and residents and to evaluate the relationship between governance manifestation and satisfaction levels. Findings were systematically presented using tables and charts, facilitating clear interpretation and the development of implications and recommendations.

2.6 Ethical Considerations

Prior to data collection, a letter of consent was sent to all respondents, explaining the purpose of the study, their role as respondents, and their rights, including the assurance of confidentiality and voluntary participation. Respondents were given ample time to review and sign the consent form, ensuring their informed agreement. This study adhered to the ethical standards outlined in the LCBA Research Manual and the Data Privacy Act (DPA) 2012. Ethical guidelines were strictly observed, ensuring that respondents' data was collected, analyzed, and stored accurately, accurately, and securely.

2.7 Treatment of Quantitative Data

The quantitative data was analyzed using Statistical Package for Social Sciences (SPSS) version 21.0. The statistical methods applied included: (a) mean to determine the levels of good governance manifestation among rural barangay chairmen and constituents' satisfaction, and (b) Pearson Product Moment Correlation Coefficient (Pearson r) to test the significant relationship between these two variables. Results were carefully interpreted to provide insights and actionable recommendations.

3.0 Results and Discussion

3.1 Level of Governance in Rural Barangays

Accountability

Good governance in rural barangays of Calamba City regarding Accountability was Extremely Manifested (4.57, $\sigma=0.00$, 0.74). Based on Table 1, effective governance in rural barangays of Calamba City demonstrates a robust commitment to budget accountability. However, further strengthening adherence to treasury regulations is needed to achieve comprehensive governance excellence. According to Devas and Grant (2003), as cited in Seetharam et al. (2020), factors such as dedicated leadership at the local level, monitoring of their performance by a higher-level authority, articulate civil society and community-based organizations, and the availability of information were critical in ensuring accountability. Additionally, public voice in democracy for citizens and government accountability when it came to the financial and budget aspects of the local barangays were important to note as assessed in the context of accountability of governance in a community (Chattopadhyay, 2015 as cited by Seetharam et al., 2020).

Table 1. Descriptive statistics of the level of governance in rural barangays in terms of accountability

Indicators	Chairmen		Constituents		Composite	
	Mean	Interpretation	Mean	Interpretation	Mean	Interpretation
1. Observe a regular reporting system on the achievements	5.00	EM	4.16	HM	4.58	EM
2. Follows budget rules and regulations in all circumstances	5.00	EM	4.17	HM	4.59	EM
3. Ensures proper budget in an authorized manner	5.00	EM	4.15	HM	4.58	EM
4. Recognizes its responsibility toward the community	5.00	EM	4.12	HM	4.56	EM
5. Follows treasury rules and regulations in all circumstances	5.00	EM	4.04	HM	4.52	EM
General Composite Assessment	5.00	EM	4.13	HM	4.57	EM

Legend: 4.20 -5.00 Extremely Manifested (EM), 3.40 - 4.19 Highly Manifested (HM), 2.60 - 3.39 Manifested (M), 1.80 - 2.59 Slightly Manifested (SM), 1.00 - 1.79 Not Manifested (NM)

Transparency

As shown in Table 2, good governance in rural barangays of Calamba City in Transparency was Extremely Manifested (4.59, $\sigma=0.00$, 0.86). This implies that the extremely high manifestation of transparency in governance across rural barangays in Calamba City underscores a strong implementation of plans and programs, readily available transaction and expenditure details, and comprehensive disclosure of administrative processes. This transparency enhances accountability and fosters trust and informed participation among residents, contributing significantly to effective local governance and community development. Transparency was one of the important principles of governance theory in making decisions and carrying them out in a way that complied with laws and regulations. It was significant in procuring goods and services (Aurangzeb, 2022). According to Savur et al. (2024), transparency ensured accountability in governance and the availability of data that could be used to assess the effectiveness of the authorities and prevent any potential fabrication.

Table 2. Descriptive statistics of the level of governance in rural barangays in terms of transparency

Indicators	Chairmen		Constituents		Composite	
	Mean	Interpretation	Mean	Interpretation	Mean	Interpretation
1. Implements plans and programs transparently	5.00	EM	4.20	HM	4.60	EM
2. Avails readily barangay transactions/expenditures	5.00	EM	4.19	HM	4.60	EM
3. Discloses sufficient information to residents about its performance	5.00	EM	4.13	HM	4.57	EM
4. Shows progress and situations to residents	5.00	EM	4.16	HM	4.58	EM
5. Discloses the entire process of barangay administration	5.00	EM	4.20	HM	4.60	EM
General Composite Assessment	5.00	EM	4.18	HM	4.59	EM

Responsiveness

As shown in Table 3, good governance in rural barangays of Calamba City regarding Responsiveness was Extremely Manifested (4.59, σ - 0.00, 0.86). This implies that the extremely high manifestation of responsiveness in governance across rural barangays in Calamba City signifies a commendable efficiency in promptly addressing citizens' appeals. Responsive public services are characterized by an organization's ability to identify community needs, prioritize those needs, and integrate those needs into a range of service offerings (Widanti, 2022). All stakeholders, notably citizens, had to be served by institutions and public servants in a fair amount of time. Elected officials were considerably responsive to the complaints and issues of the people. Due to the citizens' votes, they were likely to respond more quickly and effectively. The more responsive the government and bureaucracy were, the more easily they got the status of good governance (Aurangzeb, 2022).

Table 3. Descriptive statistics of the level of governance in rural barangays in terms of responsiveness

Indicators	Chairmen		Constituents		Composite	
	Mean	Interpretation	Mean	Interpretation	Mean	Interpretation
1. Responds to public requests quickly	5.00	EM	4.17	HM	4.59	EM
2. Makes a sincere effort to support residents who need help	5.00	EM	4.19	HM	4.60	EM
3. Provides quality solutions for public needs	5.00	EM	4.11	HM	4.56	EM
4. Becomes sensitive to public opinions	5.00	EM	4.18	HM	4.59	EM
5. Treats properly to citizens' appeals within a reasonable period	5.00	EM	4.23	HM	4.62	EM
General Composite Assessment	5.00	EM	4.17	HM	4.59	EM

Fairness

As shown in Table 4, good governance in rural barangays of Calamba City in Fairness was Extremely Manifested (4.61, σ -0.00, 0.95). This implies that the extremely high fairness in governance across rural barangays in Calamba City demonstrates robust adherence to impartial enforcement and citizen rights protection. There is an opportunity for equal access to essential services and addressing gender-sensitive issues with diligence. Fairness in good governance treats stakeholders and/or the people and communities fairly and equally. This also meant serving the people with the quality of making judgments free from discrimination (Scanlon, 2019). The citizens' judgments of relative deprivation, as determined by "social comparison," were the primary source of perceptions of social fairness; the lower the relative deprivation level, the higher the conceptions of social equality.

Table 4. Descriptive statistics of the level of governance in rural barangays in terms of fairness

Indicators	Chairmen		Constituents		Composite	
	Mean	Interpretation	Mean	Interpretation	Mean	Interpretation
1. Practices equal access to primary health, education, sanitation	5.00	EM	4.19	HM	4.60	EM
2. Handles gender-sensitive issues with diligence	5.00	EM	4.19	HM	4.60	EM
3. Observes fair and impartial enforcement of existing rules and regulations	5.00	EM	4.25	HM	4.63	EM
4. Protects the rights of the citizens	5.00	EM	4.25	HM	4.63	EM
5. Ensures fair treatment to all barangay constituents	5.00	EM	4.25	HM	4.63	EM
General Composite Assessment	5.00	EM	4.22	HM	4.61	EM

Legitimacy and Voice

As shown in Table 5, good governance in rural barangays of Calamba City regarding Legitimacy and Voice was Extremely Manifested (4.56, σ -0.00, 1.16). This implies that good governance in rural barangays of Calamba City demonstrates extremely high legitimacy and voice, particularly in using mass media to reach consensus on strategic decisions. There are opportunities for more active constituent participation in the barangay's development process. According to Haikio (2007), as cited in Da Cruz et al. (2019), legitimation was interpreted as a discursive process of acceptance wherein the constituents situated others and themselves inside the governing institutions. Citizens were a party whose voices had to be heard, and their participation was crucial for their community to progress and develop. Furthermore, giving local communities a voice in governance helped establish more open and transparent communication between the two parties.

Table 5. *Descriptive statistics of the level of governance in rural barangays in terms of legitimacy and voice*

Indicators	Chairmen		Constituents		Composite	
	Mean	Interpretation	Mean	Interpretation	Mean	Interpretation
1. Uses mass media for public consensus on major important and strategic decisions	5.00	EM	4.17	HM	4.59	EM
2. Consults with stakeholders through public dialogues at conferences	5.00	EM	4.12	HM	4.56	EM
3. Encourages participation of the constituents in the development process of the barangay	5.00	EM	4.09	HM	4.55	EM
4. Makes positive changes	5.00	EM	4.12	HM	4.56	EM
5. Strengthens the organization both strategically and financially	5.00	EM	4.13	HM	4.57	EM
General Composite Assessment	5.00	EM	4.12	H	4.56	EM

Performance

As shown in Table 6, good governance in rural barangays of Calamba City in Performance (effectiveness and efficiency) was Extremely Manifested (4.58, σ -0.00, 1.09). This implies extremely high effectiveness and efficiency in good governance in Calamba City. Encouraging resident involvement in barangay development is evident, and an opportunity for enhancing mechanisms to address public grievances and strengthen leadership accountability. The idea of efficiency included resource management and environmental protection, while the effectiveness of the policies and decisions of the government in favor of the public and the state were essential to get the desired results (Sternier and Coria, 2013, as cited in Howlett, 2019). Performance, which included efficiency and effectiveness of the government and bureaucracy, was also equally essential because efficient civil service helped the government to execute its policies, plans, and decisions (Aurangzeb, 2022).

Table 6. *Descriptive statistics of the level of governance in rural barangays in terms of performance*

Indicators	Chairmen		Constituents		Composite	
	Mean	Interpretation	Mean	Interpretation	Mean	Interpretation
1. Evaluate and improves performance	5.00	EM	4.18	HM	4.59	EM
2. Encourages the involvement of residents in the development of the barangay	5.00	EM	4.19	HM	4.60	EM
3. Practices mechanisms to listen, address, and act on public grievances and views	5.00	EM	4.14	HM	4.57	EM
4. Aligns with best practices and standards	5.00	EM	4.15	HM	4.58	EM
5. Demonstrates leadership and accountability	5.00	EM	4.14	HM	4.57	EM
General Composite Assessment	5.00	EM	4.16	HM	4.58	EM

Participation

As shown in Table 7, good governance in rural barangays of Calamba City in Participation was Extremely Manifested (4.59, σ -0.00, 0.98). This implies that good governance in rural barangays of Calamba City demonstrates extremely high participation, particularly in ensuring direct access to government systems and promoting active citizen engagement. There is also an opportunity to enhance initiatives to empower citizens in recognizing and advocating for their needs and rights. According to Krawczyk et al. (2017), as cited in Adegbola and Gearhart (2019), strengthening and increasing public participation became a crucial component of democratic growth, particularly when reducing the negative effects and mitigating setbacks arising from poor governance. Citizens' participation in democracy and individual dependency on media created a relationship between media use and political engagement that allowed them to further empower their authority.

Table 7. *Descriptive statistics of the level of governance in rural barangays in terms of participation*

Indicators	Chairmen		Constituents		Composite	
	Mean	Interpretation	Mean	Interpretation	Mean	Interpretation
1. Strengthens citizen participation in the development process of barangay	5.00	EM	4.17	HM	4.59	EM
2. Requires that all groups/constituents have direct access to the systems of the government	5.00	EM	4.19	HM	4.60	EM
3. Gives the citizens the power to recognize and promote their needs and rights	5.00	EM	4.16	HM	4.58	EM
4. Promotes spaces for active participation of the citizens	5.00	EM	4.20	HM	4.60	EM
5. Focuses on improving rights awareness and empowers the citizen to advocate for the respect of their rights	5.00	EM	4.18	HM	4.59	EM
General Composite Assessment	5.00	EM	4.18	HM	4.59	EM

3.2 Difference in the Assessment of Barangay Chairmen and Constituents

As shown in Table 8, there was a significant difference between the assessments of the rural barangay chairmen and constituents/residents on the manifestation level of good governance in the City of Calamba. This implies that the barangay chairmen have a role of public service, not of power, while the constituents are entitled to their own public opinion, either positive or negative. This indicates that perceptions of governance effectiveness vary notably between these two groups, highlighting the opportunity to explore potential adjustments in governance practices further.

Table 8. *Test of difference in the assessment of the rural barangay chairmen and constituents*

Variables	T-test	P value	Remarks	Decision
Accountability	21.7	.000	Significant	Reject Ho
Transparency	17.5	.000	Significant	Reject Ho
Responsiveness	14.0	.002	Significant	Reject Ho
Fairness	15.1	.001	Significant	Reject Ho
Legitimacy and voice	13.9	.002	Significant	Reject Ho
Performance	14.1	.002	Significant	Reject Ho
Participation	15.4	.001	Significant	Reject Ho

The ability to deliver adequate public services to citizens efficiently and effectively was a prerequisite for good government. Like good governance, effective constituent communication starts with the transparent exchange of important information (McMenamin, 2021). However, according to Menguin (2023), the perception of the performance of elected public officials depended on how the residents perceived it. Thus, in some instances, the performance of the barangay chairmen was misunderstood and underestimated by their constituents.

3.3 Level of Constituents' Satisfaction

As shown in Table 9, the constituents were Extremely Satisfied (4.57, σ -0.00, 0.99) with good governance of the rural barangay chairmen. This implies they are particularly pleased with policies and programs directly impacting them. There is an opportunity to improve processes related to approving vouchers for fund disbursement and administering the Katarungang Pambarangay. Constituents' satisfaction with their barangay chairman's work and performance was frequently the result of a confluence of real advancements, proficient communication, responsiveness to community demands, and a dedication to ethical leadership values (Abalos, 2019). Also, the extreme satisfaction was due to the manifestation of good governance's core values and principles.

Table 9. *Level of constituents' satisfaction with the governance of rural barangay chairmen in the City of Calamba*

Indicators	Chairmen		Constituents		Composite	
	Mean	Interpretation	Mean	Interpretation	Mean	Interpretation
1. Prepares the annual executive and supplemental budget of the barangay	5.00	ES	4.11	HS	4.56	ES
2. Approves vouchers relating to the disbursement of barangay funds	5.00	ES	4.02	HS	4.51	ES
3. Promotes the general welfare of the barangay through area assessment/study	5.00	ES	4.16	HS	4.58	ES
4. Administers the operation of the Katarungang Pambarangay	5.00	ES	4.01	HS	4.51	ES
5. Enforces all laws and ordinances applicable within the barangay	5.00	ES	4.14	HS	4.57	ES
6. Maintains public safety and security	5.00	ES	4.23	HS	4.62	ES
7. Implements policies and programs that impact the constituents	5.00	ES	4.27	HS	4.64	ES
8. Solicits and accepts funds for barangay projects	5.00	ES	4.16	HS	4.58	ES
General Composite Assessment	5.00	ES	4.14	HS	4.57	ES

Legend: 4.20 -5.00 Extremely Satisfied (ES), 3.40 – 4.19 Highly Satisfied (HS), 2.60 – 3.39 Satisfied (S), 1.80 – 2.59 Slightly Satisfied (SS), 1.00 – 1.79 Not Satisfied (NS)

3.4 Relationship Between Governance and Satisfaction

There was a significant relationship between the levels of manifestation and constituents' satisfaction with good governance among rural barangay chairmen in the City of Calamba, which included accountability, fairness, legitimacy, performance, and participation. This implies that higher levels of accountability, fairness, legitimacy, performance, and participation are associated with increased satisfaction among constituents. The results still

suggest a positive impact of effective governance practices on community satisfaction. These governance dimensions lead to greater satisfaction and improved governance outcomes in the barangays.

Table 10. *Test of significance in the relationship between governance and satisfaction*

Variables	r value	P value	Remarks	Decision
Accountability	0.22**	0.00	Significant	Reject Ho
Transparency	0.09	0.08	Not Significant	Accept Ho
Responsiveness	0.09	0.06	Not Significant	Accept Ho
Fairness	0.13*	0.01	Significant	Reject Ho
Legitimacy and voice	0.16**	0.00	Significant	Reject Ho
Performance	0.24**	0.00	Significant	Reject Ho
Participation	0.24**	0.00	Significant	Reject Ho

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed)

On the other hand, there was no significant relationship between the levels of manifestation and constituents' satisfaction with good governance among rural barangay chairmen in the City of Calamba, such as transparency and responsiveness. This implies that variations in transparency and responsiveness do not strongly correlate with varying satisfaction levels among constituents. Further exploration into factors influencing satisfaction in these areas may be necessary to enhance governance practices and better meet community expectations in Calamba City's rural barangays.

The manifestation of these good governance principles resulted in a system seen as accountable, fair, legitimate, efficient/effective, and participative, all of which were positively correlated with constituent satisfaction (Chien & Thanh, 2022). The public held all institutions engaged in good governance fully accountable for raising society's standards. Both locally and nationally, democratic governance and administration prioritize accountability and transparency. Transparent governance opens the behavior of public servants and their decision-making process to the public. In some instances, transparency among barangay officials was not positively responded to by the constituents or by the people (Castillo & Gabrielle, 2020).

4.0 Conclusion

Governance in rural barangays of Calamba City shows a strong commitment to budget accountability, with a need to strengthen adherence to treasury regulations for comprehensive governance excellence. Transparency is highly manifested, ensuring detailed transaction and expenditure disclosures and enhancing accountability, trust, and resident participation in community development. Responsiveness is also extremely high, efficiently addressing citizen appeals. Fairness is robust, emphasizing impartial enforcement and citizen rights, with opportunities for improving access to essential services and addressing gender-sensitive issues. Legitimacy and voice are notable, leveraging mass media for strategic decisions while encouraging more active constituent participation in barangay development. High participation ensures direct access to government systems and promotes citizen engagement, potentially empowering residents to advocate for their needs and rights.

Although, the findings indicate that transparency and responsiveness are manifested and present, these principles do not significantly influence constituents' satisfaction with good governance in rural barangays of Calamba City. It is recommended to conduct and study other factors that influence satisfaction, such as the effectiveness of service delivery, inclusivity, or the caliber of essential services for the constituents. Also, the barangay chairmen had a role of public service, not of power, while the constituents were entitled to their own public opinion, either positive or negative. This indicates that perceptions of governance effectiveness vary notably between these two groups, highlighting the need for further exploration and potential adjustments in governance practices to align perceptions and improve overall effectiveness.

In addition, constituents are particularly pleased with policies and programs that directly impact them. However, there is an opportunity to improve the processes related to approving vouchers for fund disbursement and administering the Katarungang Pambarangay. Addressing these areas could further enhance overall satisfaction and the effectiveness of governance in the barangays. Lastly, higher levels of accountability, fairness, legitimacy, performance, and participation are associated with increased satisfaction among constituents. The results still

suggest a positive impact of effective governance practices on community satisfaction. These governance dimensions lead to greater satisfaction and improved governance outcomes in the barangays.

5.0 Contribution of Authors

Exequiel Z. Aguilar III- sole author, editing, writing, supervising

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7.0 Conflict of Interest

The author certifies that there are no financial, personal, or professional conflicts of interest that could have influenced the research or its findings.

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English Teachers Handling Other Subjects: A Phenomenological Study

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Abstract. This phenomenological qualitative research study explored the lived experiences of English teachers in Urdaneta City who were assigned to teach non-English subjects. Using the census sampling method, all four English teachers handling out-of-field assignments participated in semi-structured interviews. The study aimed to examine the challenges encountered, instructional adjustments, strategies developed, and the effects of these assignments on their professional growth. Data were thematically analyzed, revealing significant challenges in content mastery, lesson preparation, and adapting to subject-specific terminologies, often resulting in stress and self-doubt. To address these challenges, teachers employed strategies such as simplifying complex topics, integrating digital tools, collaborating with peers specializing in the assigned subjects, and adopting student-centered techniques. While these strategies maintained classroom engagement and learning continuity, some participants reported overreliance on English-based approaches, which occasionally limited depth and specificity in teaching non-English content. Despite these limitations, the experience fostered professional growth among participants. Teachers reported enhanced resilience, empathy for learners, self-awareness, and a more substantial commitment to reflective practices, contributing to their lifelong learning and improved student relationships. The study concluded that while out-of-field teaching assignments posed difficulties in instructional alignment, they also catalyzed adaptability and personal growth. Recommendations include providing targeted professional development programs, peer mentoring opportunities, and policy reforms to align teacher qualifications with subject assignments. The study also advocates for institutional support systems, such as accessible resources and training programs, to equip teachers for mismatched roles while ensuring quality education. These findings emphasize the importance of addressing the professional challenges of English teachers handling other subjects to enhance their instructional effectiveness and sustain educational outcomes in diverse teaching contexts.

Keywords: English teachers; Instructional practices; Mismatch; Phenomenology; Professional growth.

1.0 Introduction

The assignment of teachers to subjects outside their specialization, known as out-of-field teaching, has become a significant challenge in the Philippine education system, particularly amidst the ongoing teacher shortage. This issue is especially prevalent among English teachers, who are frequently assigned to teach non-language subjects such as Mathematics and MAPEH (Music, Arts, PE, and Health). This practice raises concerns about the quality of instruction and its broader implications on educational outcomes. Research by the Second Congressional

Commission on Education (Chi, 2024) indicates that 62% of high school teachers in the Philippines teach subjects outside their specialization, with 65% lacking adequate training in these fields. This situation often results in lower student achievement, increased dropout rates, and diminished teacher morale.

Previous studies have highlighted how mismatched assignments lead to stress, reduced self-confidence, and decreased instructional effectiveness, particularly when teachers lack the necessary subject matter knowledge (Pillay et al., 2005; Sambe, 2020). Montero et al. (2022) noted that English teachers assigned to teach MAPEH struggled significantly with lesson planning and content delivery, adversely impacting their confidence and their students' learning experiences. Darling-Hammond (2010) further emphasized that mismatches undermine teachers' professional identity and increase turnover rates, disrupting student learning.

The theoretical foundations of this study draw on Shulman's (1987) Theory of Teacher Professional Competence, which underscores the importance of integrating Subject Matter Knowledge (SMK) and Pedagogical Content Knowledge (PCK) in effective teaching practices. Mezirow's Transformative Learning Theory (TLT) complements this by illustrating how teachers adapt to mismatched assignments through reflective practices, professional growth, and adaptive strategies. Roxas (2022) adds that such challenging experiences foster resilience and resourcefulness, qualities that contribute to professional development despite institutional barriers.

This research explores the experiences of English teachers at Badipa National High School, Urdaneta City, who were assigned to teach non-English subjects, focusing on the challenges they faced, the strategies they employed to adapt, and the effects on their professional growth. Specifically, it addresses the following questions: (1) How do English teachers experience and interpret the challenges of teaching non-English subjects? (2) How do mismatched assignments influence their teaching practices? (3) What strategies do English teachers develop to adapt to teaching non-specialized subjects? (4) How do these experiences impact their professional growth and reflective practices?

The significance of this study lies in its potential to inform future policies on teacher assignments and professional development, aiming to address gaps in subject expertise and improve educational quality. By building on previous research, this study enriches the understanding of how out-of-field teaching assignments impact teacher performance, student learning outcomes, and overall educational effectiveness in the Philippine context.

2.0 Methodology

2.1 Research Design

This study employed a phenomenological qualitative research design to explore the lived experiences of English teachers assigned to teach non-English subjects. Phenomenology was chosen because it focuses on understanding how participants perceive and make sense of their experiences (Moustakas, 1994; Giorgi, 2009). The research design aimed to uncover the challenges and strategies English teachers developed in response to mismatched teaching assignments. Data were collected primarily through semi-structured interviews, allowing teachers to share their insights and reflections on the impacts of teaching subjects outside their specialization.

2.2 Research Locale

The study was conducted at Badipa National High School, Urdaneta City, during the school year 2023-2024. It focused specifically on English teachers who were assigned to teach non-English subjects within the school. The locale was selected because teachers experiencing this mismatch were present, providing a relevant context for the research.

2.3 Research Participants

The participants were four (4) English major graduates from Badipa National High School, Urdaneta City, who were assigned to teach non-English subjects. They were selected using census sampling to ensure that all relevant participants, meeting the following inclusion criteria, were included: (1) English major graduates, (2) assigned to teach subjects other than English, and (3) with at least one year of experience teaching non-English subjects. This method ensured a comprehensive view of the phenomenon.

2.4 Research Instrument

The study utilized semi-structured interviews to gather qualitative data from the participants. The interview questions were developed to explore the impact of mismatched teaching assignments on lesson planning, instructional strategies, classroom management, and professional development. The flexibility of semi-structured interviews allowed for in-depth responses, with follow-up questions used to clarify and expand on initial answers. Each interview lasted approximately 15 to 30 minutes, and all were audio-recorded with the participant's consent for transcription and analysis.

2.5 Data Gathering Procedure

Data collection followed a systematic and ethical procedure. First, permission was obtained from the school principal to conduct the study. The participants were then contacted through formal invitations and provided information about the study's purpose and procedures. Interviews were conducted either in person or online, based on the availability and preferences of the teachers. Audio recordings were made with the participants' consent, and these recordings were transcribed for further analysis. To ensure confidentiality, anonymized identifiers were used during transcription, and all data were securely stored in line with ethical research practices (Creswell & Poth, 2018).

2.6 Ethical Considerations

Ethical considerations were prioritized throughout the research to protect participants' rights and confidentiality. Informed consent was obtained from all participants, ensuring they were fully aware of the study's purpose and procedures and their right to withdraw without penalty. Anonymity was maintained by using coded identifiers for participants during transcription, and all data were securely stored to protect participants' privacy. The research adhered to ethical guidelines outlined by Creswell and Poth (2018) and other relevant authorities, ensuring that the study was conducted with integrity and respect for participants' well-being.

3.0 Results and Discussion

3.1 Experiences and Challenges in Teaching Non-English Subjects

The findings from SOP 1 revealed the multifaceted experiences and challenges faced by English teachers assigned to teach non-English subjects. Key themes include difficulty with subject mastery, emotional reactions to role changes, struggles with language shifts, and the impact on teacher identity. Teachers reported time-consuming lesson preparation and a lack of familiarity with subject content, as they were often required to relearn concepts outside their expertise. These findings align with Shulman's (1987) assertion that effective teaching relies on Subject Matter Knowledge (SMK) and Pedagogical Content Knowledge (PCK). A lack of familiarity with non-English subjects posed significant barriers, similar to the struggles highlighted by Montero et al. (2022) and Sambe (2020), where mismatched assignments led to self-doubt and reduced confidence.

Emotional reactions ranged from frustration and self-doubt to eventual acceptance and adaptation. Teachers described feeling unprepared at first but gradually found excitement and fulfillment in new roles, echoing the resilience noted by Hoekstra and Korthagen (2011). Language shifts further compounded these challenges, as the automatic use of English sometimes hindered effective instruction in Filipino or other subjects, expanding on findings from Montero et al. (2022), which primarily focused on English teachers' challenges with MAPEH. Despite these difficulties, teachers reported an expanded professional identity, embracing new subject roles like *Edukasyon sa Pagpapakatao* (ESP) or Information and Communication Technology (ICT), which aligns with Mezirow's Transformative Learning Theory (TLT). These findings suggest that while mismatched assignments created stress, they also provided opportunities for personal growth, versatility, and a broader sense of purpose in teaching practices.

Table 1, shown on the next page, provides a detailed breakdown of the themes and subthemes discussed above. This table presents a comprehensive overview of the responses, highlighting the specific experiences and challenges English teachers face in teaching non-English subjects.

Table 1. Experiences and Challenges in Teaching Non-English Subjects

Themes	Subthemes	Responses
Difficulty with Subject Mastery	Time-Consuming Lesson Preparation	T1: "I had difficulties with content and strategies... it consumed most of my time reading lessons outside my expertise." T2: "Writing a Daily Lesson Log in Filipino is the most challenging aspect of teaching a non-English subject."
	Lack of Familiarity with Subject Content	T4: "The biggest challenge is relearning concepts for ICT... as English skills do not always apply."
Emotional Reactions to Role Changes	Initial Self-Doubt and Frustration	T1: "I was doubtful of my ability to teach non-English subjects at first."
	Gradual Acceptance and Adaptation	T2: "I felt excited because it is a new challenge." T3: "I embraced Filipino teaching... because I love the language, so I accepted the role."
Struggles with Language Shifts	Automatic Use of English Language	T3: "Shifting from English to Filipino was difficult... I sometimes used English by habit."
	Expanding Beyond an English Teacher Identity	T1: "Teaching non-English subjects expanded my view as a versatile teacher."
Impact on Teacher Identity	Embracing New Subject Roles	T2: "I now identify as an ESP teacher... this has deepened my sense of purpose." T3: "I love Filipino... So I learned to embrace the subject in just a year or two." T4: "I think it is my calling to teach ICT."

3.2 Impact of Mismatched Assignments on Instructional Delivery and Teaching Practices

The findings from SOP 2 revealed that mismatched assignments significantly impacted instructional delivery and teaching practices. Teachers demonstrated adaptability by using flexible teaching styles and integrating English communication techniques into non-English subjects like ICT. This mirrors findings from Hoekstra and Korthagen (2011), who observed that teachers relied on informal learning and creativity to bridge knowledge gaps. Despite unfamiliarity with subject content, teachers simplified concepts and occasionally introduced English concepts into lessons. This reflects similar strategies that Archer (1999) highlighted, where limited SMK forced teachers to depend on traditional or simplified approaches.

Table 2. Impact of Mismatched Assignments on Instructional Delivery and Teaching Practices

Themes	Subthemes	Responses
Adaptability in Teaching	Flexible Teaching Styles	T1: "I have become more flexible... incorporating collaborative activities that encourage sharing and teamwork."
	Integration of English Techniques in Non-English Subjects	T4: "I still integrate speeches like persuasive presentations and practical communication strategies, even in ICT classes."
Challenges in Content Delivery	Unfamiliarity with Subject Matter	T1: "When unfamiliar with the content, I simplify concepts and use interactive activities."
	Unintentional Integration of English Concepts	T3: "Sometimes I incorporate subject-verb agreement, even though it is not required for non-English subjects."
Confidence in Teaching	Preparation as a Source of Confidence	T1: "I read lessons beforehand, so I feel confident teaching topics outside my expertise."
	The Teacher as the Best Instructional Tool	T3: "The best instructional material is yourself... if you do not have confidence, no matter how good your materials are, nothing will happen."
Student Response and Engagement	Engagement with Familiar Content	T4: "Students respond positively to lessons that connect with their real-life experiences."
	Impact of Using Native Language in Teaching	T3: "Using Tagalog or Filipino makes students more comfortable... they express themselves better than in strictly English classes."
Lesson Planning and Strategy	Thorough Preparation for New Content	T1: "I make sure to fully understand the lesson before teaching it."
	Use of Consistent Strategies Across Subjects	T3: "Whether teaching in English or Tagalog, I use similar strategies—just translated to the appropriate language."

Confidence in teaching was often built through thorough preparation, with self-assurance emerging as a critical factor in maintaining instructional quality. This aligns with Sambe (2020), who found that preparation helped mitigate feelings of inadequacy. Interestingly, the findings highlight how student engagement was positively influenced when lessons were connected to real-life experiences and delivered in the native language, a nuance not extensively explored in prior studies like Montero et al. (2022). Consistent lesson planning strategies across subjects underscored the importance of preparation, reinforcing the resilience and creativity of teachers in maintaining quality education despite mismatches. Table 2 provides a detailed breakdown of the themes and

subthemes discussed above, shown on the next page. This table comprehensively overviews how mismatched assignments impacted instructional delivery and teaching practices.

3.3 Strategies for Adapting to Non-Specialized Teaching Assignments

Teachers employed various student-centered strategies to address the challenges of teaching outside their specialization. Real-life examples connected academic concepts with students' experiences, aligning with Hoekstra and Korthagen (2011), who emphasized contextualized learning as a key adaptation. Collaborative activities, such as group work and digital tools like Google Forms and Quizizz, fostered peer interaction, teamwork, and understanding, resonating with findings from Roxas (2022) about resilience and creativity.

The study also highlights the creative adaptation of English teaching techniques, such as daily drills for subject-specific terminology and multimedia resources like videos and documentaries, which simplify complex topics. This extends beyond the general strategies discussed by Montero et al. (2022) and provides a more detailed account of how digital tools can support diverse learning styles. Music and improvisational activities encouraged active participation and engagement, demonstrating how innovative teaching practices helped bridge pedagogical gaps. These strategies emphasize the role of adaptability and creativity in overcoming mismatched assignments and fostering effective learning environments despite the challenges.

Table 3 provides a detailed breakdown of the themes and subthemes discussed above, is shown on the next page. This table presents a comprehensive overview of the strategies employed by teachers to adapt to non-specialized teaching assignments.

Table 3. *Strategies for Adapting to Non-Specialized Teaching Assignments*

Themes	Subthemes	Responses
Use of Student-centered Techniques	Interactive, RealLife Examples	T1: "I use interactive activities and real-life examples to engage students."
	Collaborative Learning Activities	T2: "I always use a collaborative approach to encourage teamwork and social interaction." T4: "I had students use their phones in class for Google Forms and Quizizz to boost participation."
	Daily Drills for Terminology Mastery	T4: "I use daily drills to familiarize students with terms, especially in ICT."
Resource and Technology Utilization	Leveraging Technology for Lesson Delivery	T2: "I always prepare videos and documentaries that can help them understand the lesson better." T4: "I incorporate technology to simplify teaching ICT and to help students in other subjects."
	Incorporating Music and Creativity	T4: "I use music and improvisation to make ICT concepts relatable, especially when students need a motivational boost."

3.4 Influence on Professional Growth and Reflective Practices

Teaching non-English subjects profoundly impacted English teachers' professional growth and reflective practices. Participants reported improved adaptability, integrating creative techniques and flexible approaches to meet the diverse needs of students. This aligns with Mezirow's Transformative Learning Theory (TLT), which emphasizes the potential for personal transformation through challenging experiences. Hoekstra and Korthagen (2011) noted that teachers who adapt to unfamiliar teaching roles often undergo informal learning processes, fostering professional growth through resilience and self-directed learning. Teachers also developed greater empathy and stronger connections with students, becoming more sensitive to their needs and fostering a supportive classroom environment. These findings expand on Roxas (2022), which emphasized professional growth, by highlighting the deeper teacher-student connections that arose from these experiences. The increased resilience fostered by teaching outside one's specialization, as described by Sambe (2020), reinforced teachers' adaptability and resourcefulness, contributing to a sense of purpose and increased job satisfaction.

Reflective practice emerged as a central theme, with teachers consistently evaluating their strengths and weaknesses, committing to lifelong learning, and recognizing the importance of holistic development. This resonates with Shulman's (1987) emphasis on the combination of Subject Matter Knowledge (SMK) and Pedagogical Content Knowledge (PCK) in fostering reflective teaching practices. These findings underscore the

potential for reflective practices to transform teaching approaches, reinforcing the importance of teacher self-awareness. Moreover, participants expressed improved preparation and boosted motivation, resulting in greater job satisfaction and a more substantial commitment to student success, echoing Darling-Hammond (2010) on the relationship between teacher satisfaction and student outcomes. Additionally, as Pillay, Goddard, and Wills (2005) discussed, teachers often engage in self-study and professional development to overcome knowledge gaps when assigned subjects outside their expertise, further promoting professional growth and reflective practices.

Table 4 provides a detailed breakdown of the themes and subthemes discussed above, shown on the next page. This table presents a comprehensive overview of the responses, highlighting how teaching non-English subjects influenced the professional development and reflective practices of the English teachers involved in the study.

Table 4. *Influence on Professional Growth and Reflective Practices*

Themes	Subthemes	Responses
Growth in Teaching Adaptability	Improved Flexibility in Teaching Styles	T1: "Teaching non-English subjects made me more adaptable and improved my teaching skills."
	Enhanced Integration of Skills Across Subjects	T1: "By exploring different teaching methods for non-English subjects, I have learned to incorporate creative techniques."
Enhanced Empathy and Student Connection	Increased Sensitivity to Student Needs	T2: "I feel more empathetic to students... helping them express themselves in familiar language."
	Strengthened Student Connection	T2: "These assignments have strengthened my ability to connect with students personally, ... fostering a supportive classroom environment." T3: "I think the teacher and student connection becomes deeper ... I can see that I am helping them more as a teacher."
Continued Reflective Practice	Identifying Teaching Strengths and Weaknesses	T3: "The experience has helped me see the importance of empathy and patience when teaching non-English topics."
	Commitment to Lifelong Learning	T4: "I see the value of staying a learner myself... continuing to study ICT alongside English."
Refined Self-awareness as an Educator	Valuing the Importance of Holistic Learning	T2: "I am teaching the students not just to earn good grades but also to practice moral values that promote their overall development and well-being."
	Advanced Preparation and Readiness	T1: "I must always present myself, prepare, and be ready in the teaching-learning process."
	Boosted Motivation and Fulfilment in Teaching	T1: "These experiences have motivated me because they opened an opportunity to discover myself and succeed in various teaching roles." T2: "The opportunity to teach diverse subjects has invigorated my passion for education." T4: "When I see my students learn and at the same time apply what they have learned, I feel proud."

4.0 Conclusion

This study explored the lived experiences of English teachers handling non-English subjects. The results indicate that teaching mismatched assignments posed significant challenges, including stress, time-management issues, and content mastery gaps, which impacted instructional quality. However, the findings also highlight the resilience and adaptability of teachers, who employed creative strategies such as digital tools, contextualized learning, and collaboration to mitigate these challenges. Aligned with the literature, this study emphasizes the dual nature of mismatched assignments: they can undermine confidence and quality but also foster professional growth and reflective practices. Institutions are encouraged to provide training, mentorship, and access to digital tools to support teachers. Reflective practices and feedback systems should also be strengthened to enhance adaptability and resilience. Policymakers must prioritize aligning teacher qualifications with assignments to minimize mismatches, ensuring quality education while promoting the professional development of educators.

This study contributes to the existing body of knowledge by highlighting English teachers' challenges and coping mechanisms in out-of-field assignments, offering valuable insights into how mismatches impact teacher efficacy and student outcomes. The results can potentially inform educational policies, teacher training programs, and support systems, ultimately improving teaching practices and professional development in the Philippine education system. Future research could explore the long-term effects of out-of-field teaching on teachers' career trajectories and student learning outcomes. Additionally, studies could examine the effectiveness of various

support strategies, such as peer mentoring or targeted professional development, in helping teachers navigate mismatched assignments. Expanding the research to include a broader range of subjects and educational settings would provide a more comprehensive understanding of this phenomenon across diverse contexts.

5.0 Contributions of Authors

Michael B. Garcia: Managed all aspects of the research process, particularly the methodology, securing approvals and consents, and overseeing the entire research procedure—from topic conceptualization and data collection to analysis and ensuring ethical compliance. He executed the manuscript, made revisions, and finalized the submission, demonstrating a strong commitment to producing quality academic work.

Trisha L. Asuncion: Proposed the study, managed the introduction and background sections, and contributed to analyzing the results in SOP 3, including conducting the thematic analysis for SOP 3. She also assisted in data gathering and served as an interviewer.

Jenika S. Advincula: Created the conceptual framework and research paradigm. She contributed to analyzing the results in SOP 4, including the thematic analysis for SOP 4, and assisted with transcribing.

Lloyd M. Fernandez: Contributed to analyzing the results in SOP 3 and supported data gathering as a documenter.

Daniela Alexis M. Gueta: Contributed to the related research studies and helped analyze results in SOP 1, including thematic analysis for SOP 1. She also participated in data gathering as an interviewer and transcriber.

Deborah Ruth G. Javier: Contributed to analyzing the results in SOP 4, including thematic analysis for SOP 4, and supported data gathering as an interviewer.

Jayson C. Julaton: Contributed to the related research literature and analysis in SOP 2, and supported data gathering as an interviewer.

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7.0 Conflict of Interest

The authors declare no conflicts of interest.

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Developing a Framework for Addressing Research Competence and Challenges Among Local College Faculty: Toward a Targeted Training Program

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Abstract. Improving the research competencies of faculty remains a significant challenge for higher education institutions (HEIs) in the Philippines, with low research productivity often linked to limited faculty competencies. This study assessed the faculty's research competencies and challenges at a Local College in Tagoloan, Misamis Oriental, Philippines, to address these gaps and propose solutions. Using an explanatory sequential mixed-method design, the researchers combined quantitative data from a Research Competencies Scale with qualitative insights from open-ended questions. The study evaluated research competencies across six domains: research inquiry, literature review, sampling methods, qualitative and quantitative processes, ethics, and dissemination. Results indicated moderate overall competency, with strengths in theoretical frameworks and ethical standards but significant challenges in formulating qualitative research questions and adhering to scholarly writing standards. Time management, resource limitations, and gaps in foundational skills emerged as significant barriers, compounded by a lack of institutional support and mentorship. The study proposed a structured training program based on the S-P-A-T (Strategy, Program, Activities, Tasks) framework to address these issues. Key recommendations included establishing an Education Research and Development Office with an accompanying Research Ethics Board, allocating 1% of the institutional budget for research initiatives, and implementing interactive workshops to enhance research design, data analysis, and scholarly writing skills. By leveraging existing resources and addressing systemic barriers, the institution can foster a robust research culture and empower faculty to make meaningful academic and community development contributions. This study highlights the importance of institutional support, targeted training, and collaboration in aligning faculty research competencies with higher education goals and national priorities.

Keywords: Explanatory sequential mixed-method design; Higher education; Research competencies; Research enthusiast; Training need.

1.0 Introduction

A primary function of higher education institutions (HEIs) is "to promote, generate, and share knowledge through research" (Kataeva & DeYoung, 2018). Republic Act 7722, which established the Philippine Commission on Higher Education (CHED), defines a university as a source of knowledge. According to Kataeva and DeYoung (2018), universities play an important role in the knowledge society, acting as "producers and transformers of knowledge, in both scientific and cultural forms." Chao (2021) refers to universities as "fountains of knowledge" capable of

significantly contributing to social change through research and development. College and university faculty research skills are important for creating new knowledge, driving innovation, and supporting the country's growth.

In the Philippines, Republic Act No. 8292, also called the Higher Education Modernization Act of 1997, requires State Universities and Colleges (SUCs) to fulfill three key roles: teaching, research, and community service. These roles are important for delivering quality education, conducting meaningful research, and helping local communities (Republic Act No. 8292, 1997). Research also plays a key role by providing insights that guide policies, address social and economic challenges, and align higher education with national priorities. Local Colleges and Universities (LCUs) have similar responsibilities, even though the specific law applies to SUCs. LCUs follow their mandate through local government policies and national standards set by the Commission on Higher Education (CHED). CHED encourages LCUs to focus on research that solves local problems, promotes innovation, and supports policy-making, ensuring they contribute to regional and national development (Republic Act No. 7722, 1994).

Globally, education emphasizes developing faculty skills for research excellence. This trend supports advanced scholarship and important thinking, which benefit academia and society (Borreo, 2023; Charumbira et al., 2021). In the Philippines, improving research skills among faculty is important to meet the dual goals of national progress and community service (Republic Act No. 8292, 1997; Republic Act No. 7722, 1994). State Universities and Colleges (SUCs) actively promote and support research initiatives to address societal challenges. A notable example is the collaborative effort of 26 SUCs during the 5th International Poverty Conference, where they shared research on poverty alleviation and sustainable development to empower marginalized communities (Philippine News Agency, 2023).

However, Local Colleges and Universities (LCUs) face challenges developing faculty research competencies. Studies reveal gaps in training and limited resources, which affect the ability of faculty to produce quality research (Charumbira et al., 2021). Funding shortages, outdated practices, and lack of professional development opportunities further hinder progress (Perez et al., 2022). The COVID-19 pandemic has highlighted digital skill gaps, making it harder for faculty to adapt to online research tools (Zhao & Qian, 2021). Additionally, weak partnerships with industries and communities limit the impact of research (Ocampo et al., 2022), while a lack of motivation in some LCUs reduces overall research activity (Quitoras & Abuso, 2021).

To support the faculty, targeted training programs should address specific needs, such as conducting research, writing scholarly articles, and navigating ethical issues (Zhao et al., 2021). Thus, there is a need to conduct this research to address the challenges and gaps in research competency among faculty members in Local Colleges and Universities (LCUs), such as those at Tagoloan Community College. By assessing the current research competencies of faculty, this study will provide valuable insights to design targeted training programs that enhance research skills, foster innovation, and align with national community service and sustainable development goals. Ultimately, this research aims to strengthen the research culture within LCUs, empowering faculty to make meaningful contributions to societal and economic progress.

2.0 Methodology

2.1 Research Design

This study utilized an explanatory sequential mixed-method research design to assess the research competencies and challenges of faculty at Tagoloan Community College. This approach involved collecting and analyzing quantitative data first, followed by qualitative data to provide deeper insights into the quantitative findings. It offered a clearer understanding of faculty research skills and their challenges in conducting research (Creswell & Plano Clark, 2017).

The quantitative component involved a structured survey using a 5-point Likert scale to measure perceived research skills in six key areas: Research inquiry and literature reviews, Research sampling methods, Qualitative research processes, Quantitative research processes, Research ethics, and Dissemination of research and scholarly writing. The Likert scale quantified participants' perceptions of their research skills, providing measurable data for statistical analysis and enabling comparisons across demographic subgroups (Joshi et al., 2015). This structured

approach ensured clarity and consistency in evaluating competency levels, contributing to a reliable dataset for assessing overall faculty research skills. To complement the survey, the qualitative component included an open-ended question within the survey instrument. This allowed participants to elaborate on their challenges and experiences in conducting research, generating rich contextual data. The qualitative responses were analyzed to identify specific barriers to research competency. This component enabled participants to share detailed insights, enhancing the depth and validity of the findings while addressing nuanced issues faced by faculty in LCUs (Kvale & Brinkmann, 2015).

This study triangulated the data by integrating quantitative and qualitative methods to ensure a strong and comprehensive analysis. The quantitative survey provided a broad overview of research competencies, while the qualitative responses added depth and context to the findings. This explanatory sequential design aligned with best practices in educational research and supported evidence-based recommendations for addressing gaps in faculty research skills (Creswell & Plano, 2017).

2.2 Research Locale

The study was conducted at Tagoloan Community College (TCC), a Local College (LC), located in Tagoloan, Misamis Oriental, Philippines. TCC was established on July 23, 2003, through Municipal Ordinance No. 03, Series of 2003. As a Local College and University (LCU), TCC has financial support from the local government unit (LGU). LCUs aim to serve underserved communities by offering affordable education while utilizing LGU resources, such as libraries, sports complexes, and other public facilities, to enhance the learning experience. The college was founded to provide affordable and accessible higher education to the residents of Tagoloan and nearby municipalities, especially those from low-income families.

Guided by its Vision, TCC aims to become a premier community-based institution by 2030, producing globally competent graduates. Its Mission highlights the college's commitment to equipping students with the knowledge, skills, and values needed to meet global standards. TCC also upholds its Goals to promote academic relevance responsive to societal demands; provide quality educational programs aligned with local and global standards; assist learners in achieving competencies through quality education and adequate learning resources; and instill values to produce responsible citizens who contribute to economic development through entrepreneurial activities.

Over the years, TCC has grown significantly while staying true to its mission. In 2017, the implementation of Republic Act 10687 (UniFAST) enabled the college to provide free tuition, further expanding access to education. In December 2024, TCC reached a milestone with accreditation from the Association of Local Colleges and Universities-Commission on Accreditation (ALCU-COA). The college was recognized for its dedication to academic excellence. Programs like Bachelor of Science in Business Administration (Major in Financial Management), Bachelor in Elementary Education, and Bachelor of Arts in Sociology achieved Level 1 accreditation. In contrast, several others received Candidate Status, signifying compliance with rigorous quality standards. This success reflects the collaborative efforts of TCC's administration, faculty, and students under the guidance of Mayor Atty. Nadya B. Emano-Elipe highlighted the transformative power of education in improving lives and communities.

TCC remains steadfast in its vision, mission, and goals as a beacon of progress and hope. It continues to provide accessible, high-quality education, shaping responsible, globally competent graduates who contribute to economic and social development in Tagoloan and beyond.

2.3 Research Participants

In this study, the faculty members passionate about research are labelled research enthusiasts. The researchers believed that they played an important role in improving the school's research culture. These individuals actively engage in research, mentor colleagues, and demonstrate a strong commitment to scholarly work. A take-all sampling method was utilized to include all faculty members at Tagoloan Community College who identified themselves as research enthusiasts. Among the faculty members across 11 colleges, 119 faculty viewed themselves as research enthusiasts and participated in the study. These faculty members were defined as faculty who actively

engaged in research activities, mentored others in research practices, or demonstrated a strong commitment to advancing research within the institution, thus the term Research Enthusiast.

The focus on research enthusiasts ensured that the study captured insights from faculty who were deeply involved in research processes and likely to have substantial experience and perspectives on research competencies. Their participation provided valuable data on their perceived competencies, the challenges they encountered, and the strategies they employed to navigate research-related tasks. This approach enabled a thorough understanding of the strengths, gaps, and needs of research-focused faculty, contributing to evidence-based recommendations for professional development and enhancing the research culture at Tagoloan Community College.

2.4 Research Instrument

The research instrument for this study comprises two integrated components: a quantitative questionnaire and an embedded qualitative question. For the quantitative data collection, an adapted version of the Research Competencies Scale (RCS), developed by Jacqueline M. Swank and Glenn W. Lambie from the School of Human Development and Organizational Studies in Education at the University of Florida, was utilized (Swank & Lambie, 2016). An email was sent to the authors asking permission to utilize the RCS questionnaire for this study which the authors authorized the researcher to use for the study. The RCS consists of 54 items rated on a 5-point Likert scale ranging from 1 (Not Competent) to 5 (Very Competent). The scale was designed to assess various dimensions of research competency among participants. Swank and Lambie (2016) calculated the internal consistency of the RCS using Cronbach's alpha, yielding an impressive overall value of 0.979, indicating excellent reliability. Additionally, internal consistency was evaluated for each factor within the RCS: Factor 1 (Qualitative Research Processes: 0.987), Factor 2 (Quantitative Research Processes: 0.964), Factor 3 (Research Ethics: 0.949), Factor 4 (Dissemination of Research/Scholarly Writing: 0.940), Factor 5 (Research Inquiry/Literature Review: 0.917), and Factor 6 (Research Sampling Methods: 0.957). All factors exceeded the acceptable standard of 0.70 for internal consistency (Lunag et al., 2023; Creswell & Plano, 2017).

An open-ended question was embedded within the quantitative questionnaire to capture qualitative insights, allowing participants to elaborate on the challenges they faced in conducting research. This question prompted participants to share detailed narratives about any barriers, enriching the quantitative data with personal experiences and insights. This integrated approach ensured that both quantitative and qualitative data were collected cohesively, promoting a more comprehensive analysis of research competencies and challenges. Combining the RCS and the embedded qualitative question provided a deep understanding of the educational landscape at Tagoloan Community College, enhancing the study's overall findings and implications.

2.5 Data Gathering Procedure

The data-gathering procedure for this study began with a formal request for approval to conduct research at Tagoloan Community College. The researchers drafted a letter of intent, signed by the Vice President for Academic Affairs (VPAA), seeking permission to administer the study. Once approval was granted and with the permission of the Dean of the College of Education, students were asked to assist in collecting data from the respondents. The researchers provided the questionnaire, which included both quantitative and qualitative components, to the students, who assisted in distributing and collecting the data directly from the participants. The purposes of the study were indicated in the survey questionnaire. This collaborative approach ensured a more efficient data-gathering process while offering the students valuable practical exposure to research activities.

Each questionnaire incorporated the Research Competencies Scale (RCS) to assess research skills across six areas, along with an embedded open-ended question that allowed participants to describe specific challenges they encountered in conducting research. This design eliminated the need for separate interviews, as participants provided rating-scale responses and written feedback within the same instrument, ensuring a streamlined data collection process.

To maintain confidentiality and encourage honest responses, all participants were informed that their responses were anonymous and would be used exclusively for research purposes. Questionnaires were distributed in digital format, such as Google Forms, with a timeline of one to two weeks provided for completion. After collection, the researchers organized and prepared the data for analysis, using statistical methods for quantitative responses and

thematic coding for qualitative responses, ensuring a comprehensive understanding of the participants' research competencies and challenges.

The data analysis in this study employed a mixed-method approach to provide insights into the research competencies and challenges faced by faculty at Tagoloan Community College. Descriptive statistics were calculated for the quantitative data derived from the Research Competencies Scale (RCS) to determine the perceived competency levels in six key areas: research inquiry, literature review, sampling methods, qualitative research processes, quantitative research processes, and research ethics. Measures of central tendency, such as mean and median scores, illustrated the overall competency levels among faculty, while standard deviations indicated the variability in responses. This statistical analysis highlighted areas where faculty demonstrated competence and those requiring further skill enhancement.

For the qualitative data, thematic analysis was applied to the open-ended responses embedded within the questionnaire. This analysis involved coding responses using NVIVO software to identify recurring themes related to specific challenges faculty faced in conducting research, providing context and depth to the quantitative findings. Common themes were examined, offering valuable insights into the barriers hindering effective research practices. The themes were organized to align with the quantitative results, enhancing the interpretive depth of the study.

By integrating quantitative and qualitative data through triangulation, the analysis validated findings across both methods, contributing to a richer understanding of the research competencies and challenges among faculty at Tagoloan Community College. These insights guided the development of a targeted training program that directly addressed the identified competencies and challenges, ultimately supporting the institution's goals of promoting academic growth and cultivating a strong research culture.

2.6 Ethical Considerations

This study followed an ethical framework approved by the college administration and adhered to general ethical principles in educational research. As the institution does not have an established Institutional Ethics Committee, the researchers sought permission to conduct the study from the Vice President for Academic Affairs (VPAA), who provided the necessary oversight and approval. This initiative was spearheaded by the researchers from the College of Education as part of their commitment to fostering ethical research practices within the institution.

All participants gave informed consent. They clearly explained the study's purpose, procedures, and voluntary nature, including their right to withdraw at any time without repercussions. Participants were assured that all data collected would be used solely for this study and maintained under strict confidentiality. Responses were presented in aggregate form to protect anonymity, and all identifiers were removed from the dataset before analysis.

The researchers implemented secure data storage practices to ensure the integrity and confidentiality of the information collected. Digital files were password-protected. Although the study did not reference a formal protocol number due to the absence of an Institutional Ethics Committee, the researchers upheld ethical standards by adhering to best practices in obtaining permissions, securing informed consent, and maintaining transparency in their processes. By following these measures, the study safeguarded participants' rights and contributed to strengthening ethical research protocols at Tagoloan Community College.

3.0 Results and Discussion

3.1 Profile of the Research Enthusiasm, Priority, Participation, and Engagement in the Workplace at Tagoloan Community College

Enthusiasm

Table 1 revealed that of the 119 faculty participants who are research enthusiasts at Tagoloan Community College, 50 (42%) are currently studying research, indicating a strong enthusiasm for learning and skill development about research. In contrast, another 45 (38%) plan to pursue future research, reflecting their aspirations to enhance their knowledge. However, 14 (12%) are not currently researching academic expeditions, although they have the

charisma. Thus, 10 (8%) were identified as directly active and involved in conducting research projects. This data revealed further challenges in translating enthusiasm into action, with many faculty members appearing to be in the early stages of their research journey. Likewise, facing barriers such as time constraints, lack of confidence, or insufficient resources made their academic journey the walkway within the four corners of the classroom. However, those actively engaged in research had developed a culture in which they may become a potential resource for the institution, as they could serve as mentors, coaches, and main collaborators in engaging research within the teaching-learning environment and even to the extent of the outside project and development on research.

Table 1. *Distribution of the Enthusiasm to Research of the Participants*

Research Status	Frequency	Percentage
Studying research	50	42%
I will be studying research	45	38%
Not conducting research	14	12%
Conducting research	10	8%
Total	119	100%

To address these challenges, the institution can implement strategies to bridge the gap between enthusiasm and active research involvement. Offering targeted training and workshops can help faculty members enhance their skills and confidence, while mentorship programs could allow experienced researchers to guide those neophytes. Institutional support, such as access to resources, research funding, and reduced workloads, could translate practical barriers into research and development engagement. Additionally, recognizing and rewarding research achievements may be a powerful tool and motivator, inspiring more faculty to participate in scholarly research and development activities. By taking these steps, Tagoloan Community College can strengthen its research culture. Faculty support programs may become the gate guard in transitioning merely studying research into a proactive contribution to the body of knowledge. Thus, this leads the teaching-learning environment to be scholastic and productive.

Priority

Table 2 revealed the research priority of the faculty at Tagoloan Community College, who identified themselves as research enthusiasts. The data revealed that 17 (14%) of the participants rated research very high as they considered research a priority. They demonstrated a strong alignment with their enthusiasm and commitment to scholarly work. However, 43 (36%) of the research participants rated research as a medium priority, indicating that competing professional responsibilities or limited institutional support may hinder their ability to prioritize research. Likewise, 2 (2%) of the research participants identified research as a Low priority, likely due to barriers such as lack of confidence, time constraints, or inadequate incentives to engage in research activities.

Table 2. *Distribution of the Priority to Research of the Participants*

Level	Frequency	Percentage
High	57	48%
Medium	43	36%
Very High	17	14%
Low	2	2%
Total	119	100%

These findings mirror broader challenges in the Philippine higher education system. Ducas et al. (2023) observed that many higher education institutions (HEIs) in the Philippines struggle with a weak research culture caused by insufficient infrastructure, limited funding, and inadequate administrative support. This systemic context may explain why only a minority of faculty rate research as a Very High priority. Similarly, Chao and Symaco (2021) highlighted that despite efforts to internationalize and improve quality, many Philippine HEIs face challenges aligning faculty incentives with research priorities, particularly those with heavy teaching loads.

The diverse research priorities among participants indicate varying levels of engagement. Faculty who rate research as High or Very High are likely active researchers or those profoundly committed to developing their skills and contributions. These individuals could play an important role in developing a culture of research by serving as mentors or leaders. Faculty with Medium priorities may require additional support, such as mentorship, professional development programs, and institutional backing, to elevate research as a greater career

focus. Those with Low priorities present an opportunity for engagement by addressing barriers through targeted initiatives such as providing research funding, adjusting workloads, and offering recognition for research achievements.

Participation

Table 3 revealed the encouragement the faculty at Tagoloan Community College received for participating in research activities. Among the 119 self-identified research enthusiasts surveyed, 73 (61%) reported feeling supported by their workplace in engaging in research, while 46 (39%) indicated a lack of encouragement. This discrepancy reveals inconsistencies in the institutional support provided to faculty, which may hinder some from transitioning their interest in research into active participation. These findings align with earlier observations that, despite enthusiasm, many faculty members do not prioritize or actively pursue research. Workplace encouragement is important in building a strong research culture, as it helps address barriers and motivates broader engagement.

Table 3. *Distribution of the Participation to Research in the Workplace of the Participants*

Were you encouraged to join/make research studies in the workplace?	Frequency	Percentage
Yes	73	61%
No	46	39%
Total	119	100%

This challenge is not unique to Tagoloan Community College but reflects broader issues within Philippine higher education institutions (HEIs). Ducas et al. (2023) noted that insufficient administrative support and a lack of incentives often discourage faculty from pursuing research activities. Similarly, Chao and Symaco (2021) observed that while Philippine HEIs strive to improve research output and quality, there is still a significant need for structured support systems to institutionalize a research-friendly environment. The 39% of participants who felt unsupported may encounter systemic issues such as inadequate resources, unclear research expectations, or competing demands, which limit their capacity to engage in research.

To bridge this gap, institutions must prioritize strategies that foster a more supportive research culture. These could include establishing mentorship programs to guide emerging researchers, allocating resources and funding for research projects, recognizing and rewarding research achievements, and reducing faculty workloads unrelated to research. Encouraging faculty through these measures boosts motivation and strengthens institutional research output. The experiences of the 61% who feel encouraged demonstrate the positive impact of workplace support, suggesting that expanding such efforts could significantly enhance faculty engagement and productivity in research activities.

Engagement

Table 4 revealed that research enthusiasts at Tagoloan Community College experience varied satisfaction levels with their workplace research engagement. Nearly half of the participants (49%) expressed dissatisfaction, while 31% reported being Satisfied (27%) or Very Satisfied (4%). An additional 19% were Somewhat Satisfied, indicating mixed experiences and underscoring a substantial gap in workplace satisfaction related to research. This high level of dissatisfaction highlights systemic challenges, including insufficient support, limited resources, and a lack of opportunities for meaningful research engagement despite these faculty members identifying as research enthusiasts.

Table 4. *Distribution of the Engagement to Research in the Workplace of the Participants*

How satisfied are you with your research engagement in the workplace?	Frequency	Percentage
Not satisfied	56	49%
Satisfied	31	27%
Somewhat satisfied	22	19%
Very satisfied	5	4%
Total	114	100%

These findings align with broader trends in Philippine higher education institutions (HEIs). Ducas et al. (2023) emphasized that dissatisfaction with research engagement often arises from inadequate administrative support, limited funding, and unclear institutional priorities. Similarly, Chao and Symaco (2021) noted that although

Philippine HEIs aim to prioritize research, the absence of strong support systems and recognition programs can demotivate faculty. This lack of institutional backing mirrors the experiences of the 49% of participants who reported dissatisfaction in this study.

For the minority who expressed satisfaction, the results suggest that institutional efforts, such as workplace encouragement for research engagement (as seen in 61% of respondents), have positively influenced their experience. However, addressing the needs of the dissatisfied majority requires strategic interventions. Recommendations include increasing access to research funding, reducing non-research-related workloads, and offering capacity-building programs to improve research skills. Recognizing and rewarding research accomplishments, establishing mentorship programs, and fostering collaborative opportunities with experienced researchers could further boost faculty confidence and satisfaction.

Additionally, self-efficacy plays an important role in faculty engagement and productivity. Quiño and Corpuz (2021) highlight that self-efficacy positively influences teaching practices and professional growth. Their findings indicate that professional development programs focusing on self-efficacy can empower educators to overcome challenges and increase their effectiveness. Incorporating self-efficacy enhancement strategies—such as targeted training on collaborative research and mentorship—could further mitigate dissatisfaction at Tagoloan Community College. By addressing these systemic issues and reinforcing effective support mechanisms, the institution can foster a more research-driven culture, enhance faculty productivity, and elevate its academic reputation (Quiño & Corpuz, 2021).

3.2 Research Competency

Research Inquiry

Table 5 revealed the participants' competency levels in performing research, particularly in research inquiry and literature reviews. The overall mean competency score is 3.56 (SD = 0.097), interpreted as Competent. This indicates that participants have adequate skills in conducting research inquiries and reviewing literature, aligning with expectations for professionals engaged in academic research.

Table 5. *Distribution on the Level of Competency in Performing the Research Behavior in Terms of Research Inquiry / Literature Reviews*

Indicators	Mean	SD	Interpretation
1. Identifying relevant implications for professional practice from an article.	3.58	0.10	Competent
2. Recognizing gaps within the literature.	3.55	0.10	Competent
3. Recognizing limitations of empirical research studies.	3.57	0.10	Competent
4. Developing a theoretical framework and/or conceptual model to guide an empirical investigation.	3.61	0.09	Competent
5. Identifying theories/models within the literature to support the research topic.	3.54	0.10	Competent
6. Generating areas for research inquiry that are meaningful to the professional literature.	3.53	0.10	Competent
7. Locating relevant literature to support the development of a sound research study.	3.61	0.10	Competent
8. Constructing a sound rationale for a study supported by the literature.	3.49	0.10	Competent
Overall Assessment	3.56	0.09	Competent

Legend: 1.00 – 1.80 – Not Competent, 1.81 – 2.60 – Limitedly Competency, 2.61 – 3.40 – Moderately Competent, 3.41 – 4.20 – Competent, 4.21 – 5.00 – Very Competent

The indicator with the highest mean is shared by two items: *developing a theoretical framework and/or conceptual model to guide an empirical investigation* (SD = 0.099) and *locating relevant literature to support the development of a sound research study* (SD = 0.104), both scoring 3.61 and interpreted as Competent. This suggests that the participants are exceptionally skilled in building foundational structures and frameworks important for rigorous research. These competencies are important, as they reflect the participants' ability to construct solid theoretical and empirical bases for their research endeavors. On the other hand, the indicator with the lowest mean *constructs a sound rationale for a study supported by the literature*, with a mean of 3.49 (SD = 0.107) but still interpreted as competent. While this skill is considered adequate, the slightly lower score indicates challenges in synthesizing and articulating the literature into clear arguments, an important step in justifying the significance of a research study.

These results are consistent with the findings in Tables 1 to 4. Table 1 shows that only 8% of participants are actively conducting research, with 42% studying and 38% planning to study research. This reflects a developing research culture where skills are being built progressively, which aligns with the overall Competent interpretation in Table 5. Furthermore, Table 2 indicates that while 62% of participants prioritize research as High or Very High, a significant portion (36%) rate it as Medium, suggesting room for improvement in developing research

engagement. Table 3 highlights that 61% feel encouraged to participate in research, but the remaining 39% may lack institutional support or motivation, potentially impacting their ability to master higher-order research competencies. Table 4 adds another layer, revealing that 49% of participants are dissatisfied with their research engagement, which might explain the moderate scores in some areas of Table 5.

In addition, studies in the Philippine context reinforce these findings. Lasco et al. (2021) observed that while Filipino educators show interest in research, institutional support, training, and mentorship significantly impact their competency levels. Similarly, Reyes and Mendoza (2023) highlighted that Philippine universities often struggle with integrating research culture, with educators citing limited time and resources as barriers to advancing their research skills. Moreover, a study by Joyce and Cartwright (2020) emphasizes the importance of professional development programs in boosting research competencies among educators, noting that targeted training in areas like literature reviews and theoretical framework construction can significantly enhance their confidence and productivity. These studies highlight the need for systemic interventions, such as mentorship programs and reduced teaching loads, to enable educators to excel in research.

The competency level of participants in performing research behaviors is promising, with all indicators falling within the Competent range. However, slight variations suggest that specific areas, such as constructing sound rationales for studies, require targeted support. Addressing the gaps identified in Tables 1 to 4, such as encouraging research engagement and providing adequate institutional support, can further enhance these competencies. Authentic research studies confirm that developing a strong research culture is a shared responsibility of institutions and educators, necessitating collaborative efforts to ensure sustained growth and excellence in the Philippine academic landscape.

Research Sampling Methods

Table 6 revealed the participants' level of competency in performing research related to sampling methods, including both probability and non-probability techniques. The overall mean score is 3.52 (SD = 0.102), interpreted as Competent, indicating that the participants possess adequate skills in implementing and identifying various sampling methods important for conducting intense research.

Table 6. Distribution on the Level of Competency in Performing the Behavior in Terms of Research Sampling Methods

Indicators	Mean	SD	Interpretation
1. Implementing several probability sampling procedures.	3.54	0.10	Competent
2. Identifying several probability sampling procedures.	3.56	0.10	Competent
3. Implementing several non-probability sampling procedures.	3.48	0.11	Competent
4. Identifying several non-probability sampling procedures.	3.50	0.10	Competent
Overall Assessment	3.52	0.10	Competent

The highest mean score, 3.56 (SD = 0.103), is for the *indicator identifying several probability sampling procedures*, which is interpreted as Competent. This suggests that the participants are exceptionally skilled in recognizing different probability sampling techniques, an important step in ensuring the generalizability and reliability of research findings. This skill is fundamental, as proper sampling is a cornerstone of credible and valid research. Conversely, the lowest mean score, 3.48 (SD = 0.110), is associated with *implementing several non-probability sampling procedures*, though still interpreted as Competent. This result indicates that while participants can adequately perform this task, they may experience more challenges than probability sampling methods. This finding reflects a potential need for more focused training or resources in applying non-probability sampling techniques, often used in qualitative and exploratory research.

The results align with patterns observed in Tables 1 to 3. Table 1 shows that most participants are either studying research (42%) or planning to study research (38%), highlighting a developing proficiency in core research methodologies like sampling. Table 2 reveals that 62% of participants prioritize research as High or Very High, supporting their continued growth in competency levels. However, Table 3 indicates that 39% of participants feel a lack of encouragement to engage in research, which could hinder further skill development in areas such as non-probability sampling. According to Borreo (2023), Filipino educators often demonstrate greater confidence in structured, quantitative research methods, such as probability sampling, than qualitative approaches requiring non-probability sampling. Similarly, Lunag et al. (2023) found that educators benefit significantly from professional development programs that focus on practical applications of both sampling types, particularly non-

probability methods often used in action research. Furthermore, Raifman et al. (2022) noted that while many educators are competent in identifying sampling techniques, they sometimes struggle with practical implementation, particularly when faced with limited resources or time constraints. This aligns with the slightly lower scores observed in Table 6 for implementing non-probability sampling procedures.

The participants' competency in research sampling methods is encouraging, with all indicators interpreted as Competent. The slightly higher proficiency in probability sampling highlights their strength in quantitative research methodologies, while the relatively lower scores in non-probability sampling suggest opportunities for targeted professional development. The results reflect the ongoing efforts to build a research culture, as seen in the broader context of Tables 1 to 3, and are consistent with findings from recent Philippine studies. Continued support, such as mentorship and training programs, will further enhance these competencies.

Qualitative Research Processes

Table 7 analyzed the participants' competencies in performing qualitative research processes. The overall mean is 3.08 (SD = 0.076), interpreted as Moderately Competent. This indicates that while the participants have foundational knowledge and skills in qualitative research, significant gaps require attention for mastery.

Table 7. Distribution on the Level of Competency in Performing the Behavior in Terms of Qualitative Research Processes

Indicators	Mean	SD	Interpretation
1. Grounding qualitative research questions/hypotheses/purpose statement in a theoretical framework and/or conceptual model.	3.46	0.10	Competent
2. Conducting a rigorous qualitative investigation in a sound fashion (e.g., credibility, dependability, rigor, and trustworthiness).	3.33	0.10	Moderately Competent
3. Identifying appropriate qualitative data analysis procedures per identified research questions and/or hypotheses.	3.44	0.10	Competent
4. Identifying the appropriate research design to answer qualitative research questions and/or hypotheses.	3.47	0.09	Competent
5. Interpreting qualitative results.	3.40	0.10	Moderately Competent
6. Employing sound research methods to address potential threats to trustworthiness and rigor in qualitative investigations.	3.43	0.09	Competent
7. Implementing qualitative data collection procedures to maximize trustworthiness and rigor.	3.29	0.10	Moderately Competent
8. Identifying appropriate data collection procedures for qualitative research investigations.	3.45	0.10	Competent
9. Understanding paradigmatic assumptions and research goals for different qualitative research approaches.	3.43	0.10	Competent
10. Identifying potential threats to trustworthiness and rigor in qualitative investigations.	3.48	0.10	Competent
11. Develop sound qualitative research questions/hypotheses/purpose statements grounded in the professional literature.	1.95	0.07	Limitedly Competency
12. Constructing a straightforward, concise qualitative research question.	1.98	0.07	Limitedly Competency
13. Employing appropriate qualitative data analysis procedures per identified research questions and/or hypotheses.	1.98	0.07	Limitedly Competency
Overall Assessment	3.08	0.07	Moderately Competent

The indicator with the highest mean *identifies potential threats to trustworthiness and rigor in qualitative investigations*, with a mean of 3.48 (SD = 0.103), interpreted as Competent. This suggests that participants are reasonably able to recognize issues that could undermine the credibility and reliability of qualitative research, an important skill in ensuring the validity of findings. On the other hand, the indicators with the lowest means are *developing sound qualitative research questions/hypotheses /purpose statements grounded in professional literature* (Mean = 1.95, SD = 0.073) and *constructing a straightforward, concise qualitative research question* (Mean = 1.98, SD = 0.073), both interpreted as Limitedly Competent. This reflects a significant challenge in formulating foundational aspects of qualitative research, such as research questions and hypotheses. These areas are important, as they guide the entire research process and influence the depth and quality of subsequent analysis.

The findings align with trends seen in Tables 1 to 4. Table 1 shows that only 8% of participants are actively conducting research, and 12% are not engaged in research, highlighting limited practical exposure, which may contribute to low competency in qualitative processes. Table 2 indicates that while many prioritize research as High or Very High (62%), variability exists in commitment levels, potentially affecting their focus on qualitative methods. Additionally, Table 3 showed that 39% lack encouragement to participate in research, further hindering opportunities for skill development. Table 4 reflects dissatisfaction with research engagement, with 49% of

participants Unsatisfied, suggesting systemic barriers to research participation, such as lack of mentorship or training in complex methodologies like qualitative research.

Reyes and Mendoza (2023) found that Filipino educators often struggle with qualitative research due to its interpretive nature, which demands deeper analytical and theoretical skills than quantitative methods. This aligns with the low scores in developing qualitative research questions and hypotheses. Similarly, Joyce and Cartwright (2020) noted that educators typically lack formal training in qualitative methodologies, emphasizing the need for workshops and mentorship programs to bridge this gap. Moreover, Joyce and Cartwright (2020) highlighted the importance of grounding qualitative research in strong theoretical frameworks, a skill with which participants in this study demonstrated moderate competency. The findings also align with Table 5, where participants showed competency in identifying theoretical frameworks but faced challenges in constructing rationales, which parallels the difficulties observed in qualitative research question formulation.

The participants' overall competency in qualitative research processes is moderate, with notable strengths in identifying threats to trustworthiness and rigor but significant weaknesses in formulating research questions and hypotheses. This highlights the need for targeted professional development to enhance these foundational skills. The broader context provided by Tables 1 to 4 highlights systemic challenges, such as lack of engagement, satisfaction, and encouragement, which likely contribute to the observed gaps in competency. Addressing these issues through institutional support, mentorship, and focused training programs is important to developing a culture of qualitative research excellence.

Quantitative Research Process

Table 8 revealed the participants' competency levels in performing quantitative research processes, with an overall mean score of 3.25 (SD = 0.081), interpreted as Moderately Competent. This suggests that while participants demonstrate foundational knowledge and skills in quantitative research, there is room for growth in mastering these methodologies to achieve higher levels of competence.

Table 8. *Distribution on the Level of Competency in Performing the Behavior in Terms of Quantitative Research Process*

Indicators	Mean	SD	Interpretation
1. Operationally defining variables of interest in a research study.	3.29	0.08	Moderately Competent
2. Identifying potential threats to internal and external validity in quantitative investigations.	3.25	0.09	Moderately Competent
3. Differentiating in quantitative results between statistical and practical significance.	3.30	0.08	Moderately Competent
4. Constructing clear, concise quantitative research questions and/or hypotheses.	3.11	0.09	Moderately Competent
5. Implementing quantitative data collection procedures to strengthen internal and external validity.	3.21	0.08	Moderately Competent
6. Identifying appropriate data collection procedures for quantitative research investigations.	3.17	0.09	Moderately Competent
7. Grounding the quantitative research questions/hypotheses/purpose statement in a theoretical framework and/or conceptual model.	3.32	0.08	Moderately Competent
8. Interpreting the psychometric properties of an instrument to identify strengths and limitations.	3.26	0.08	Moderately Competent
9. Understanding epistemological assumptions underlying quantitative research methods.	3.31	0.08	Moderately Competent
10. Selecting sound data collection instruments per identified research questions &/or hypotheses.	3.16	0.09	Moderately Competent
11. Interpreting quantitative results.	3.27	0.08	Moderately Competent
12. Develop sound quantitative research questions/hypotheses/purpose statements grounded in the professional literature.	3.30	0.08	Moderately Competent
Overall Assessment	3.25	0.08	Moderately Competent

The indicator with the highest mean is *grounding the quantitative research questions/hypotheses / purpose statement in a theoretical framework and/or conceptual model*, with a mean of 3.32 (SD = 0.081), interpreted as Moderately Competent. This result indicates that participants can connect their research objectives to theoretical or conceptual foundations, an important skill for ensuring their research's validity and scholarly grounding. Conversely, the indicator with the lowest mean is *constructing clear, concise quantitative research questions and/or hypotheses*, scoring 3.11 (SD = 0.94), also interpreted as Moderately Competent. This finding suggests that participants find it more challenging to articulate precise research questions and hypotheses, which are important for guiding the research design and analysis process.

The findings are consistent with the trends observed in Tables 1 to 4. Table 1 showed that only 8% of participants actively conduct research, reflecting limited practice opportunities, which may contribute to the moderate competence levels seen in Table 8. Table 2 reveals that while 62% of participants prioritize research as High or Very High, the remaining 38% rate it as Medium or lower, indicating varied engagement with research, which could affect skill development. Table 3 highlights the importance of institutional encouragement, as 39% of participants feel unsupported in their research efforts. Additionally, Table 4 indicates dissatisfaction with research engagement (49% Not satisfied), pointing to systemic barriers such as lack of resources, mentorship, or training that could hinder skill acquisition in quantitative research. According to Ducas et al. (2023), educators in the Philippines often exhibit basic proficiency in quantitative research but struggle with advanced aspects such as crafting research questions and interpreting complex statistical results. Similarly, Lunag et al. (2023) emphasized the need for targeted training programs focusing on the practical application of quantitative methods, particularly in formulating hypotheses and aligning research designs with theoretical frameworks. Villanueva and Garcia (2021) noted that while educators understand the theoretical underpinnings of quantitative research, they often lack the hands-on experience necessary to master data collection and analysis procedures. This gap aligns with the moderate competence levels observed in implementing data collection procedures and selecting appropriate instruments in Table 8.

The participants demonstrate moderate competency in quantitative research processes, with strengths in grounding research questions in theoretical frameworks but challenges constructing concise research questions and hypotheses. These findings suggest the need for focused capacity-building initiatives, including workshops and mentoring, to enhance their proficiency in these areas. The broader context provided by Tables 1 to 4 highlights systemic challenges such as limited engagement, lack of encouragement, and dissatisfaction with research opportunities, which likely contribute to the observed competency levels. Addressing these barriers through institutional support and professional development can help foster a more substantial research culture and improve quantitative research competencies.

Research Ethics

Table 9 revealed the participants' competencies in applying research ethics. The overall mean score is 3.38 (SD = 0.073), interpreted as Moderately Competent. This suggests that participants possess foundational knowledge of research ethics but may face challenges in consistently applying ethical standards across contexts, particularly in collaborative research settings and cultural competence.

Table 9. *Distribution on the Level of Competency in Performing the Behavior in Terms of Research Ethics*

Indicators	Mean	SD	Interpretation
1. Implementing ethical standards and practices in research.	3.39	0.07	Moderately Competent
2. Implementing ethical standards and practices when working on a collaborative research team (e.g., dual relationships, research mentorship, and authorship).	3.36	0.08	Moderately Competent
3. Knowing ethical standards and practices in research (e.g., fabrication, falsification, plagiarism).	3.39	0.08	Moderately Competent
4. Implementing ethical standards and practices in research with human subjects.	3.45	0.07	Competent
5. Knowing authorship processes (e.g., authorship determinations, collaborative research).	3.36	0.08	Moderately Competent
6. Knowing ethical standards and practices in research with human subjects.	3.35	0.08	Moderately Competent
7. Demonstrating cultural competence and appropriateness in research with human subjects (e.g., respect for people's rights, dignity, and diversity).	3.38	0.08	Moderately Competent
Total	3.38	0.07	Moderately Competent

The indicator with the highest mean is *implementing ethical standards and practices in research with human subjects*, scoring 3.45 (SD = 0.077) and interpreted as Competent. This result indicates that participants have a solid understanding of ethical principles related to working with human participants, such as obtaining informed consent, ensuring confidentiality, and respecting participants' rights and dignity. These competencies are important for conducting research that aligns with global ethical standards, particularly in studies involving vulnerable populations. On the other hand, the indicator with the lowest mean is *knowing ethical standards and practices in research with human subjects*, scoring 3.35 (SD = 0.082), which is interpreted as Moderately Competent. This finding suggests a slight gap between theoretical knowledge and practical application, which could hinder the participants' ability to address complex ethical dilemmas in research involving human subjects.

The findings align with trends observed in Tables 1 to 4. Table 1 highlights that only 8% of participants are actively conducting research, reflecting limited exposure to real-world ethical challenges, which may contribute to moderate competency levels. Table 2 showed that while 62% of participants prioritize research as High or Very High, variability in prioritization may impact their focus on mastering ethical practices. Table 3 indicates that 39% of participants feel unsupported in their research efforts, reducing ethical guidance and mentorship opportunities. Finally, Table 4 reveals dissatisfaction with research engagement, with 49% of participants Unsatisfied, suggesting systemic barriers such as insufficient training or resources for ethical research practices.

Gomez (2018) emphasizes embedding ethical principles into research practice, particularly in collaborative and culturally sensitive contexts. In *The ABC on the Methods of Educational Research*, Gomez notes that ethical competency is important in preventing misconduct, such as plagiarism and data manipulation, and developing trustworthiness and credibility in research outcomes. The moderate competency levels observed in this study align with Gomez's assertion that structured training and institutional support are important to improving researchers' ethical standards. Moreover, Tidalgo et al. (2023) observed that while Filipino researchers are aware of ethical principles, gaps in practical application often arise due to limited exposure to ethical dilemmas and insufficient mentorship. Lunag et al. (2023) highlighted the need for comprehensive training programs that address theoretical knowledge and real-world research ethics applications, particularly in authorship and collaborative work. Raifman et al. (2022) emphasized the importance of cultural competence in research ethics, noting that respect for diversity and inclusivity must be central to research involving human subjects in the Philippine context.

The participants demonstrate moderate competency in research ethics, with strengths in implementing ethical standards with human subjects but challenges in knowledge application and collaborative practices. These findings highlight the need for targeted capacity-building initiatives, such as ethics workshops and mentorship, to address gaps in theoretical knowledge and practical application. The broader context provided by Tables 1 to 4 highlights systemic barriers, such as limited engagement and lack of institutional support, which likely contribute to the observed competency levels. Addressing these issues through structured training programs and a supportive research environment can enhance ethical practices and promote a culture of responsible research.

Dissemination of Research / Scholarly Writing

Table 10 revealed that the participants' competencies in disseminating research and scholarly writing, focusing on tasks such as presenting findings at conferences, writing reports, and aligning with academic standards. The overall mean score is 3.28 (SD = 0.084), interpreted as Moderately Competent. This indicates that while participants demonstrate foundational skills in research dissemination and scholarly writing, there is a need for further development, particularly in advanced areas like publishing and technical writing.

Table 10. *Distribution on the Level of Competency in Performing the Behavior in Terms of Dissemination of Research / Scholarly Writing*

Indicators	Mean	SD	Interpretation
1. Disseminating a research report as a paper presented at a refereed conference in your specialty areas.	3.35	0.08	Moderately Competent
2. Constructing a research report aligned to the APA Publication Manual.	3.18	0.08	Moderately Competent
3. Identifying consistencies and incongruences between a study's research results and findings identified in published research in areas of interest.	3.21	0.08	Moderately Competent
4. Disseminating a quantitative research report as a manuscript published in a refereed journal in your specialty areas.	3.21	0.08	Moderately Competent
5. Constructing a research report with minimal syntax, grammar, and punctuation errors.	3.20	0.08	Moderately Competent
6. Identifying potential limitations within an empirical investigation.	3.45	0.06	Competent
7. Presenting a research report clearly and accurately verbally (e.g., presenting a research report paper at a refereed conference).	3.28	0.08	Moderately Competent
8. Writing a clear and accurate Results section for a research report.	3.32	0.08	Moderately Competent
9. Writing a clear and concise research report with continuity of thought.	3.36	0.08	Moderately Competent
10. Presenting positions in the research report with appropriate citations to support the claim.	3.25	0.08	Moderately Competent
Total	3.28	0.08	Moderately Competent

The indicator with the highest mean *identifies potential limitations within an empirical investigation*, scoring 3.45 (SD = 0.65) and interpreted as Competent. This suggests that participants are proficient in evaluating their studies to identify weaknesses, which is important for enhancing the credibility of research findings and informing future

investigations. The indicator with the lowest mean is *constructing a research report aligned to the APA Publication Manual*, scoring 3.18 (SD = 0.088) and interpreted as Moderately Competent. This reflects challenges in adhering to strict formatting and referencing standards, an important skill for publishing in refereed journals and ensuring academic rigor.

These findings align with the patterns seen all through the tables. Table 1 revealed that only 8% of participants actively conduct research, limiting opportunities for dissemination and practice in scholarly writing. Table 2 reveals that 62% of participants prioritize research as High or Very High, suggesting an interest in dissemination but perhaps limited capacity to follow through. Table 3 highlights that 39% of participants feel unsupported in their research efforts, reducing encouragement to develop competencies in presenting or publishing findings. Table 4 revealed dissatisfaction with research engagement (49% Not satisfied), which likely affects motivation and access to resources for improving dissemination and scholarly writing skills.

Gomez's work, *The ABC on the Methods of Educational Research* (2018), emphasizes that scholarly writing and dissemination are often underdeveloped skills among educators due to insufficient training and exposure to academic publication standards. Gomez highlights the importance of mentorship and hands-on guidance in crafting clear, well-structured reports aligned with international guidelines such as APA. Ducas et al. (2023) similarly found that Filipino educators face challenges in writing for refereed journals, citing difficulties with academic writing conventions and grammar. Lunag et al. (2023) identified limited institutional support for conference participation and publication, further restricting opportunities for skill enhancement in research dissemination.

The participants demonstrate moderate competency in disseminating research and scholarly writing, with strengths in identifying research limitations but weaknesses in adhering to strict academic standards like APA formatting. These findings highlight the need for targeted training, mentorship, and institutional support to improve scholarly writing and increase research dissemination opportunities. Broader systemic issues, such as limited engagement (Table 1) and dissatisfaction with research environments (Table 4), must also be addressed to create a conducive atmosphere for skill development in these important areas.

Table 11 illustrates the perceived levels of research competency among faculty members, categorized into six key research areas. The overall competency level is interpreted as "Moderately Competent," with a total mean score of 3.35 (SD = 0.085). Among the areas assessed, faculty demonstrated the highest competency in Research Inquiry and Literature Reviews (Mean = 3.56, SD = 0.097) and Research Sampling Methods (Mean = 3.52, SD = 0.102), both interpreted as "Competent." These scores suggest that faculty members possess adequate skills in identifying research gaps, conducting literature reviews, and employing various sampling methods.

Table 11. Overall Perceived Levels of Research Competency Among Faculty

Competence	Mean	SD	Interpretation
Research inquiry/literature reviews	3.56	0.097	Competent
Research Sampling Method	3.52	0.102	Competent
Qualitative Research Process	3.08	0.076	Moderately Competent
Quantitative Research Process	3.25	0.081	Moderately Competent
Research Ethics	3.38	0.073	Moderately Competent
Dissemination of research / scholarly writing	3.28	0.084	Moderately Competent
Total	3.35	0.085	Moderately Competent

However, faculty scored lower in areas such as Qualitative Research Processes (Mean = 3.08, SD = 0.076), Quantitative Research Processes (Mean = 3.25, SD = 0.081), and Research Ethics (Mean = 3.38, SD = 0.073), all interpreted as "Moderately Competent." This indicates room for improvement in designing and conducting qualitative and quantitative studies and consistently applying ethical standards in research. Dissemination of Research and Scholarly Writing received a mean score of 3.28 (SD = 0.084), also interpreted as "Moderately Competent," highlighting challenges in academic writing, presenting findings, and adhering to publication standards.

These findings align with recent studies highlighting gaps in faculty research competency. For instance, Lasco et al. (2022) found that Filipino educators face challenges applying advanced research methodologies, particularly in qualitative and mixed-methods studies, due to limited training and mentorship opportunities. Similarly, Reyes and Mendoza (2023) emphasized that while faculty are often familiar with theoretical concepts, they struggle with the practical application of research ethics and scholarly writing, which are important for producing publishable work. Furthermore, Lunag et al. (2023) noted that many educators demonstrate moderate proficiency in quantitative research but require targeted training to enhance their data analysis and interpretation skills.

The relatively high scores in research inquiry and sampling methods suggest that faculty are confident in foundational research skills. However, the lower scores in advanced areas such as qualitative processes, ethics, and dissemination highlight the need for structured professional development programs. Addressing these gaps through mentorship, workshops, and institutional support can significantly enhance faculty research competency, as recommended by Villanueva and Garcia (2021), who advocate for continuous capacity-building initiatives to align research outputs with global standards.

3.3 Challenges Encountered in Conducting Research

Table 11. *Showing the Specific Challenges in Conduction Researches to the Participants*

Main Theme	Sub-Theme	Exemplar
1. Time Management	Balancing research with other responsibilities	Time management. (p12) Balancing research with other academic responsibilities can lead to time management struggles. (p8) The hectic schedule is in line with the demands of the teaching job. (p54)
	Procrastination and motivation	Staying motivated and overcoming procrastination can also be challenging. (p3) Overcoming writer's block even with a clear research question and ample data. (p24) Finding the motivation to write can be difficult. (p24)
	Scheduling conflicts	Our schedules often clash with the participants' availability. (p4) Not being able to coordinate our schedules, especially since it is a group project. (p29) Scheduling conflicts due to geographical dispersion of group members. (p16)
	Deadlines and workload	Balancing the research, writing, and editing process while meeting deadlines. (p68) Time pressure because of the complications from the work schedule. (p98) Time constraints and availability of responders. (p17)
	Time for reading and writing	Time management, finding RRL, and conducting surveys. (p71) Writing a research paper needs more time to read related literature. (p54) Research needs more time. (p49)
2. Topic Selection	Choosing a relevant topic	Finding relevant and interesting topics. (p1) Choosing a topic that is both interesting and manageable can be tough. (p48) Finding a relevant and engaging topic can be difficult for me. (p75)
	Narrowing down broad topics	It can be not easy to narrow down a broad area of interest into a specific, manageable research question. (p68) Narrowing down my topic to a specific research question, as I initially wanted to cover too much. (p26) Difficult in choosing the topic. (p62)
	Defining variables	Finding dependent and independent variables. I am confused about how to find these two. (p15) Identifying the variables and methods of research to be used. (p63) The challenge I faced in writing a research paper was constructing a proper research title. (p15)
	Iterative process of topic approval	Once you pass it to your instructor or adviser, you must revise it often until your instructor becomes satisfied with your work. (p38) Making a Research Title or What Would be the Problem Should I Write? (p74) Revising the paper and not being able to coordinate our schedules. (p29)
	Instructor guidance	I have difficulty defining a focused, clear, and feasible research title, but I am very glad that our instructor is guiding us. (p105) Our instructor updates us with everything for the betterment of our research paper. (p105) Title and more. (p32)
3. Resource Management	Limited access to resources	Lack of resources and time. (p47) Retrieving online resources. (p97) The challenge during conducting research is the resources of the research itself. (p57)
	Financial constraints	Scarcity of personal finances and time to craft the study. (p34) In my fourth year of school, I faced big challenges when writing a research paper, especially with money. (p59) The research process is affected by financial matters. (p83)
	Support system issues	Lack of support system in the workplace. (p34) Our professor's death prevented us from finishing our research problem. (p55) Limited guidance and mentorship. (p96)
	Challenges in funding research	Securing adequate funding for research projects, especially in fields that require specialized equipment or extensive fieldwork. (p67) Research is mediocre due to limited funding. (p110)
	Limited literature resources	Limited review of related literature and studies. (p70) Locating the most reliable and up-to-date references is important but time-consuming. (p84) Finding credible sources takes time and effort. (p48)
4. Data Collection and Analysis	Difficulty gathering responses	Gathering data from the participants. (p58) It is hard to gather data, mostly in a community that is not cooperating with research. (p72) Availability of participants. (p111)
	Ensuring validity and reliability	Ensuring research validity and reliability. (p78) Making sure the information I find is accurate and up-to-date. (p7) Navigating ethical considerations to ensure reliable data. (p78)
	Designing research instruments	The conducting of survey questionnaires. The participants are not taking the questionnaires seriously. (p15) Research instruments. (p89) Making effective research tools is challenging. (p78)
	Challenges with respondent cooperation	Participants are not taking the questionnaires seriously. (p15) Securing respondent participation can be difficult. (p78) Explain the purpose of the research to the participants. (p64)
	Data analysis complexities	How to analyze the problem and look for good results. (p96)

		Interpreting the given data. (p6) Analyzing collected data accurately is challenging. (p78)
5. Writing and Presentation	Constructing research titles	The challenge that I faced in writing a research paper was first to create a title on making a research paper. (p5) Making a Research Title or What Would be the Problem Should I Write? (p74) The Title. (p41)
	Organizing and structuring papers	Structuring the paper in a clear, logical way can be difficult. (p48) I will organize my sources and integrate them into my paper. (p26) Proper organization is necessary for clarity. (p30)
	APA formatting and citations	Citing reference sources using APA format. (p40) Searching supporting documents and fitting citations. (p43) Using proper formatting is important. (p76)
	Overcoming writer's block	Overcoming writer's block even with a clear research question and ample data. (p24) Finding inspiration to write is challenging. (p24) Writer's block can hinder progress. (p78)
	Incorporating feedback and revisions	Revising the paper and addressing feedback can also be difficult. (p29) Receiving multiple corrections from instructors. (p38) Revisions are time-consuming. (p46)
6. Research Knowledge Gaps	Lack of foundational research skills	I do not have much knowledge of doing research. (p91) I have not yet written a research paper; I need more ideas/background in writing it. (p35) In all parts of research in what I have observed in my capabilities and knowledge, it is zero. (p96)
	Limited exposure to methodologies	I am still figuring out everything about research and will continue to learn. (p2) First timer and no knowledge at all. (p82) I honestly do not have sufficient research writing experience or ideas because of the COVID-19 pandemic. (p55)
	Challenges with literature review	Finding references to support our research study and making the theoretical concept. (p73) Limited review of related literature and studies. (p70) Finding Review of Related Literature. (p11)
	Statistical analysis	Statistical computations. (p65) How to analyze the problem and look for good results. (p96) Difficulty interpreting and analyzing statistical data. (p15)
	Writing basics	I must practice writing grammatically correct sentences because miswriting is a sign of negligence. (p15) Writing clear and understandable sentences can be challenging. (p48) Constructing sentences/paragraphs in proper grammatical form. (p42)

Time Management

Time management emerged as the most prominent challenge, balancing responsibilities, procrastination, scheduling conflicts, and workload. Participants expressed difficulty juggling research with teaching and administrative duties:

"Balancing research with other academic responsibilities can lead to time management struggles" (p8)
"Hectic schedule with the demands of the teaching job" (p54)

Procrastination and motivation also surfaced as important barriers:

"Staying motivated and overcoming procrastination can also be challenging" (p3)
"Overcoming writer's block even with a clear research question and ample data" (p24)

External factors, such as scheduling conflicts, further exacerbate these challenges:

"Our schedules often clash with the participants' availability" (p4)

Additionally, participants highlighted the difficulties in allocating sufficient time for reading and writing:

"Writing a research paper needs more time in reading related literature" (p54)

This theme aligns with Table 1 in the quantitative data, where only 8% of participants actively conducted research, and 49% reported dissatisfaction with their research engagement. These findings suggest that workload and time constraints are significant barriers preventing faculty from implementing their research enthusiasm.

Topic Selection

Selecting an appropriate topic proved to be a significant challenge. Participants struggled with choosing relevant, manageable, and engaging topics:

"Choosing a topic that is both interesting and manageable can be tough" (p48)

Narrowing down broad topics into specific research questions was also a common struggle:

"It can be difficult to narrow a broad area of interest into a specific, manageable research question" (p68).

Moreover, defining research variables and gaining approval for research titles emerged as barriers:

"Finding dependent and independent variables. I am confused on how to find these two" (p15).

"Once you pass it to your instructor or adviser, you must revise it many times until your instructor becomes satisfied with your work" (p38).

These challenges indicate the need for improved mentorship and support, consistent with Table 3 from the quantitative findings, which revealed that 39% of participants lacked encouragement to engage in research. Additional guidance and training in research design and topic refinement could alleviate these struggles.

Resource Management

Participants cited limited access to resources, financial constraints, and a lack of institutional support as significant obstacles. For example:

"The challenges during conducting research is the resources of the research itself" (p57).

"Research process is affected by financial matters" (p83).

The lack of mentorship and support systems also hindered progress:

"Limited guidance and mentorship" (p96).

"Our professor's death prevented us from finishing our research problem" (p55).

These insights align with Table 3, where 39% of faculty felt unsupported in research activities, and Table 4, where 49% reported dissatisfaction with research engagement. Institutional initiatives, such as resource allocation, funding, and mentorship programs, are crucial to addressing these barriers.

Data Collection and Analysis

Data collection and analysis posed logistical and technical challenges. Participants described difficulties in gathering responses:

"Hard to gather data mostly in the community who is not cooperating in research" (p72).

Ensuring validity and reliability in data collection was another concern:

"Making sure the information I find is accurate and up-to-date" (p7).

Additionally, participants struggled with designing effective research instruments and analyzing collected data:

"The conducting of survey questionnaires. The participants are not taking the questionnaires seriously" (p15).

"Analyzing collected data accurately is challenging" (p78).

The quantitative data from Table 5 reflect moderate competency in research methodologies (Mean = 3.56), suggesting that while faculty are capable of designing studies, the practical aspects of data collection and analysis remain challenging.

Writing and Presentation

Writing and presenting research emerged as a key challenge, particularly in constructing research titles, organizing papers, and adhering to APA formatting standards:

"The challenge I faced in writing a research paper is first to create a title" (p5).

"Citing references sources using APA format" (p40).

Writer's block and the time-intensive process of revisions also hindered progress:

"Writer's block can hinder progress" (p78).

"Revisions are time-consuming" (p46).

Quantitative data from Table 10 supports these findings, with a mean score of 3.28 (Moderately Competent) in scholarly writing and dissemination. While participants possess basic skills, targeted academic writing and presentation training is needed to address these gaps.

Research Knowledge Gaps

Limited foundational research skills were a recurring theme, particularly among first-time researchers. Participants described their lack of knowledge and confidence:

"In all parts of research, what I have observed in my capabilities and knowledge is zero" (p96).

"I honestly do not have sufficient research writing experience or ideas because of the COVID-19 pandemic" (p55).

Challenges with statistical analysis and literature review further compounded these gaps:

"Difficulty interpreting and analyzing statistical data" (p15).

"Finding references that will support to our research study and making the theoretical concept" (p73).

This aligns with Table 5, where participants demonstrated moderate competency in research methodologies, and Table 4, where dissatisfaction with engagement reflected gaps in training and support.

How can the identified competencies and challenges in research inform the design of a targeted training program to enhance the research skills of faculty?

3.4 Identified Competencies and Challenges in Conducting Research

The competencies and challenges identified in Table 12 provide a balanced perspective on the strengths, opportunities, weaknesses, and threats faced by Tagoloan Community College (TCC) faculty in conducting research. These insights are important for designing a targeted training program to enhance research skills.

Table 12. Identified Competencies and Challenges in Conducting Research for the Participants

Challenges	Core Strength and Opportunities	Core Weaknesses and Threats
Time management / Allotment	Individual faculty has the control of time management	No institutional initiatives and time come when required by the CHED monitoring team, it will become a nightmare
Topic Selection	A Resource Person is available within the organization	Those who are qualified are hesitant to share their tenet knowledge because they are overruled by the majority who do not know about research.
Resource Materials	- Board Resolution in Aid for legislation - Faculty 201 Files - Competitive curriculum - Community Counterpart Partners for curriculum rev - Student Services & Dev Data - Entrepreneurial-ship - Adopted Community Data - Research & Development - Published & Unpublished Research - Library holdings - Laboratories & Amenities - Physical facilities data	Data are available or can be uncovered and explored, but the researchers are hesitant to do an internal audit on these data. Instead, they will go for the external mining of data.
Data Collection & Analysis	Data are available, waiting to be uncovered and explored	Data are available or can be uncovered and explored, but the researchers are hesitant to do the internal audit on these data, and instead, they will go for the external mining of data.
Writing & Presentation	- Semestral Requirement - Plan to come up with the Serendipity Journal	Not practiced and required to write and present even within the internal organization
Research Knowledge & Gaps	- Offered curriculum - Faculty is highly qualified	Hesitant to have knowledge sharing within the academic venue because of the culture being developed.

Time Management / Allotment

Core Strengths and Opportunities. Faculty members at TCC have individual control over their time management, which allows for personal flexibility in balancing teaching, administrative duties, and research. This autonomy provides a foundation for developing strategies to optimize time usage, such as time-blocking or prioritization training. It also presents an opportunity to empower faculty with tools and techniques to allocate their time effectively.

Core Weaknesses and Threats. The lack of institutional initiatives to support time management is a significant threat. Faculty are left to manage competing responsibilities independently without structured guidance. This challenge becomes important during compliance with CHED monitoring, leading to chaotic, last-minute efforts. The reactive nature of addressing time constraints not only affects the quality of research but also adds unnecessary stress to faculty workloads.

Topic Selection

Core Strengths and Opportunities. A key strength of TCC is the availability of resource persons. These individuals, who are knowledgeable and experienced in research, can serve as mentors to guide faculty in selecting and refining research topics. This resource presents an opportunity to establish mentorship networks and collaborative brainstorming sessions to enhance research outputs.

Core Weaknesses and Threats. A cultural barrier prevents qualified individuals from fully sharing their expertise due to fears of being overruled by less experienced peers. This hesitancy to engage in collaborative topic selection limits innovation and discourages knowledge-sharing. The threat lies in a lack of trust and openness, undermining the institution's ability to build a cohesive research culture.

Resource Materials

Core Strengths and Opportunities. TCC has an impressive array of institutional resources, including board resolutions, unpublished research, curriculum data, community partnerships, and physical facilities such as laboratories and libraries. If utilized effectively, these resources can significantly enhance research quality. The diversity and breadth of available data offer opportunities for faculty to explore unique research areas aligned with institutional and community priorities.

Core Weaknesses and Threats. Faculty often overlook these internal resources, favoring external data sources due to hesitancy or lack of awareness about the potential of institutional data. This preference increases the cost and effort required for research and diminishes the relevance of studies to the institution's context.

Data Collection and Analysis

Core Strengths and Opportunities. A significant strength is the availability of institutional data that is ready to be explored and analyzed. This data provides a foundation for impactful research projects, particularly those that address local or institutional challenges.

Core Weaknesses and Threats. Despite data availability, faculty are hesitant to perform internal data audits, often opting for external data sources instead. This reluctance wastes valuable resources and narrows the scope of research. Additionally, it reflects a gap in confidence or training in data collection and analysis methods.

Writing and Presentation

Core Strengths and Opportunities. TCC's semestral research requirements encourage faculty to engage in scholarly writing, while the planned *Serendipity Journal* provides an institutional platform for publishing research. These initiatives create opportunities for faculty to improve their academic writing and presentation skills.

Core Weaknesses and Threats. Writing and presenting research is not yet widely practiced or required within the institution. This lack of regular engagement limits the development of key skills needed for effective scholarly communication. Faculty may lack the confidence to publish or present their work without consistent practice, further stalling research progress.

Research Knowledge and Gaps

Core Strengths and Opportunities. The offered curriculum and the presence of highly qualified faculty create a strong foundation for addressing knowledge gaps. These strengths can be harnessed to build the research capacity of less experienced faculty through structured learning programs and mentorship.

Core Weaknesses and Threats. A major threat is a cultural reluctance to share knowledge within academic settings, likely driven by fear of critique or undervaluation. This dynamic restricts collaboration and prevents the development of a collective research culture that thrives on shared expertise and mutual learning.

3.5 Targeted Training Program to Enhance the Research Skills of the Faculty Participants

Table 13 shows that the design of a targeted training program for faculty at Tagoloan Community College reflects a strategic, programmatic, and task-oriented approach to addressing research skill gaps while leveraging existing resources. The program, informed by the S-P-A-T framework (Strategy, Program, Activities, Task), identifies specific actions and resource allocations necessary to enhance the research competencies of faculty participants.

Table 13. *Informed design of a Targeted Training Program to Enhance the Research Skills of the Faculty Participants*

S-P-A-T [Strategy / Program / Activities / Task]		Resources Needed	
Strategy	People	Physical	Pesos
Construct / Build & Organize the office of Education Research and Development Office with REB (Research Ethical Board) Training and Seminars Coaching / Mentoring / Collaboration	BOT, Admin Rank and file [Personnel]	Office or cubicle	1% of the total population of the college
Program	BOT, Admin, Personnel	Approved Manual of R&D	1% of the total population of the college
Get at least 1% of the total population income for Research and Development for the College of Education			
Activities	Faculty interested	AVR / Simulation	Snacks 25 X 25 = P625.00
- An hour of Research & Development (R&D) - Conversation on research - Brown Envelope			
Task	Faculty Interested	AVR / Simulation	Snacks 25 X 25 = P625.00
- Be oriented on the research process through the formulation and orientation of the following: - Thesis formatting - The Problem - Methodology - Results & Discussions/ Presentation, Analysis, Interpretation of Data - Summary of Findings, Conclusions and Recommendations - Referencing - Publishable Paper formulation Understanding the following: - Qualitative Research - Quantitative Research			

Strategy: Institutionalizing Research Infrastructure

The program's foundation is constructing an Education Research and Development Office (ERDO) with an accompanying Research Ethics Board (REB). Establishing a dedicated space for research consolidates efforts and provides a structured environment for faculty to engage in scholarly activities. The involvement of key stakeholders, including the Board of Trustees (BOT), administration, and personnel, ensures institutional support and sustainability. An allocated office or cubicle serves as the physical manifestation of this initiative, offering a centralized hub for resources and collaboration. This step is important, as institutionalizing research infrastructure has been proven effective in increasing faculty research output (Santos, 2022).

Program: Funding Allocation for Research and Development

The program emphasizes securing financial resources, recommending 1% of the college's total income for research and development initiatives within the College of Education. This funding allocation is crucial for supporting projects, training, and seminars that enhance faculty capacity. Aligning the budget with research goals ensures that faculty can access the tools, training, and resources needed to succeed. Research by Joyce and Cartwright (2020) highlights the role of dedicated funding in fostering a strong research culture in higher education institutions.

Activities: Interactive and Informal Learning Sessions

The program incorporates activities such as an hour dedicated to Research and Development (R&D), conversations on research, and brown envelope discussions. These informal and interactive sessions allow faculty to share ideas, learn collaboratively, and discuss challenges in a supportive setting. Such activities encourage participation and foster a sense of community among researchers. Hosting these sessions in accessible spaces like the AVR or simulation rooms further enhances their practicality. Providing modest resources, such as snacks (e.g., P625.00 per session), ensures inclusivity and encourages attendance, aligning with best practices in faculty engagement (Cruz & Bautista, 2023).

Task: Comprehensive Training in Research Process

The tasks outlined in the program focus on equipping faculty with the knowledge and skills needed to conduct high-quality research. Training covers key aspects of the research process, including:

- Thesis formatting
- Formulating research problems
- Methodology development
- Data presentation, analysis, and interpretation
- Writing conclusions and recommendations
- Referencing techniques
- Publishable paper formulation

In addition, the program emphasizes an understanding of qualitative and quantitative research methodologies, ensuring a well-rounded skill set. These tasks are designed for faculty interested in research, utilizing simulation rooms and modest funding to create an engaging learning environment. This structured approach addresses common research knowledge gaps and ensures the practical application of theoretical concepts.

Resource Allocation

To implement these strategies, the program identifies the necessary resources across three categories:

1. People: BOT, administration, faculty, and personnel.
2. Physical: Office spaces, AVR, simulation rooms.
3. Financial: Modest allocations (e.g., P625.00 per session for snacks), with 1% of the college's total income dedicated to research initiatives.

4.0 Conclusion

The study found that the faculty at Tagoloan Community College possess moderate competencies in research-related areas, such as theoretical framework development, literature reviews, sampling methods, and ethical research with human subjects. However, they face significant challenges in formulating qualitative research questions, constructing concise quantitative hypotheses, adhering to scholarly writing standards (e.g., APA formatting), and managing time effectively. Major obstacles include balancing research with teaching responsibilities, accessing adequate resources, and navigating the complexities of data collection and analysis. These findings highlight systemic issues, such as limited institutional support, insufficient training programs, and inadequate mentorship, which negatively impact faculty research engagement and satisfaction.

The study recommends a training program based on the S-P-A-T framework (Strategy, Program, Activities, and Tasks) to address these challenges. As part of the strategy, the institution should establish an Education Research and Development Office (ERDO) to centralize resources, provide a dedicated space for research activities, and ensure structured oversight. A Research Ethics Board (REB) should also be organized to uphold ethical standards in all research efforts. The program proposes securing funding by allocating 1% of the institutional income to support faculty training, mentorship, and resource acquisition. An official manual for research and development should also be created to standardize processes and expectations.

The program's activities include R&D Hour Sessions, which involve regular or informal faculty gatherings to discuss research concepts, share experiences, and collaborate on ideas. Brown Envelope Discussions will focus on practical challenges, such as refining research titles, designing methodologies, and improving scholarly writing.

Workshops on research skills should cover essential topics, including thesis formatting, crafting clear and concise research questions, understanding qualitative and quantitative methodologies, and adhering to APA formatting standards. Comprehensive training in research processes will involve basic and advanced modules, addressing data analysis techniques, developing publishable research papers, and conducting peer reviews and revisions. Additionally, collaborative mentorship programs will pair less experienced faculty with research-active mentors to guide them in navigating research challenges.

This training program aims to address competency gaps, foster collaboration among faculty, and institutionalize research as a priority within the college. The institution can bridge competency gaps and cultivate a strong research culture by fostering collaboration and providing tailored capacity-building efforts.

5.0 Contributions of Authors

The authors made significant contributions to the success of this research.

Dr. Frederick W. Gomez, the Dean of the College of Education at Tagoloan Community College (TCC), provided overall direction and shaped the conceptual framework for the study. His leadership, deep understanding of faculty development, and expertise in higher education policies were instrumental in aligning the research with the institution's goals and standards. Additionally, his familiarity with the local education context enriched the study by addressing the unique needs and conditions of TCC. Dr. Gomez also took the lead in analyzing qualitative data, providing in-depth interpretations that captured faculty members' contextual challenges and competencies, leveraging his expertise in educational research to interpret the data and formulate actionable recommendations.

Dr. Jeddah B. Quino-Justol, an Assistant Professor IV at the College of Education Tagoloan Community College and a Certified Research Specialist played an important role in adapting the research instrument to ensure its validity and reliability. She facilitated the data collection process, coordinating with students and faculty participants while upholding ethical standards throughout the study. Dr. Quino-Justol also analyzed the quantitative data, generating statistical insights highlighting trends and patterns in faculty research competencies. Her expertise in quantitative methodologies was important in ensuring the strongness of the study's findings.

Together, the authors demonstrated a collaborative effort in advancing the research culture at TCC. Their combined expertise ensured that the study assessed faculty research competencies and provided evidence-based recommendations for targeted training programs. Their work highlights the importance of fostering a supportive environment for educators to enhance their skills, ultimately contributing to the institution's mission of producing globally competent graduates.

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This research was conducted without external funding. The authors covered all expenses related to the study, including materials, resources, and other operational costs, as part of their professional commitment to advancing academic research within Tagoloan Community College (TCC).

7.0 Conflict of Interests

The authors declare that there is no conflict of interest in conducting this research. The study was undertaken with complete objectivity and independence, and the findings reflect the genuine perceptions and competencies of the faculty members involved.

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Inevitable Necessity of Self-Care: A Phenomenological Exploration of Filipino Sandwich Generation

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Abstract. This research explored the concept of self-care of the Filipino sandwich generation. Amidst the challenges that come with the experiences of simultaneously providing care for two or more generations, this study focused on how the Filipino sandwich generation cares for themselves and whether or not being in this generation influences their concept of self-care. Employing Interpretative Phenomenological Analysis, the study generated nine (9) themes which were Maintaining Physical Well-Being and Self-Care Practices; Balancing Responsibilities and Adaptation; Juggling Multiple Roles and Responsibilities; Building Social Engagement and Support Networks; Continuous Learning and Cognitive Stimulation; Nurturing Relationships with Family and Loved Ones; Spectrum of Emotional Expression; Fostering Familial Unity; and Interconnectedness of Self-Care and Care for Others. The study emphasized the importance of prioritizing self-care for care providers like the sandwich generation because no one could pour from an empty cup. Losing their health also meant losing their ability to take care of their loved ones. Thus, acknowledging the study's results, the researcher proposed the program/ workshop called SELF: Self-care Empowerment and Life-altering Skills for Filipino Sandwich Generation. This program highlights self-care strategies for the Filipino sandwich generation that aim to provide ways to manage the demands of simultaneous responsibilities and encourage prioritization of self-care among the Filipino sandwich generation. The program comprises not just a discussion on topics relative to this research's emergent themes, especially on self-care, but also includes activities for self-reflection and group interactions that benefit the intended participants of the said workshop.

Keywords: Filipino sandwich generation; Intergenerational solidarity; Self-care.

1.0 Introduction

"When you take time to replenish your spirit, it allows you to serve others from the overflow. Self-care isn't selfish. You cannot serve from an empty vessel." - Brownn

In this current world, no one will argue that selflessness is indeed an honorable character. Existing heroes, fictional or not, possess this attribute, and they are remembered for an instance when they did not put themselves first. It is viewed as a noble thing, and it is. However, because of how people value selflessness, taking care of oneself may sometimes start to look selfish. Meanwhile, selfishness may equal greediness and be viewed as disgraceful or diabolic. It is also noticeable how plenty of people choose to give themselves away for the sake of their loved ones. They value others more than themselves. Sometimes, it is forgotten that they also need to be at the receiving

end of the care they give. After all, no matter how big of a heart they may have and are ready to give, they can never pour from an empty cup.

Self-care has been a worldwide concept since the 1950s. It was initially utilized in the medical field to help patients be involved in their care, as Project (2023) mentioned. Self-care is still a topic widely discussed today and acknowledged by different generations. For example, Generation Z, or Gen Z, is one of the most vocal about self-care. They were born from 1997 to 2012, and many are the primary social media users. They can make a trending topic through social media; many people can read about it online. The Corporate Wellness Magazine (2023) said that when it comes to the workplace, Gen Z puts high regard on prioritizing self-care, as they cater to the demands of their job. Making self-care a priority allows them to increase productivity, lower stress levels, improve mental health, and promote a positive work-life balance.

In the same way, the older generation, like the Millennials, or the generation born between 1981 and 1996, also have their concept of self-care. According to Nermoe (2022), health is the most important thing to millennials, next to family. Millennials actively pursue wellness daily. Compared to earlier generations, they are eating better and exercising more. They do not smoke as much. Instead of treating healthy eating as a diet with specific goals, nearly half saw it as a lifelong decision. Despite making less money than previous generations, millennials spend more on exercise and wellness and use apps and technology to stay healthy.

Similar to Gen Z, millennials also hold a high regard for work-life balance, according to Nermoe (2022). Because of that, they tend to jump from one job to another, a behavior often disliked by many. They want to be rewarded for their ideas and innovative thinking, and they emphasize education, higher purpose, and cooperation across organizational levels. The millennials also played a massive part in this study because the sandwich generation participants came from that generation. Though sandwich generation was a somewhat familiar topic, there was noticeably very little research published on this with Filipino participants despite how common sandwich generation is in the Philippines. Because Filipinos place the utmost value on close family ties, extended families have become customary, as De la Cruz (2022) and Ledesma (2023) mentioned. Notario (2023) also acknowledged the Filipino concept of “utang na loob,” or the debt of gratitude. In Ledesma’s (2023) article, it is mentioned that when it comes to familial ties, many became part of the sandwich generation because of the expectation that children should take care of their parents or elderly when they were older as a way of giving back for all the sacrifices they have made in raising them. In the Filipino culture, failing to do this is often viewed negatively. On the other hand, the Brighter Life Team (2023) emphasized the financial factors contributing to why many Filipinos become part of the sandwich generation.

This study explored the concept of self-care of the Filipino sandwich generation. Mental Health America (2023) said that one of the most common stressors of the sandwich generation was having little to no personal time. This consequently made it harder for them to prioritize self-care versus the other millennials who were not in the sandwich generation. Thus, as the participants of the study were generally known to be the people who spend so much time taking care of others, this research answered the question as to how they take care of themselves despite all their responsibilities as the sandwich generation.

Aside from that, Konstantinovsky (2021) recognized that self-care was vital for care providers like the sandwich generation because no one can pour from an empty cup. Losing their health also meant losing their ability to take care of their loved ones. Also, according to Kapil (2022), clinical validation supported that practicing self-care had the means to lessen or even eliminate anxiety and depression, as well as lower stress and increase happiness. It can aid in a person’s ability to adjust to change, create solid relationships, and recover from setbacks and/or failures.

Moreover, this research explored the participants’ means of caring for themselves, not just on the physical aspect of self-care but also on the mental, social, emotional, and spiritual facets. This study also discovered whether or not being in the sandwich generation influenced their way of taking care of themselves and highlighted the themes that emerged from their responses. Thus, comprehensive recommendations were provided for the individuals involved, especially for the Filipino families and the sandwich generation.

Seeing that the family-oriented nature of Filipinos was very commonly demonstrated in the local society, the struggles of the sandwich generation can be easily overlooked, especially regarding their self-care. Thus, aside from the previously mentioned objectives, this research also aimed to provide helpful information for Filipinos in the same situation, to let them know that they were not alone in their experiences and that there were ways to deal with life situations. Because they were also human beings who possessed the exact needs for love and care physically, mentally, socially, emotionally, and spiritually, amidst their noble act for their loved ones, this study hoped to remind them that making sure they were cared for was as important.

2.0 Methodology

2.1 Research Design

A qualitative research design was utilized. Foley Library (2023) described this as research designed to comprehend people's views, experiences, behaviors, attitudes, and associations. It produced data that was not numerical. Instead, it examined reasons, viewpoints, and meaning. It tried to figure out the "why" and usually used historical records, discussions, interviews, observation, and so on, with a small sample size compared to quantitative research. A more specific qualitative approach used in this study was the phenomenological approach. This method aimed to understand and describe a phenomenon's universal essence, as defined by Ho and Limpaecher (2023). It paused the researchers' prior beliefs about the phenomenon to explore people's everyday experiences. Phenomenology research investigates lived events to learn more about how individuals interpret those experiences.

Furthermore, in gathering the necessary data regarding the self-care of the Filipino sandwich generation, the study's participants, this research employed a qualitative research design in the form of an Interpretative Phenomenological Approach (IPA). Ho et al. (2023) described this as qualitative research investigating how people interpret, perceive, or discuss their experiences. This method was deemed the most appropriate to use in achieving the purpose of this research, as it required specific characteristics for participants to qualify. Also, the data collected from them were about their experiences in particular aspects of their lives. The responses gathered through a semi-structured interview questionnaire underwent analysis through IPA to uncover the commonalities in the participants' responses. These were identified as the emerging themes leading to the essence of the Filipino sandwich generation's concept of self-care.

2.2 Research Locale

The province of Laguna was the chosen locale for this research, where the researcher was born and raised and is currently living and working. The study's aim in this province was fueled by the aspiration to help Filipino sandwich generation in the area through the information and results provided by the research. Also, as there are already very few studies on sandwich generation in the Philippines, they are even more lacking in specific areas, such as in a province like Laguna. Thus, there was no available information, as of the conduct of this research, about Laguna's data on sandwich-generation residents. The research's results and information hoped to be a way to start providing that non-existent data. Additionally, to complete this study within the limited time frame, the researcher was obliged to acquire qualified participants within easily reachable areas from where she was residing. Therefore, the province of Laguna was chosen as the research locale.

According to the PhilAtlas (n.d.) Central Luzon was home to the Philippine province of Laguna, part of the CALABARZON region. The Municipality of Santa Cruz serves as its capital. The province was 1,928.23 square kilometers, or 744.49 square miles, in size on land. Three million three hundred eighty-two thousand one hundred ninety-three people were living there as of the 2020 Census. This comprised 20.88% of the CALABARZON region's total population, 5.44% of Luzon's total population, and 3.10% of the Philippines' total population. These numbers were used to calculate the population density, totaling 1,754 people per square kilometer or 4,543 people per square mile. Moreover, PhilAtlas (n.d.) indicated that the median age in the province was 25.98, which meant that one-half of Laguna's total population was younger than 26 years old. The other half was older than 26 years old. Furthermore, there was a youth dependency ratio of 42.8, while there was a ratio of 5.9 for old dependency and a total dependency ratio of 48.7.

2.3 Research Participants

Filipinos who belonged to the club sandwich generation residing in the Laguna province were the study's focus, as most of the sandwich generation consisted of middle-aged adults; according to Ochman (2022), this research aimed to select participants between the ages of 35 and 50. Also, it was by the age group of the club sandwich generation indicated in the different types of sandwich generation defined by Abaya (n.d., as cited in Hoyt, 2022), that is, 30s to 40s, and 50s to 60s. Moreover, participants should also care for their parents (aged 60 and above) while caring for their children (aged 18 and below). They can be residing in the same household or not.

Table 1 presents the demographic information of the Filipino sandwich generation selected for this study. In compliance with the Data Privacy Act of 2022, the participants' identities were censored using pseudonyms such as "SG," which stands for sandwich generation, followed by their corresponding number sequence. "SG 1" was an example. The National Privacy Commission (2022) defined DPA as an act that seeks to uphold the freedom of information flow by encouraging creativity and advancement while safeguarding the fundamental human rights of privacy and communication.

Table 1. Participants of the Study

Participants	Gender	With spouse	Age	Residence	Years as Sandwich Generation	Age of Children	Age of Parents	Gender of Parents
SG 1	F	Y	45	Laguna	7 years	17	67	F
SG 2	F	Y	36	Laguna	12 years	12,10,7,4	66	F
SG 3	F	Y	42	Laguna	22 years	22,17,5	72, 70	M, F
SG 4	M	Y	35	Laguna	12 years	12	60,60	M, F
SG 5	M	Y	46	Laguna	6 years	23, 16	66,65	M, F
SG 6	F	Y	42	Laguna	18 years	18, 15, 6	74	F
SG 7	F	Y	35	Laguna	9 years	9	63,65	M, F
SG 8	F	Y	48	Laguna	23 years	23,16,11	78,73	M, F

2.4 Research Instrument

The research instrument used in this research was inspired by the principles conveyed in The Moral Theory and The Intergenerational Solidarity Theory. The semi-structured interview was conducted with the help of 10 guide questions validated by five (5) notable individuals deemed to have knowledge and expertise on the topic being discussed in this study. The validators were comprised of the institution's research director as well as a research data analyst. The remaining validators were comprised of registered psychologists and professors. Two (2) were from inside the institution, and one (1) was from an external. Additionally, Lawshe's (1975) content validation method was utilized to validate the study. Gilbert and Prion (2016, as cited in Tarcilo, 2022) explained that this method guarantees that an instrument assesses the domain it was designed to test.

2.5 Data Gathering Procedure

Before starting the actual collection of data and/or responses, it was assured that the participants fully understood the purpose of the procedure they were participating in and the kind of information they asked of them. This information was indicated in a letter to participants. An invitation for possible participants was shared online through the researcher's personal social media account on Facebook to reach out to qualified individuals willing to participate in the study. The invitation was made in the form of an online poster containing the set criteria, with a caption explaining the objectives of this research. Instructions on how they can join were also indicated in the post. The overall content and appearance of the invitation were checked and approved by the research adviser. The social media platform was chosen to get the attention of the researchers' Facebook contacts who possibly qualified with the criteria or might know someone who did. This method helped the invitation reach a wider audience and saved resources compared to doing it all face-to-face.

The individuals who reached out were verbally asked initial questions regarding the criteria and their actual situation with their families to ensure they were qualified and fit for the research. Written consent was also secured from the confirmed participants. Afterward, the research conducted face-to-face interviews at the participants' most convenient time and chosen venue. Materials such as a notebook, pen, and mobile phone were used as recording devices during the interview.

This research utilized a semi-structured questionnaire administered to the Filipino sandwich generation to gather the necessary data. According to George (2023), the semi-structured interview was a qualitative data collection technique that involved formulating interview questions within a pre-established theme framework. Nonetheless, the questions were not predetermined in terms of sequence or wording. The interview questions were generally open-ended, granting versatility. While it made it simple to compare responses amongst respondents, asking predetermined questions in a predetermined order might be restrictive. Less structure allows for comparisons between responders and can aid in identifying patterns. Each question discussed an idea with adherence to the central and corollary questions while staying aligned with the study's theoretical framework. Subject matter experts checked and validated the questionnaire regarding this study's primary focus and objective.

The interviews were audio recorded; some were video recorded, with the participants' confirmed consent, to document the conversation thoroughly without missing dialogues. This way, during the interview, it was easier to understand and discover the emerging themes more accurately than jotting down notes alone. This audio recording is only accessed by the researcher.

2.6 Ethical Considerations

In compliance with the guidelines in the Institutions Research Manual, this research acknowledged the ethical consideration of conducting research. It was assured that the participants fully understood the purpose of the procedure they were participating in, as well as the kind of information that was asked of them. The study's objectives were thoroughly explained to the respondents of the Filipino sandwich generation. Their real names were also not divulged, and nicknames were assigned to each. The participants also signed a document indicating their informed consent. Afterward, the collected information remained confidential to avoid breaching the Data Privacy Act (DPA) of 2022. The National Privacy Commission (2022) defines DPA as an act that seeks to uphold the freedom of information flow by encouraging creativity and advancement while safeguarding the fundamental human rights of privacy and communication.

It was considered that even researchers were human beings with personal beliefs and specific expectations for the study's results. However, the research needed to be objective in the presentation of the data gathered and the findings. Thus, to ensure that the study's conclusions were based on the participants' perspectives, the researcher employed reflexivity to identify personal prejudices and reduce their impact on the research process.

3.0 Results and Discussion

Taking into account the gathered qualitative information from the responses of Filipino sandwich generation who participated in this study, nine (9) themes emerged, namely: **Maintaining Physical Well-Being and Self-Care Practices; Balancing Responsibilities and Adaptation; Juggling Multiple Roles and Responsibilities; Building Social Engagement and Support Networks; Continuous Learning and Cognitive Stimulation; Nurturing Relationships with Family and Loved Ones; Spectrum of Emotional Expression; Fostering Familial Unity; and Interconnectedness of Self-Care and Care for Others.**

In the first theme, the Filipino sandwich generation conveyed their ways of caring for themselves even while managing the demands of their caregiving situation. Some have mentioned self-pampering, leisure shopping, exercising, social engagement, eating healthy, and sleeping on time, which are related to the different forms of self-care that involve the various aspects of an individual's overall health. Although the participants have provided diverse responses, mentioning activities they applied to keep themselves afloat, the most recurrent element was still the maintenance of a person's physical well-being, which included eating and sleeping on time, along with other self-care practices, as previously mentioned. Participant SG 1's response mentions, *"I take time at least once a week to have a spa massage to release the stress from work, everything, the environment. Then, sometimes, I go to the gym, and we have time with my officemates to relieve stress. So that is one way. Um, as much as possible, if I can go to bed earlier, sleep earlier, I do that to lessen my exhaustion"*. Having this emergent theme served as proof that despite the busy schedules and the state of being a "sandwiched" caregiver, the participants were managing not to neglect themselves completely. However, they found time for self-care no matter how simple or grand; they did not let themselves be overlooked.

According to the literature, there were five self-care practices enumerated by Scott (2023), as follows: (1) physical self-care, which included a person's amount and quality of sleep and exercise, the kind of diet supply in the body, and how well a person attended to the rest of his/her physical needs; (2) social self-care, or dedicating time and energy in building relationships, emphasizing the importance of maintaining and fostering close relationships to one's well-being; (3) mental self-care, which included practicing activities that helps our minds stay sharp, like reading solving puzzles, and the likes. Practicing self-compassion or acceptance can also be a form of mental self-care; (4) spiritual self-care, which involves things that cultivate a greater sense of purpose, understanding, and/or connection to the world; and (5) emotional self-care, which encompasses activities that contribute in safely expressing, and recognizing one's feelings regularly.

On the other hand, the struggle of fractionating one's time for everyone, including oneself, was highlighted in the second theme. From the participants' responses, it was apparent how busy their daily routines were that they could hardly squeeze in an activity to have some actual self-care. Although their routine seemed very repetitive, there would still be some days when something unexpected might happen, and they had to adjust and/or adapt. Participant SG 7 even mentioned, *"I got used to my routine. In the morning, I take care of my child. Then, when my parents need me, I am also present. However, sometimes, I get tired. Of course, there are a few complaints. However, it is the love that prevails. That is how I feel. That is why I can also ensure that I do not neglect myself in all aspects, physical, emotional, and mental. I am fine."* Hence, the theme emphasized how the Filipino sandwich generation had to balance their responsibilities and be creative about their self-care, which oftentimes was not happening in reality. There would be days when they could only give themselves the bare minimum or human necessities; however, they would still have a way to care for themselves and acknowledge that they had needs that had to be addressed.

According to Avalon Memory Care (2022), being in the Sandwich Generation can be stressful and may bring fatigue, despair, loneliness, and guilt. The Sandwich Generation might feel challenged in simultaneously taking responsibility for their children while managing their careers, other relationships, and personal time. On average, people who provide care for two generations, like their parents and their kids, lose 21 minutes of sleep every day and spend an extra 14 minutes doing errands and household chores. Maintaining such a demanding schedule requires setting aside time for self-care and wellness activities, yet many people neglect their health.

As for the third theme, it could be perceived that the sandwich generation already played many roles just by looking at the definition of the term. Examining the participant's responses, it was even more accentuated how hectic their lives could be in fulfilling these roles. The main challenges that arose were financial limitations and balancing simultaneous responsibilities, which resulted in a lack of time for oneself. This is apparent in the response of Participant SG 3, who said, *"The challenge is that .. like me. I am the only one that can attend to my mother. I do not have siblings that can help me. Sometimes, things can happen simultaneously, and it is difficult."* Relatively, Participant SG 5 also mentioned his challenge when he said, *"I cannot buy things for myself because I prioritize the needs of my parents and my children."* These challenges were also supported by related literature/studies, which proved that the problems were not first-time discoveries and might have been around for quite some time now. However, based on the responses, they still exist to this day and are experienced by the current sandwich generation, even Filipinos. The said challenges posed a massive factor in how the Filipino sandwich generation was able to provide care for themselves.

According to Mental Health America (2023), one of the most common stressors of the sandwich generation is having little to no personal time. As taking care of an aging parent while being a parent can be physically and emotionally taxing, it can be challenging to make time for anything else, including personal time. Both roles require a lot of emotion, effort, and coordination, so trying to manage both simultaneously can be particularly challenging. Aside from this, Ledesma (2023) also cited the economic conditions of most Filipino families. With poverty and inflation, many elderly people need financial support from their children, who are also adults and already have families of their own.

The fourth theme underlined the importance of having confidants for the Filipino sandwich generation. Their responses indicated the positive impact of receiving support from people outside the receivers of their care. Participant SG 5 pointed out how meeting with friends made him happy and helped him get his mind off his responsibilities at home. He responded, *"That is something that I cannot lose, the way I socialize with people despite*

having a responsibility to take care of. Although you cannot share your problems with them, since there is fun and happiness, sometimes it can ease the sadness." The same went for another participant who was the president of an organization. She said that it helped her mind ease off the duties at home, while it also did not hinder her from properly taking on her roles as the sandwich generation. Although some of them were not as outgoing as the others, all of them had some connection with people outside their families. They maintained a good relationship with these individuals, per their reports. The emergence of this theme emphasized the vital role of having social engagement as a form of self-care, even for the Filipino sandwich generation.

According to Moun (2024), social engagement is defined as an individual's activity level in their online and offline groups. Man was a social creature. Thus, he constantly tried to establish relationships with others. Furthermore, everyone wanted positive relationships with their loved ones to feel a sense of belonging. People who engage with others frequently receive emotional support from people. In general, it would be critical to minimize feelings of isolation in the larger society – all of these assist in reducing stress, anxiety, and sadness.

In addition, the fifth theme brought about the vital role of keeping the mind sharp. Despite how taxing it may sound, related studies and literature have supported how exercising the mind was also a form of self-care. Some participants did this by doing actual mind activities such as reading, while others interacted with other people and counted that as a way to keep the mind going. The mentioned activities may vary in form, but they all concern how the Filipino sandwich generation can care about this aspect. However, their other activities might not be as frequent and consistent. One participant even cited a situation where she made a mistake and turned that into a learning experience. Additionally, even leisure time and relaxation can be part of learning and keeping the mind sharp as per their responses. Participant SG 1 shared, *"I like to read. Novels and books. What I am after is the vocabulary which I need for work. Also, when I see a new word, I would google it and learn. Because, in a way, it helps when you learn something new from time to time."*

Furthermore, in the listed benefits of lifelong learning by Norwood (2023), it was said that continued learning was important in maintaining one's intellect fresh and brain healthy. This applied to people of varying ages, including the older and younger ones. Constant mental work can increase pleasure, minimize fear responses, and promote optimism. Although it was not a guaranteed protection against illnesses, the healthy habits it fostered can lead to a higher quality of life. Additionally, it went without saying that when someone starts to grasp something they did not before, they feel accomplished. This generally leads to an increase in overall self-confidence.

Relative to the sixth theme, it underscored the massive role of family and loved ones. There might be some irony that the Filipino sandwich generation may experience exhaustion due to the demands of caring for two generations. However, their relationship with them can also be their source of fulfillment and satisfaction. This process fell under spiritual self-care as it tapped into the concept of self-purpose. The emergence of this theme as a means of self-care demonstrated the considerable impact family can have on the lives of the Filipino sandwich generation, even in the concept of self-care. Most responses linked fulfillment to how they could provide for their family and loved ones. The participants mentioned that their sense of purpose can be felt when they are doing this caregiving and when they are doing it successfully. An example is the response from Participant SG 7, who said, *"When I see my parents happy, that is it. That is all. No matter how tired I am, then, when I see them happy, that is enough for me. I feel like I did something right."* She further said, *"No matter how tired I am, when I see them happy, that is enough for me. I feel like I did something right."*

Ledesma (2023) supported Filipinos' family-orientedness. In an article published in the Mindanao Journal, she mentioned that Filipinos have close family ties. Therefore, it was unsurprising to see Filipinos of multiple generations living in one household, having the strong urge to support parents and children even though some may not be able to afford it anymore.

The seventh theme involved emotions and how they could be expressed, especially to the family. The Filipino sandwich generation delivered contradicting responses on this topic, although one was more dominant. Only two participants mentioned being comfortable and open to expressing their emotions to their family, whether positive or negative. The rest of the participants chose not to show their negative emotions or their exhaustion to their families for most of the time and mentioned it being difficult to express. Most of them reasoned it was to avoid

being a burden and show consideration to the feelings of those around them, especially their families. The materialization of this theme reminded the researcher of the Filipino nature of being cheerful and jolly no matter the circumstances. Showing negative emotions was not exactly something most Filipinos were comfortable with; instead, it can be more familiar to “laugh it off.” This behavior of concealing one’s feelings was also evident in the responses that led to the emergence of this theme. Participant SG 3 said during the interview, *“Maybe to my eldest child. I can share my feelings because she is the older one among them. However, to my father and mother, I do not let them feel that I am struggling or that I am getting tired. I do not complain to them. I keep it to myself. I do not want them to stress about it. I also do not want them to feel what I feel.”*

Research by Jang et al. (2019) studied persons in their 50s to 70s who care for several family members, including children and elderly parents or relatives, were examined in connection to their emotional tiredness and the mediating effects of self-care. Results showed that care obligations among older sandwich generations substantially impact emotional weariness and that emotional exhaustion was mediated by self-care in their study. Thus, focusing on self-care may help caregivers over 50 avoid emotional exhaustion.

As for the eighth theme, the family-orientedness of the Filipinos played a part in its emergence. Aside from the culture, the participants’ responses indicated that as an existent sandwich generation, the family gets to experience everything together and better understand each other across generations, resulting in a stronger bond and familial unity. Although there might be challenges along the way, the responses highlighted how it helped keep the family relationship tight and with solidarity. Participant SG 3 shared, *“It helps in a way. Our togetherness, there is no problem; we look at it positively because we are all together. As a family, we can help each other. We support each other. Also, my children are close to their grandparents. Because they all grew up in their presence.”* Apart from that, some of the responses also mentioned how the situation was an opportunity to impart values to the younger generation, as they witnessed how to love and care for parents and the older generation for the family. Participant SG 7 mentioned, *“It helps make the family’s relationship more intact. Everyone can feel what each other is going through in the family. It tightens the relationship of the family when it is like this. It also has a positive impact on my child. Because he can see, “Ah, this is the kind of love you must have for your parents – a perfect example to my child. You will not be a burden. However, it will come naturally when you love them and respect your parents. It is not forced. You will do it of your own will. Like that. I think, for me, the solidarity is there.”* It posed a beautiful reminder for the researcher of Filipino values that should only be passed on to the next generations.

Delving into the ninth and last theme highlighted the very significance of self-care for the Filipino sandwich generation. The theme displayed how self-care indirectly influences how participants provide care for their families and loved ones. All participants’ responses pointed to one direction: prioritizing self-care was important for a person’s well-being. When asked about the importance of self-care, Participant SG 1 mentioned, *“Yes. Because when you neglect yourself, you will also be neglecting them. Moreover, as for me, as much as possible, I can do that's best for them. So, in order to fulfill that, I need to be in the best condition. That is when self-care comes in. I need time for myself.”* Similarly, Participant SG 8 put it this way, *“Yes. Because if you do not care for yourself, you will not have anything to give them. How can you say you love others if you cannot love yourself? Love yourself first before you give it to somebody else. That is why your love and care for yourself is important. When you put yourself first, it does not make you selfish. Because if I neglect myself, what help can I give?”* Being part of the sandwich generation, most have emphasized that taking care of the self is not selfish but also a form of caring for others. Because no one can pour from an empty cup; nobody can give what they do not have. Thus, caring for other people would be difficult, if not impossible, if the caregiver was not taking care of themselves. However, despite their expressing their thoughts on the importance of self-care, it was noticeable how, in their everyday lives, self-care was not as normalized as their routine.

Perimeter Healthcare (2021) cited that self-care motivated people to nurture an affirmative relationship with themselves to share warmth and positive sensations with other people. When providing enough effort and attention to one's well-being, it was not selfishness but being considerate of other people's needs. Because people cannot give what they do not have to themselves. In order to become the best version of themselves for the people around them, they are reviving themselves. The restored vitality and excitement that people radiate affect everyone around them.

4.0 Conclusion

The study emphasized the importance of prioritizing self-care for care providers like the sandwich generation because no one could pour from an empty cup. Losing their health also meant losing their ability to take care of their loved ones. To support that further, Perimeter Healthcare (2021) cited that self-care motivated people to nurture an affirmative relationship with themselves to share warmth and positive sensations with others. When providing enough effort and attention to one's well-being, it was not selfishness but being considerate of other people's needs. Because people cannot give what they do not have to themselves. In order to become the best version of themselves for the people around them, they are reviving themselves. The restored vitality and excitement that people radiate affect everyone around them. Thus, these findings inspired the creation of a proposed program called SELF: Self-care Empowerment, and Life-altering Skills for Filipino Sandwich Generation, which highlighted self-care strategies for the Filipino sandwich generation that aimed to provide ways to manage the demands of the simultaneous responsibilities as well as to encourage prioritization of self-care among the Filipino sandwich generation.

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The Role of Financial Literacy in Supporting Employee Work-Life Balance

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Abstract. Balancing work and family responsibilities is a significant challenge for employees in today's dynamic workplace. Financial literacy empowers employees to manage finances effectively, reducing stress and improving focus. It fosters better decision-making, enhances financial security, and promotes a healthier work-life balance. This study examines how financial literacy influences employees' work-life balance by mitigating financial stress and supporting well-being, job satisfaction, and effectiveness. Utilizing a correlational descriptive design, quantitative and qualitative data were collected from 140 and 8 faculty members and staff, respectively, from different colleges in one state university through surveys and interviews to analyze the relationship between financial literacy and work-life balance. Results indicate that employees have financial literacy, with an average score on knowledge at 8.35 (SD = 3.13), positive attitudes (M = 3.99, SD = 0.73), and positive financial behaviors (M = 3.94, SD = 0.58). Qualitative findings indicate that employees have acknowledged the relevance of financial planning tools but may have problems with complex financial ideas and a form of hesitancy about long-term financial goals. Correlation analysis revealed a weak association between financial literacy and work-life balance ($\rho = 0.11$) and was not statistically significant ($p = 0.191$). Despite work-life balance policies, challenges related to heavy workloads, financial pressure, and limited personal time remain. These results indicate that targeted financial education programs and increased workplace flexibility are required to reduce stress and support employee well-being.

Keywords: Employee well-being; Financial literacy; Financial stress; Work-life balance; Workplace flexibility.

1.0 Introduction

"Invest in your work life balance. Time with friends and family is as important as times at work. Getting that out of balance is a path toward unhappiness."

Stephen Gillett
Chairman, President & CEO of Verily

Balancing work and family responsibilities has become difficult for most employees in their chosen professions. This is mainly because of dynamics in the workplace and the economic factors. Work-life balance, the relationship between the obligations towards work and activities outside the working environment, is significant to the general human well-being, job satisfaction, and effectiveness (Stankevičienė et al., 2021). However, financial stress makes these challenges worse. Various issues, such as economic instability and individual approaches to financial issues, have only worsened the employees' work-life balance question. This has made it challenging to balance work and

personal life with other associated demands (Trógolo et al., 2022). This calls for understanding financial literacy and managing financial pressure by maintaining a balance between work and family.

Financial literacy is making sound decisions concerning financial issues, including budgeting, saving, investing, and planning for future security (Lestari et al., 2024). It is one of the most important factors of financial security, and it is deemed significant in other spheres of life, such as work-life balance management. For example, people with financial literacy skills are more capable of being strategic about handling their sourced finances, dealing with debts, and planning for their short-term and long-term goals (Strough et al., 2020; Muñoz-Céspedes et al., 2021). It decreases the pressure of financial illiteracy and allows them to concentrate more on job responsibilities and individual concerns without the burden or uncertainties of financial bad status (as cited in Choi et al., 2020). On the other hand, a low level of financial literacy increases the chances of poor financial handling and an increased level of financial stress (Jumady et al., 2024; Chong et al., 2021).

Currently, there is limited evidence regarding the ability of financial literacy to serve as a moderator of stress, especially financial stress. Work-related financial pressure negatively impacts human and organizational outcomes due to decreased performance efficiency, absence, and possible worsening of chronic burnout (Ryu & Fan, 2022). Lack of adequate knowledge or appropriate skills and qualities for proper management of finances makes employees concerned and worried about their financial well-being. On the other hand, those with more financial literacy show better performance in managing financial difficulties, thus reducing part of the stress from balancing work and family responsibilities (Lone & Bhat, 2022).

In this regard, other financial literacy benefits include helping people balance the demands between work and other activities in their lives. It empowers employees to create a better strategy or plan for future spending and thus avoid major financial shocks or allocate the money they spend in ways that are helpful for their general and specific career objectives (Bai, 2023). For instance, financial literacy enables a person to save for rainy days and long-term security concerning finance, therefore eradicating the element of fear in fiscal instability. People who worry less about their finances can also manage their errands at work and home without the looming danger of an economic downturn (Alcover et al., 2020). Managing personal finances is useful in helping people achieve a work-life balance since such persons are likely to devote their time to balancing their responsibilities without being prompted by other financial pressures.

However, there is an evident gap in rich empirical research assessing the specific consequences of financial literacy on work-life balance. The majority of organizational initiatives in the field of financial literacy have aimed mainly only at improving financial performance—reducing debt and providing for retirement—as well as paid insufficient attention to possible consequences of such programs on various aspects of the employee's well-being, including their ability to balance work and family life (Kaiser & Menkhoff, 2020). Additionally, while some organizations have come up with financial education schemes to solve the financial cures that affect the employee's work life, there is not enough proof as to whether these programs directly and strongly impact improving the overall work-life balance results. To date, minimal literature is available on this topic, which creates a significant gap in knowledge about how exactly financial education might extend beyond mere financial repercussions and affect the well-being of employees in a broader sense. Consequently, research on financial literacy constitutes an essential determinant of financial well-being, with effects beyond personal finance management into other dimensions of life, like occupational performance and general well-being. Financial literacy is a critical skill that facilitates an individual's ability to manage his or her resources correctly. This skill promotes financial security, thereby reducing the stress related to finances, which significantly balances work and personal life.

According to Mukhtar et al. (2022), financial insecurity, fueled by high inflation and economic instability, has been translated into significant disruptions in employees' work-life balance and limited knowledge acquisition. Concentrating the study on the IT industry in Lahore, where constant technological advancements necessitate continuous learning, the paper reveals that financial stress is critical in impairing the work-life balance between employees. This stress allows employers to have an even more significant oppressive effect on their workforce in terms of extra workload, affecting employees' well-being. It is advisable to improve the financial position of the employees since their work-life balance can be improved through such a move, which would enhance their

learning and development capabilities. It has been suggested that finance should be the key aspect that enables workers to achieve personal and professional skills.

One study by Hu et al. (2024) states that individuals with low levels of financial literacy are more likely to suffer from financial distress, including excessive debt, which may cause financial stress. The paper finds that borrowers with high financial literacy experience mortgage stress 60% less than those with low literacy. Moreover, this impact is age-dependent, as it varies with age, and there are significant interactions between financial literacy and quantitative reasoning in determining mortgage stress. Financial stress has been highly documented as being the most significant factor influencing employee performance. This connection between financial stress and employee performance is further elaborated in the study by Rosso et al. (2024), which shows how financial stress negatively impacts various workplace outcomes, including employee health, commitment, and performance. The study also reveals that financial stress negatively impacts several workplace outcomes, including employee health, commitment, and performance, and increases work-family conflict and deviant behaviors. These can collectively diminish overall business effectiveness using reduced employee productivity and complicating personnel management, which may harm employees' work-life balance.

In addition, the study by Ryu and Fan (2022) delves deeper into the connection between financial worries and psychological distress. They discovered an important association between financial worries and psychological distress among American adults. Specifically, individuals with higher levels of financial worries tend to present with more psychological distress. Indeed, this relationship is significantly stronger for some vulnerable groups, such as the unmarried, the unemployed, households with lower incomes, and renters. The study provides the available financial counseling and public health interventions that can reduce financial worries and their mental health implications. Results point out that such interventions should focus on identified high-risk groups to improve their well-being and restore their work-life balance. Individuals with higher financial literacy have relatively more activities concerned with long-term security outcomes.

The study by Setiawan et al. (2020) shows that DFL plays a significant role in defining financial behaviors among Indonesian millennials. In this analysis, the structural equation model indicated that DFL positively affects the current saving behavior with a coefficient of 0.35, which accounts for a 12.25% variation, and current spending behavior with a coefficient of 0.40, explaining a 16% variation. Both present saving and spending behaviors also influence future financial behaviors. In the case of saving foresight, it is strongly influenced by a current saving behavior because the coefficient is 0.63 ($R^2 = 0.54$), and it states that a higher level of current saving behavior significantly enhances saving foresight. Current spending behavior also influences future spending foresight, but much lower, at a coefficient of 0.018. The study also shows socio-economic determinants, which are positively influential for DFL through education and income, with a coefficient of 0.23 ($R^2 = 0.055$), which means that people with higher educational and income levels tend to perform better in DFL.

In the Philippine context, Eloriaga et al. (2022) found a strong correlation between financial literacy and the financial development and well-being of young professionals within Metro Manila. The regression concludes that financial literacy has a significant influence on financial development and well-being. Furthermore, capability and usage of money are the determinants that influence the financial literacy of young professionals. No significant influence of the usage of money is found on financial literacy. This indicates that though the young professionals are financially literate, they fail to apply this knowledge effectively.

Jabar and Delayco (2021) demonstrated that in public elementary and high school teachers in Metro Manila, the relationship between financial literacy and impulse buying exists but is very weak. While generally going about keeping accounts, using financial records, and possessing basics such as savings accounts and debit cards for financial management, it does not strongly counteract impulse buying behaviors. The findings are that impulse buying negatively correlates with financial literacy, especially in record-keeping. The effect, however, is still weak. The result of multiple regression analysis showed that using financial records and maintaining record-keeping can predict actual impulse buying behaviors. This would signify that increasing financial literacy training by emphasizing the regular use of financial accounts and actual record-keeping practices may diminish the observed propensities of impulse buying among teachers.

According to Galapon and Bool (2022), financial behavior significantly affects the financial well-being of teachers in higher education institutions in Region 1, Philippines, with a moderate positive correlation of $r = .382$. This implies that teachers who exhibit better financial behaviors experience improved financial well-being. In contrast, financial literacy did not significantly impact their financial well-being. Despite the teachers having high financial literacy, their financial well-being was more closely related to their financial behaviors, such as goal-setting, delayed gratification, and management of savings and spending. The study recommends that financial wellness programs emphasize behavioral changes and personalized coaching rather than focusing solely on financial literacy. Generally, the research suggests that though financial literacy is, as is indicated by many, an important component of financial well-being and development, its direct impact is said to be limited without corresponding practical financial behaviors. Studies have shown that financial knowledge alone will not always lead to better financial outcomes but rather the application of financial literacy through behaviors such as discipline in saving, record-keeping, and goal-setting enhancing financial well-being. Thus, efficient financial wellness programs should focus on combining financial education with practical behavioral changes and tailored coaching for more remarkable results in improving financial outcomes.

Moreover, financial literacy empowers employees to wisely utilize employer-offered benefits and employee assistance programs. According to Lestari et al. (2024), employees with more financial literacy will be more likely to use these benefits, leading to their eventual financial security and, consequently, their general welfare. These also help in long-term financial planning but provide a solution to the immediate financial problems so that the worker is not distracted from this fear while working. Engaging and educating employees about these benefits is an important way organizations can support employees in improving their financial health and overall life satisfaction.

Mental health and job satisfaction are affected by financial literacy. It has become clear that financial stress is one of the significant causes of anxiety, depression, and low quality of life, which considerably impacts performance levels in workplaces. Employees with poor financial education suffer from psychological problems, leading to low concentration levels and poor productivity, as well as a reduced level of job involvement. On the other hand, workers with a good understanding of finances tend to manage their money effectively. Hence, they incur fewer debts and face fewer financial crises, eventually making them psychologically stable. This stability enhances emotional well-being, increasing job satisfaction and improving work-life balance. To support this claim, Nyambita's (2023) research indicates that employee performance in higher learning institutions in Tanzania is significantly predicted by job security, financial stability, and work-life balance. Specifically, financial stability greatly influences performance (85.4% of variance explained), job security, and work-life balance. These findings emphasize that while financial literacy serves as the foundation, practicalities such as having stable finances or employment are the determinants of performance. Jaggar and Navlakhi (2021) also support the idea that financial wellness programs can reduce financial stress on the employee level, hence promoting their psychological well-being and job satisfaction. Thus, customized financial wellness programs should be provided according to employees' need levels to promote their better well-being. While financial literacy is the bedrock of economic security and psychological well-being, it is the day-to-day application of financial stability, job security, and work-life balance that most directly impact employees' performance and work satisfaction. Tailor-fit financial wellness programs directed at these areas can significantly impact employees' mental health and work outcomes.

Financial literacy is an aspect that contributes to financial well-being and work-life balance. The availability of sound financial knowledge makes it easy for individuals to manage finances, hence eradicating stress from instability in finances. This reduction in financial-related distress provides employees with an avenue to allow them to spend more time working and their personal lives, hence attaining a better balance between work and personal life. Without adequate financial literacy, individuals often face financial insecurity, which causes stress levels to increase significantly, and this overflows into work, where productivity is reduced and work-related strain increases. Financial literacy also enables an informed decision, enhancing long-term planning, savings, and investment toward one's life. This contributes to overall life satisfaction and emotional stability. Employees can reduce many causes of stress interfering with work-life balance by efficiently managing finances, promoting well-being, job satisfaction, and harmonious integration of work and personal responsibilities. Thus, financial literacy is vital not just for securing finances but also for enhancing work-life balance and quality of life in general.

Essentially, this study was anchored to the Conservation of Resources (COR) Theory, developed by Hobfoll in 1989, to explore the importance of financial literacy for achieving work-life balance. According to COR Theory, people usually seek to obtain, protect, or build resources to minimize stress and handle challenges better. People can, therefore, have physical assets, personal attributes, energy, time, and financial security among resources. Stress occurs when resources are threatened or lost in work, personal life, and other areas where humans spend most of their daily lives. This theory considers financial literacy because it is a vital resource that helps handle financial pressure, as enhancing individuals' financial decision-making skills enhances their well-being. According to Viera et al. (2020), the dimensions of financial literacy involve knowledge, that is, knowledge about financial concepts; attitude, which encompasses the mindset and beliefs of finance; and behavior, that is, the action taken in managing their finances. Together, these dimensions present a person who successfully employs available monetary resources.

Therefore, the primary aim of this study is to explore the relationship between financial literacy and work-life balance among employees. In an increasingly complex financial environment, where personal financial management can significantly impact an individual's overall well-being, this study seeks to understand how financial literacy affects an employee's ability to maintain a healthy balance between work and personal life.

2.0 Methodology

2.1 Research Design

This research employed a descriptive research approach to assess whether or not the role of financial knowledge contributes to the management of the work-life balance of employees. Correlational descriptive research is ideal for systematically defining a phenomenon without affecting it. Similarly, through this methodology, this study seeks to provide more clarity in understanding the observed relationship between financial literacy, financial well-being, and work-life balance. The study analyzed the relationship between financial literacy levels and improved work-life balance.

2.2 Research Respondents

The respondents of this study were selected employees from a state university in different colleges, which includes faculty members and college staff. The inclusion criteria are current employees within the selected locale with a minimum of six months of work experience. On the other hand, the exclusion criteria include employees who have not completed at least six months of employment or are in temporary or contract positions with less job stability. A variety of participants in the study was chosen purposefully, with a specific number of participants from each sector. This is to capture various views about financial literacy and work-life balance. For the study's sample size, the study considered 140 respondents based on the population size of 215 employees. Moreover, eight employees were interviewed in the sample.

2.3 Research Instrument

The quantitative part of the study employed a self-administered survey with 22 items that the researchers developed based on the studies by Viera et al. (2020) and Liu et al. (2021) and grouped into three parts. The first section focuses on users' basic information, including age, gender, and income level. The second section used multiple-choice questions in basic financial literacy, a 5-point Likert scale measuring the attitude towards finances, and a 5-point scale to rate their financial practices. This part assessed respondents' knowledge of financial concepts, perceptions of personal financial planning and management, and current financial behaviors. The last part measures work-life conflict by providing a 5-point Likert scale that contains questions about work scheduling options, support from co-workers and managers, time allocated for personal issues, and overall satisfaction with the working environment.

A pilot survey was conducted with 10 respondents to validate the instrument and measure its reliability. From this process, only minor modifications were made, where possible, to the general structure of the text in order to make the text more readable. Taber (2018) noted that in the reliability test using Cronbach's alpha coefficients, the reliability coefficients are 0.83 for the attitude domain, 0.85 for the behavior domain, and 0.84 for the work-life balance domain, showing high internal consistency.

2.4 Data Gathering Procedure

Surveys for this study were administered online and in paper format to the employees from different colleges. The researchers explained the reasons for the study; the data collected was kept anonymous, and the respondents were told whether they could opt to participate in the study or not. The data collection phase lasted for three (3) weeks only. Moreover, to get more qualitative information, eight (8) employees with experience working in different fields were asked about their experiences of financial literacy and its influence on their quality of work and their lives. This study selected interview participants with various levels of financial literacy and financial management behaviors through purposive sampling.

2.5 Data Analysis

The quantitative data was analyzed using Statistical Package for Social Sciences (SPSS) to provide a detailed description of the data collected. Percentages were calculated to determine the proportion of the respondents that fell into specific demographic categories. In contrast, means and total scores were calculated to provide average financial literacy and work-life balance. Standard deviations were used to assess variability, thus providing information about the degree of consistency or instability of scores on financial literacy and work-life balance aspects. Spearman correlation coefficients were used to determine the relationship between financial literacy and work-life balance due to the non-normality of the data (p -value < 0.001). At the same time, significance testing was conducted at the 0.05 significance level. For the qualitative component, responses were used to triangulate the quantitative data.

2.6 Ethical Considerations

The study had ethical considerations, and this ensured that all the participants were protected and respected. The participants were aware of the purpose of the research, the process, potential hazards, and advantages of the study and had the authority to withdraw at any time they wanted to. Data were kept in password-protected electronic files and securely locked storage for storing files, which are accessible only to the researchers and statisticians. Researchers stated that they have no conflict of interest and practice and implement professional, ethical standards concerning the rights of the participants.

3.0 Results and Discussion

3.1 Financial Knowledge, Attitudes, and Behaviors

Table 1 summarizes the respondents' financial knowledge, attitudes, and behaviors.

Table 1. Summary of Respondents' Financial Knowledge, Attitudes, and Behaviors

Items	Mean	SD	Interpretation
Knowledge	8.35	3.13	Knowledgeable
Overall Attitude	3.99	0.73	Positive
Overall Behavior	3.94	0.58	Positive

For the first dimension of knowledge, the total scores of the respondents have a mean of 8.35 out of 13, a median of 9, while the SD was 3.13. This generally means financial knowledge has a high mean but with various individual differences within the group of employees. The interviews pointed to these variations, given the diversity in responses regarding employees' understanding of finance. One respondent mentioned, "*I find basic financial concepts like budgeting, saving, investing, and debt management vital for maintaining good financial health.*" Others found a minimal familiarity with some aspects. Some respondents noted, "*Not so*" or "*no idea of these aspects,*" while another admitted, "*None at all.*" Formal financial education varied in that some indicated formal training, as noted, "*Yes, I received financial education through formal courses in economics and personal finance as part of my studies.*" While others depend on experience alone, "*Yes, but most of my learning is from my experience,*" according to Respondent 4. Such findings replicate the moderate heterogeneity that also appears in the quantitative findings, showing inequality in employees' knowledge about money. Also, previous studies have confirmed heterogeneity in financial literacy in workplace settings (Goyal & Kumar, 2021).

For the attitude dimension, results indicated a mean of 3.99, a median of 4.1, and a low standard deviation of 0.73, revealing that employees have a positive attitude about financial matters. This aligns with interview responses where the employee described proactive attitudes toward planning for financial matters, as stated by some of the respondents, "*It is just a matter of spending money; you should know how to budget, save, invest, and pay debts.*" and "*I*

see budgeting as the process of creating a plan for your income and expenses to live within your means and achieve financial goals." These answers reflect a common underlying theme of financial responsibility along with a readiness to embrace wholesome financial practices, in tune with the low variability of quantitative data. These sentiments align with financial responsibility and readiness tends to adopt sound financial practices (Mawad et al., 2022).

The analysis of overall behavior revealed a mean score of 3.94, a median of 4.02, and a standard deviation of 0.58, suggesting positive financial behaviors with minimal variation. Interview responses illustrated practical financial literacy applications such as *"I know the theories and apply them to my everyday living."* Some respondents have pointed to the role of tools in supporting positive behavior: *"I am aware of financial tools like budgeting apps like Mint and YNAB that help in tracking income and expenses."* Others said they were familiar but admitted using them less: *"I am quite familiar but do not use them."* These experiences reflect the positive but consistent behavioral patterns implied by the low SD in the quantitative findings. These behaviors are consistent with the research of Raut (2020), indicating that financial literacy influences the likelihood of adopting positive financial behaviors.

The analysis of financial attitudes provides a holistic understanding of employees' financial perspectives and the importance of these attitudes in shaping their financial behaviors (see Table 2). The mean score is 3.99 (median = 4.1, SD = 0.73), reflecting a generally positive attitude toward financial management, though with some notable variations across specific items.

Table 2. Summary of Respondents' Financial Attitudes

Items	Mean	SD	Interpretation
It is important to set goals for the future.	4.56	0.70	Highly Positive
I do not worry about the future; I live only in the present.	3.74	1.37	Positive
Saving is impossible for our family.	3.67	1.30	Positive
After deciding about money, I tend to worry too much about my decision.	3.97	1.05	Positive
I like to buy things because it makes me feel good.	4.06	1.09	Positive
It is hard to build a family spending plan.	3.79	1.11	Positive
I am willing to spend money on things that are important to me.	4.38	0.83	Highly Positive
I believe the way that I manage my money will affect my future.	4.53	0.73	Highly Positive
I think it is more satisfying to spend money than save it for the future.	3.28	1.31	Positive
Money is made to be spent.	3.96	1.03	Positive
Overall Attitude	3.99	0.73	Positive

Employees showed a highly positive attitude toward setting financial goals ($M = 4.56$, Median = 5, $SD = 0.7$) and recognizing the impact of money management on their future ($M = 4.53$, Median = 5, $SD = 0.73$). The above findings align with interview responses focusing more on planning and saving. One of the participants stated, *"Preparation for future needs is given due importance."* At the same time, another said, *"I place a high importance on financial planning and savings, viewing them as essential for security and future opportunities."* This consistency between quantitative data and qualitative insights underscores employee prioritization of long-term financial stability. The readiness to spend on important issues ($M = 4.38$, Median = 5, $SD = 0.83$) also scored highly and represented a balanced view on priorities in spending. Many participants seemed to have a pragmatic attitude toward spending and saving. For example, one participant responded, *"I first give priority to health insurance and prepare finances for the future,"* thus, financial decisions are usually dictated by necessity and foresight.

Despite these positive attitudes, there are areas of ambivalence. Items such as *"I do not worry about the future; I live only in the present"* ($M = 3.74$, Median = 4, $SD = 1.37$) and *"It is hard to build a family spending plan"* ($M = 3.79$, Median = 4, $SD = 1.11$) indicate that some employees experience challenges in maintaining a structured financial plan. Further clarification came through interviews where one respondent said, *"Managing personal finances can be challenging, especially when expenses are just too much sometimes."* This expresses the tension between understanding the imperative to plan finances and how difficult it can be in practice. The item *"Money is made to be spent"* ($M = 3.96$, Median = 4, $SD = 1.03$) reveals a moderate inclination toward spending, corroborated by qualitative data where participants acknowledged occasional indulgence. One respondent shared, *"I like to buy things because it makes me feel good,"* indicating that emotional satisfaction can influence spending habits. However, this is usually

balanced by a strong sense of responsibility, as seen in another comment: "*I spend only within my salary and save for necessities.*" The belief that "*Saving is impossible for our family*" ($M = 3.67$, Median = 4, $SD = 1.3$) reveals that some employees face financial security challenges. The interview responses would have otherwise revealed the barriers that may come their way, such as lack of income and unexpected expenses. Lastly, financial literacy, being a key component to reaching long-term goals, was mentioned both in the survey and the interviews. Employees generally felt that the ability to make informed decisions was important. One explained, "*Financial literacy helps make good financial decisions, such as wise investing and spending.*" Another said, "*Financial literacy is critical because it enables individuals to avoid financial pitfalls and build stability over time.*" These comments are consistent with the highly positive rating for the belief that "*The way I manage my money will affect my future.*"

As shown in Table 3, employees were found to have positive attitudes towards financial planning and management. It had an overall mean score of 3.99 with a median of 4.1 and a $SD = 0.73$. High ratings for items such as "It is important to set goals for the future" ($M = 4.56$, $SD = 0.7$) and "I believe the way that I manage my money will affect my future" ($M = 4.53$, $SD = 0.73$) suggest a good appreciation of the need to plan for the future. This attitude is in line with She et al. (2024), who show that people who focus on long-term goals are more effective in financial management, and future-oriented thinking promotes financial literacy.

Table 3. Summary of Respondents' Financial Behavior

Items	Mean	SD	Interpretation
I make notes and control my personal spending	4.06	0.98	Agree
I compare prices when making a purchase.	4.19	0.93	Agree
I save some money I receive each month for a future need.	4.22	0.8	Strongly Agree
I have a spending/budget plan.	3.91	1.06	Agree
I am able to identify the costs I pay to buy a product on credit.	3.86	1.03	Agree
I set goals to guide my financial decisions.	4.23	0.83	Strongly Agree
I usually reach the goals I set when managing my money.	4.11	0.88	Agree
I discuss with my family about how I spend our money.	4.12	0.94	Agree
I pay my bills on time.	4.18	0.83	Agree
I save a part of my income every month.	4.08	0.82	Agree
I spend my money before getting it.	3.71	1.22	Agree
I often ask family or friends to borrow money to pay my bills.	3.43	1.33	Agree
I analyze my bills before making a large purchase.	3.97	0.94	Agree
Every month I have enough money to pay all expenses of my own and fixed household expenses.	4.17	0.93	Agree
I keep organized financial records and can find documents easily.	4.09	0.86	Agree
I avoid buying on impulse and use shopping as a form of entertainment.	3.44	1.05	Agree
I pay the credit card invoices in full to avoid interest charges.	3.96	0.87	Agree
I save my money regularly to achieve long-term financial goals such as my children's education, purchasing a home, retirement.	3.81	0.84	Agree
I know the percentage I pay as income tax.	3.7	0.95	Agree
I have my money invested in more than one kind of investment (real estate, stocks, savings).	3.81	0.9	Agree
I start saving more when I get a pay raise.	3.45	1.09	Agree
I have a financial reserve equal to or greater than 3 times my monthly expenses, and it can be quickly accessed.	3.49	0.99	Agree
I calculate my equity annually.	3.74	0.99	Agree
Before buying anything, I carefully check whether I am able to pay for it.	4.12	0.81	Agree
People think my income is not enough to cover my expenses.	4.04	1.04	Agree
In the last 12 months, I have been able to save money.	4.24	0.81	Strongly Agree
When deciding on which financial products and loans I will use, I consider the options from various companies/banks.	4.15	0.83	Agree
Overall Behavior	3.94	0.58	Agree

However, the data also shows behavioral nuances suggesting a more complex picture. For instance, the item *"I think it is more satisfying to spend money than save it for the future"* ($M = 3.28$, $SD = 1.31$) shows an impulse toward present pleasure rather than future security. This trait appeared in the interviews as individuals struggled to juggle immediate demands with long-term planning. One interviewee commented, *"Challenging in a way that expenses are just too much sometimes,"* indicating how difficult it can be to save or plan for the future when balancing immediate financial needs. This reflects Doh et al.'s (2021) findings, which found that immediate financial pressures can be such that long-term planning can be overridden, particularly for those under economic constraints.

Interviews help deepen and provide nuance into these behaviors. Most respondents described their practices in financial management as being simple but consistent. One respondent said, *"Just having a simple routine of saving something for the future."* Another person was on to regular budgeting and saving as core practices. Such responses highlight the creation of manageable and sustainable financial habits. Some employees expressed a more structured approach to saving by checking their financial situation monthly or using automatic transfers to make regular savings. One participant noted, *"I am setting up automatic transfers to a savings account to ensure consistency and take the guesswork out of saving."* This is consistent with the quantitative data indicating that most employees know the benefits of regularly checking their financial situation ($M = 4.17$, $SD = 0.93$), and actions are taken to stay on track toward financial goals.

However, there are instances where employees expressed less engagement with more sophisticated financial tools or advice. Several interviewees admitted to not seeking financial advice or using financial tools regularly. For example, one said, *"I do not seek financial advice or use financial tools myself,"* while another revealed, *"I do not have personal finances or needs, so I do not seek advice or use tools."* Their hesitance to invest further reflects this lack of engagement with formal financial tools and advice. One participant said, *"I am afraid to invest since I was scammed before,"* and expressed a lack of confidence in making more sophisticated financial decisions. This result aligns with the earlier finding that some employees refrain from investing and seeking financial advice. Despite all this, the data shows that most employees are proactive in keeping their finances tight to meet basic financial goals like savings. Their expenditure also falls in line with planned budgets.

Moreover, employees reported strategies for managing finances, some using manual methods, a few keeping track of expenditures and savings in their spreadsheets, and others using budgeting applications and real estate investments, among the rest. As one respondent said, *"My wife budgets and saves, investing in personal property that increases in value as well as realty."* Some preferred the more traditional approach, but others showed flexibility with using digital tools to keep tabs on expenses and savings, showing that employees are changing their financial practices based on personal preferences and experiences.

The data also reflects good behavior toward setting goals and planning for the future. Most participants highly rated items like *"It is important to set goals for the future"* ($M = 4.56$, $SD = 0.7$) and *"I believe the way that I manage my money will affect my future"* ($M = 4.53$, $SD = 0.73$). Interviewees echoed this sentiment, stating that financial planning is crucial for future stability. One of the respondents pointed out, *"Preparation for future needs is given due importance."* The other one said, *"I give a high importance to financial planning and savings. They are must-haves for security and future opportunities."* This behavior aligns with Czech et al.'s (2024) that indicates financial literacy is a basis for long-term financial goals behavior, such as savings for emergencies, retirement, or education. Despite the generally positive views about financial planning, some interviewees have expressed feelings of financial stress or uncertainty, likely contributing to more mixed attitudes on money management. For instance, one interviewee observed, *"I find managing my finances to be somewhat challenging, but I appreciate the importance of doing so."* Another respondent observed, *"Challenging in a way that expenses are just too much sometimes,"* indicating that it is financially unfeasible for individuals to continue applying what they have learned about personal finance. These responses suggest that although employees believe that personal financial management is an important area, real-world financial constraints can make it challenging to maintain consistent long-term financial planning practices. This finding corresponds with the broader literature, which indicates that economic insecurity can reduce positive attitudes toward long-term financial planning (Mata, 2021). Overall, combining quantitative and qualitative findings reveals that employees generally hold positive behavior toward financial planning and are aware of its role in shaping their future financial stability. However, such behavior is tempered

by the financial realities of many employees, who are forced to face high living expenses and immediate financial pressures. Employees who acknowledge the role of financial literacy in achieving long-term goals are more likely to engage in proactive financial behaviors, as financial literacy equips individuals with the knowledge necessary to make informed decisions. Strengthening financial literacy through targeted education and support can help employees better navigate financial challenges and enhance their financial attitudes, ultimately leading to better financial outcomes.

3.2 Work-Life Balance

Table 4 indicates a generally positive perception of work-life balance among employees, with mean scores ranging from 3.88 to 4.33 and relatively low standard deviations, suggesting consistency in responses. For instance, employees rated highly their ability to schedule preferred days off (mean = 3.88, SD = 0.81) and adjust rosters when working hours were inconsistent (mean = 4.01, SD = 0.78).

Table 4. Summary of Respondents' Perception on their Work-Life Balance

Items	Mean	SD	Interpretation
I can schedule my preferred days off, supported by my team.	3.88	0.81	Good
I can change my roster if the daily working hours are not consistent.	4.01	0.78	Good
My co-workers are supportive when I talk about personal or family issues that affect my work.	4.06	0.73	Good
My supervisor is understanding when I talk about personal or family issues that affect my work.	4.01	0.8	Good
I have enough time after work to carry out personal matters.	3.97	0.96	Good
I have enough time for my family and friends.	4.01	0.95	Good
I have personal discretion over my starting and finishing times.	3.95	0.83	Good
I look forward to being with the people I work with each day.	4.24	0.77	Excellent
I work very smoothly to handover to the next shift because of a good management system.	4.13	0.80	Good
I find it easy to concentrate at work because of family support.	4.11	0.74	Good
I feel happy when I have quality time for my family life.	4.33	0.74	Excellent
Overall Work-Life Balance	4.06	0.60	Good

The median value of 4 across most items reflects consistent perceptions of work-life balance as "Good." Items tied to emotional well-being (e.g., family time and coworker relationships) tend to have stronger ratings, with participants perceiving these aspects positively. The slightly higher median for the overall work-life balance of 4.09 suggests that participants view their work-life balance favorably, with low variability across responses. The interview responses also reflected this flexibility, where participants noted the importance of controlling their schedules. One respondent emphasized, "*Defining when work ends and personal time begins is key,*" highlighting the role of boundaries in maintaining balance. This flexibility supports Barck-Holst et al.'s (2020) findings that employees who have control over their schedules have lower stress levels and better work-life balance.

The employees express satisfaction with a mean score of 4.06 (SD = 0.73) with a standard deviation 0.80. This resonates with interview narratives wherein employees underscored the positive effect a supportive environment has on managing work-life demands. In this regard, one of the participants opined that "*having a supportive supervisor and team makes balancing responsibilities less stressful.*" The findings of this study were in tandem with research conducted by Fazal et al. (2022), as it highlights the need for supportive work environments to enable work-life balance and curb work-family conflict. In addition, it has been found that support from the supervisor positively influences the employee's ability to balance work and personal life (Talukder & Galang, 2021).

The amount of time available for personal matters and family was also rated positively. The scores include 3.97 (SD = 0.96) on the "having enough time after work for personal matters" question and 4.01 (SD = 0.95) on "having enough time for family and friends." Interviewees supported the findings with their accounts about making time for family and other personal activities despite busy work schedules. One respondent noted, "*It is a matter of finding or making time for family and personal activities.*" Another added, "*I use strategies like setting boundaries at work and prioritizing my time to manage both work and personal life.*" These strategies reflect a proactive approach to maintaining balance, even in challenging circumstances. According to Palma (2021), practical strategies for attaining work-life balance include time management and prioritization.

Items about workplace relationships and family well-being have the highest mean scores, including "I look forward to being with the people I work with each day," with a mean score of 4.24 and SD of 0.77, and "I feel happy when I have quality time for my family life" with a mean score of 4.33 and SD of 0.74. These results highlight the need for good interpersonal relationships and family ties to enhance general well-being. Interview answers also reflect this, with one respondent stating, *"Spending quality time with family significantly impacts my happiness and well-being."* Indeed, research has shown that support from family and friends at work significantly improves work-life balance and emotional well-being (Kurtuluş et al., 2023).

Overall, the findings from the quantitative data and the interviews are pretty coherent in representing employees as having a relatively good work-life balance. However, issues like time availability and job pressures were raised through the interviews, suggesting some scope for improvement. One respondent said, *"Managing multiple roles and a busy schedule can limit time for relaxation and family."* Nonetheless, this general feeling is offset by good times, facilitated through time management, prioritization, and the nature of the work environment. These results concur with Wayne et al.'s (2019) research that underlines supportive policies and personal strategies play a vital role in balancing professional and personal domains. In addition, evidence suggests financial stability also plays an essential role in promoting work-life balance because financial stability reduces pressure from having to worry about money. Employees manage their time and resources well.

3.3 Relationship between Financial Literacy and Work-Life Balance

The analysis between financial literacy and work-life balance was weakly correlated ($\rho=0.11$, $p=0.191$), indicating no statistically significant connection between these variables (see Table 5). Although the quantitative association was not strong, the qualitative interviews reveal the subtle ways financial literacy affects work-life balance, as perceived by the respondents. Many participants mentioned that financial literacy reduces stress and improves focus on personal and professional priorities. One respondent said, *"A well-informed individual on financial management becomes productive in almost all aspects, especially at work,"* which reflects the indirect outcomes of financial knowledge on the work-life balance. Respondents often quoted that financial literacy reduces financial stress, which indirectly helps in better work-life balance. For instance, one participant stated, *"Knowing finances has helped me avoid debt, allowing me more time for personal activities rather than worrying about money."* This is in tandem with previous studies that associate financial stability with better mental health and work-life balance, as insecurity about finances can cause stress that interferes with personal and professional life (Marques & Berry, 2021).

Table 5. Correlation between Financial Literacy and Work-Life Balance

	Rho	p-value	Interpretation	Strength of Relationship
Financial Literacy and Work-Life Balance	0.11	0.191	No significant Relationship	Weak Relationship

Improved financial literacy is also a tool for better decision-making and long-term planning. Respondents felt that understanding concepts like budgeting, saving, and investing empowered them to make strategic choices. For example, one of the interviewees said, *"With a good grasp of my financial situation, I can make choices that allow for more freedom, like working fewer hours or transitioning to a job with better work-life balance."* This reflects the findings of Iannello et al. (2020), which suggest that financial literacy promotes autonomy and flexibility, thereby supporting overall life satisfaction. Interestingly, respondents who expressed high financial literacy also illustrated actual examples of its use, such as avoiding high-interest loans or taking advantage of investment opportunities such as Pag-IBIG MP2 savings. These behaviors reflect that financial literacy empowers people with risk management tools and strengthens their economic resilience. On the other hand, people with less financial knowledge related examples of how this weakness led to stress and missed opportunities, further underscoring practical importance in daily life.

Even though the perspectives in the above sections were quite positive, the quantitative finding suggests that financial literacy cannot be a strong predictor of work-life balance for the population. This might be because work-life balance is a complex concept that depends on factors other than financial security, such as organizational culture, time management, and personal support systems (Tambosi et al., 2021). As one respondent aptly summarized, *"While financial knowledge helps, work-life balance also depends on how well you manage your time and prioritize personal commitments."* The interview results for the strategies and recommendations offer varied and

informative suggestions on improving financial literacy support within organizations, calling for tailored and accessible initiatives. A frequent recommendation among the respondents was that there should be regular financial literacy workshops. One participant indicated, *"I would advise our organization to offer our employees periodic financial literacy sessions and tools to improve employee knowledge of personal finance."* Another person echoed this with a value on holistic programs: *"In addition to workshops and financial tools, there are many other kinds of resources and types of support that can make a big difference in helping employees better manage their finances and achieve a healthier work-life balance."* For example, *"financial coaching and personalized advising alongside physical and mental health support would be beneficial."*

In addition to workshops, respondents advocated for more practical and structural resources. For instance, one participant suggested, *"Payroll should be accessible online anytime to monitor deductions and increases for future planning."* This aligns with the growing emphasis on financial transparency and empowerment through technology. Another respondent spoke of employer-supported initiatives, noting, *"Create a provident fund here,"* referring to a fund that could help employees plan for the future and build up a savings account and safety net. Cooperative loans with lower interest rates than traditional banks were another initiative proposed to lessen financial strain, as noted by one respondent, *"We need cooperative loans that offer lower interest than banks and even GSIS."* Some respondents suggested integrating financial literacy with broader organizational or educational goals, such as one respondent's comment: *"Integrate financial literacy into the curriculum."* Others proposed providing one-on-one financial counseling sessions and access to financial planning apps, with one commenting, *"Introduce regular financial literacy workshops and provide digital tools and resources for managing personal finances."* This has been supported by research that states the requirement for comprehensive financial literacy programs, which reduce stress and enhance employee productivity and satisfaction in the workplace (Brown et al., 2019; Rahman et al., 2021). Organizations can increase their employees' financial management capacities, general quality of life, and work-life balance by creating a financial wellness culture through such strategies.

4.0 Conclusions

The study highlights that employees, generally, are financially literate, have a good attitude, and have healthy financial practices, such as budgeting and saving, which result in their long-term stability. The quantitative findings agree with this trend. High mean values were recorded in financial knowledge and attitudes, which means there is an appreciation for the need for financial planning. Qualitative insights further reinforce this awareness, with many respondents appreciating the value of financial planning tools in achieving financial security. However, the findings also reveal heterogeneity in financial knowledge, with some employees lacking confidence in more complex financial concepts. There is occasional ambivalence toward long-term financial goals, highlighting areas where more targeted education and guidance could benefit. There are also financial constraints, less utilization of sophisticated financial instruments, and a reluctance to invest.

There is, therefore, a need for practical support in order to bridge the gap between theory and practice in financial applications. Regarding work-life balance, the study finds that flexible work arrangements and supportive work environments positively affect the ability of employees to maintain a healthy work-life balance. This included work flexibility, which, combined with a supportive culture, meant that the employees were empowered to be responsible for themselves and experienced improved well-being. Still, the current study highlights several ongoing issues, most notably a heavy workload, financial pressure, and the struggle to find time for their personal lives amidst their work demands. These pressures suggest that these work-life balance policies alone are insufficient; broader measures are required to relieve financial stress and control workload.

Thus, it is recommended to design target-based financial education programs that focus on increasing employees' confidence levels in handling financial issues, providing individualized financial counseling support, and strengthening work-life balance initiatives. Such programs may consist of more flexibility, time management tools, and mental health resources, as they aim to promote a healthy work environment that is effective in productivity. These approaches align with the Conservation of Resources (COR) Theory, which emphasizes the importance of financial literacy as a resource for reducing stress and improving overall well-being.

5.0 Contributions of Authors

All the authors contributed equally to this research paper, engaging collaboratively in every stage of its development, from the initial conception and design of the study to the thorough analysis of the results. Each author played an instrumental role in drafting the manuscript and participated actively in the revisions, ensuring a comprehensive and high-quality final document. Their combined efforts reflect a shared commitment to the research objectives and integrity of the findings presented.

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7.0 Conflicts of Interest

The authors declare that no conflicts of interest related to this research, whether financial or non-financial. All the authors confirm that their contributions to the study were conducted with integrity and transparency, ensuring that personal, professional, or financial interests did not influence the research process or outcomes. This declaration reflects the authors' commitment to upholding ethical standards in their scholarly work and maintaining the credibility of the research presented.

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Progressivism-Based Instruction in Mathematics: A Review of Effects on Conceptual Understanding, Procedural Knowledge, and Student Attitudes

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Abstract. This narrative review examines the application and impact of progressivism-based instruction in mathematics, focusing on conceptual understanding, procedural knowledge, and student attitudes. Drawing on foundational works by John Dewey, Jean Piaget, and other progressive theorists, the review highlights the key tenets of progressivism, including student-centered learning, inquiry-driven activities, and collaborative problem-solving. Empirical studies suggest that adopting progressivist strategies can deepen students' conceptual comprehension and enhance their motivation and confidence in mathematics. Despite these benefits, questions persist about maintaining sufficient attention to procedural fluency—an area where traditional approaches are often more explicit. Some research indicates that students may develop strong conceptual frameworks under progressive methods but may not always receive the systematic practice needed for computational efficiency or high-stakes examinations. Consequently, certain studies advocate blended pedagogies that incorporate progressive and explicit procedural strategies to balance deeper cognitive engagement and mastery of essential skills. Overall, this review underscores the transformative potential of progressivism in mathematics education while identifying gaps in research on how best to harmonize conceptual rigor with procedural fluency, thus guiding future inquiries and instructional design.

Keywords: Conceptual understanding; Mathematics education; Procedural knowledge; Progressivism-based instruction; Student attitudes.

1.0 Introduction

Mathematics remains a cornerstone of academic success and critical thinking, yet debates persist regarding fostering deep, lasting learning in this discipline (Evans & Dietrich, 2022; McDowell, 2023). Traditional, teacher-centered instruction emphasizes procedural drills and rote memorization—effective for instilling basic algorithms but often leaves students with limited conceptual understanding and low confidence (Kang, 2016; Noreen & Rana, 2019). In contrast, progressivism-based instruction advocates a student-centered, inquiry-driven approach that seeks to elevate procedural fluency and cultivate learners' curiosity, problem-solving skills, and positive attitudes toward mathematics (Dewey, 1938; Danquah, 2017). Stemming from philosophical and psychological underpinnings introduced by figures such as John Dewey, Jean Piaget, and Paolo Freire, the progressive model highlights the intertwining of real-world application, collaborative learning, and reflective practice to spark deeper engagement and autonomy in students (Piaget, 1970; Freire, 1970).

Research suggests that integrating progressive strategies into math instruction can bolster conceptual grasp, heighten engagement, and positively shift student attitudes (Hwang & Son, 2021; Bui et al., 2021). However, gaps remain regarding how progressivism-based approaches balance conceptual understanding with the procedural mastery essential for advanced mathematics and standardized assessments (Andal & Andrade, 2022; Asmida et al., 2018). This literature review thus aims to synthesize the theoretical foundations, implementation strategies, and empirical findings on progressivism-based instruction in mathematics. By contrasting these approaches with more conventional teaching methods, it seeks to identify what is already known about optimizing math performance and attitude and where further exploration is needed to ensure students achieve both robust conceptual frameworks and procedural fluency.

2.0 Theoretical Bases of Progressivism-based Instruction

Progressivism in education is a beacon of change and dynamic approaches prioritizing individuality, progress, and real-world problem-solving. Progressivism emerged in the late 19th and early 20th centuries as a philosophical movement advocating societal reform and progress through education (Anderson, 1973). At its core, progressivism posits that education should not only transmit knowledge but also foster the development of individuals as active, informed citizens capable of contributing positively to society (Dewey, 1930). Its roots are founded on philosophical and psychological theories that challenge traditional notions of education by centering curricula on students' needs, experiences, interests, and abilities (Anderson, 1973; Labaree, 2005).

As mentioned, progressivism emphasizes the importance of prioritizing individuality within educational settings. Individual differences in pedagogy reject the notion of one-size-fits-all instruction (Gillet-Swan, 2017) and consider each learner's individual needs and abilities (Bisai & Singh, 2020). Dewey (1938) asserted that education should be capable of catering to the unique qualities of each student. He further noted that such efforts promote an environment where learners can flourish intellectually, socially, and emotionally (Dewey, 1938). In short, progressivism champions the idea of continuing progress and change (Anderson, 1973). Rather than viewing education as a fixed and rigid system, progressivism sees it as subject to adaptation and change. As Rousseau (1762) put forth, education should evolve alongside the changing needs of society to prepare students to navigate the changing times.

Dewey (1930) mentioned how progressivism centers curricula on students' needs, experiences, interests, and abilities. This “student-centered approach” focuses on active engagement and ownership of learning, enabling learners to take charge of their educational journey (Kilpatrick, 1918). Such an approach provides learners with meaningful learning experiences that resonate with a more profound understanding and retention of knowledge (Freire, 1970). Moreover, progressive pedagogy places a strong emphasis on real-world problem-solving activities. Instead of passively absorbing information, learners are encouraged to apply their knowledge to solve authentic problems, thus bridging the gap between theory and practice (Dewey, 1938).

Several theorists have championed progressivism or contributed to how it is known today. As the father of progressive education, John Dewey advocated for experiential learning and integrating education with democratic ideals (Williams, 2017). Dewey's pragmatic approach to education emphasized hands-on learning experiences and curriculum integration with real-life situations. Kilpatrick (1918) then expanded upon Dewey's ideas and advocated for using projects and activities that are meaningful and relevant to students' lives.

Progressive pedagogy upholds learner individuality, autonomy, and exploration, all key elements of Rousseau's “natural education” (Bardina, 2017). Rousseau believes education is an unfolding process where children are free to discover knowledge naturally at their own pace, unhindered by rigid structures. This means that children, by their nature, can learn better when given ample time and space. Jean Piaget, the pioneer proponent of cognitive development theory, also contributes to progressivism-based instruction. Piaget promotes active learning and the construction of knowledge through firsthand experiences or constructivism (Pakpahan & Saragih, 2022). Piaget's theory of constructivism posits that learners actively construct their understanding of the world through interaction with their environment. Constructing one's knowledge is a sign of critical thinking. Freire's critical pedagogy also challenged traditional power dynamics in education. His methods advocate for dialogue,

reflection, and action to promote social justice and equity (Sta, 2021). According to Freire, students must be empowered to critically examine societal norms and structures as a way of learning.

Maria Montessori and Friedrich Froebel similarly promoted student-centered approaches to early childhood development. They championed the importance of self-directed exploration and discovery led by learners themselves (Lillard, 2020; McNair & Powell, 2021). Montessori's pedagogy, grounded in the principles of respect for the child and the importance of a child-friendly environment, emphasizes hands-on learning experiences and the cultivation of independence and intrinsic motivation. Similarly, Froebel, the founder of the kindergarten movement, advocated for play-based learning and the use of manipulative materials to facilitate the holistic development of young children (Flemig & McNair, 2022)

Progressivism continues to serve as a theoretical foundation for educational research and practice. The pioneering work of theorists mentioned herein laid the groundwork for student-centered learning, experiential education, and the cultivation of critical thinking skills. Considering the enduring relevance of progressivism in informing innovative approaches to teaching and learning, the current study finds its theoretical anchor in the tenets of progressivism. Drawing upon the principles of progressivism, the study seeks to explore the implications of progressivism-based instruction for mathematics teaching and learning, aiming to contribute to the developing body of knowledge on effective educational practices.

3.0 Progressivism-based Instruction: Conceptual Framework and Implementation Strategies

Progressive-led instruction is a learning theory rooted in the practices of active learning, problem-solving, and critical thinking. Grounded in the work of John Dewey, this method promotes student-centered learning with an emphasis on inquiry, exploration, and collaboration (Dewey, 1938). Progressivism is different because it does not encourage the monotonous rote memorization that traditional methods promote; it focuses on an alternative that encourages curiosity and stimulates understanding. It was noted in mathematics that this is probably the best way to increase conceptual understanding and procedural knowledge — key elements of mathematical performance (Danquah, 2017).

Understanding in mathematics refers to a student's overall grasp of fundamental mathematical principles. It relates to everyday experiences, while procedure knowledge represents the formal algorithms and problem-solving methods system. Progressivism-based instruction shall help students see basic mathematical ideas through hands-on exercises, discussions, and real-world problem-solving (Park, 2022). Tippet and Lee (2019) posited that progressive education aids students in making a conceptual understanding at their own pace along with procedural aspects, particularly of how the calculation is carried out and equations are solved (Qetrani et al., 2021). Such a balance requires mixing the two dimensions, which progressivism-based instruction naturally accommodates.

Teachers can craft exploration and critical thinking experiences in math class essential in progressivism-based instruction. For instance, project-based learning has been found to support students in working on math tasks for an extended period while drawing upon their understanding of the big ideas and specific procedures they need (Gay, 2022). Collaborative group work with problem-solving tasks makes this experience even richer because students can teach one another the concepts needed and try out the various approaches there are for solving a particular task. The teacher is a facilitator in this model, leading students through their inquiry and asking them to think critically about mathematical ideas (Ebby et al., 2024).

An important component of any progressivism-based instruction is that formative assessments evaluate conceptual understanding and procedural knowledge (Karaman, 2021). The tradition of assessment is mostly procedural, like solving problems; progressivism demands that it should always be continuous and reflective. Almost all its demonstrations show the teaching and learning of mathematical concepts so that teachers can track where a student is with those understandings while at the same time identifying domains where procedural practice may be needed (Demosthenous et al., 2021; Bucella, 2022). This adaptive formative assessment allows teachers to personalize their practice in response to the strengths and weaknesses of each student, leading to better mathematics performance both within schools and nationally.

Progressivism-based instruction provides a holistic method of increasing performance in mathematics as it integrates both conceptual understanding and procedural knowledge (Pokhrel, 2018). As stated by Siller and Ahmad (2024), project-based learning and cooperative activities, along with varied formative assessments (Chigonga, 2020), help students learn how to solve mathematical problems and why mathematics works. This emphasizes improving students' math knowledge and understanding to improve academic achievement. However, it also takes the longer view: getting students ready for what lies down the road in mathematics and beyond.

4.0 Progressivism-based Instruction Versus Conventional Instruction

Progressive instruction and traditional, conventional instruction are two opposing forms of practice in educational philosophy packaged in an easy way to teach or learn. Progressive instruction prioritizes student-driven activities, active learning techniques, and real-world problems. It promotes critical thinking, collaboration, and inquiry-based learning led by students and allows them to take an active role in their learning process. Conventional instruction, sometimes referred to as traditional or teacher-centered instruction, on the other hand, focuses on well-defined learning, often a rigid curriculum with direct teaching and rote memorization and evaluation using standardized tests (Garrett, 2008). Both approaches are shared within an educational setting, though the effect on student outcomes (especially in areas like math) can differ drastically.

Research shows that a progressivism-based mode of instruction can also help develop students' mathematical concepts and thinking skills. This method allows students to investigate mathematical ideas through inquiry-based methods, project-based learning techniques, and real-life application – as a result, creating individuals who understand math in a way in which they apply the core principles (Evans & Dietrich, 2022). Other studies show that students experiencing progressive practices in math are more likely to cultivate a growth mindset around the subject because they are doing problems they can relate to their daily lives. Here, procedural knowledge is emphasized compared to traditional instruction, where students are taught explicit algorithms and formulas that help them solve problems without a deeper conceptual understanding (Manandhar et al., 2022; Braithwaite & Sprague, 2021).

While progressivism-based instruction has many benefits, it can also be problematic. Bell and Cui (2023) examined the teachers' understandings of patriotism, compassion, and creativity from these two metaphors based on a voice study of 15 English teachers at four universities in China. They discussed some implications for Sfard's concepts as well. These findings reveal that Chinese educators depend primarily on traditional modes of knowledge transmission but gradually use more innovative practices, with constructivist approaches better developed than participation-based ones. The fact that reforms in education policies promote active learning has contributed to this, as there is still a gap between expectations and practice about how students participate in their classrooms.

On the other hand, Khadim et al. (2023) discussed how the Pakistani curriculum framework can resonate with progressivism, which focuses on critical thinking, social betterment, and cooperative learning practices. Drawing from 10 years of research, this study reports that by emphasizing hands-on learning and tying lessons to real-world issues and experiences students are interested in, we bring more relevance and engagement into education. Adopting these principles would create the possibility of teaching students in a way that leads toward careers and models citizenship.

Moreover, while the models under the progressive label might improve conceptual understanding a few times compared to traditional methods, they often tend to ignore that students need focused practice time to develop procedural fluency. Most of the time, traditional instruction is good at repetition and practice, one aspect essential for students who need accuracy and efficiency in performing arithmetic tasks (Kang, 2016; Noreen & Rana, 2019).

Regarding mathematics achievement, one needs to be aware of the effect of the two methods on learning. Instruction based on progressivism leans towards conceptual understanding, while instruction based on conventional is often more procedure-based. However, research has shown that mixed methods incorporating aspects of both progressive and conventional methods work best. For example, combining inquiry-based learning with direct instruction can provide both a solid conceptual foundation and procedural fluency that meet the problem-solving demands of students (McDowell, 2023). With both theory and application in play, the blended

style gets closer to the best of both worlds, encouraging better learning while providing the necessary traits for academic success.

Each teaching method based on progressivism and conventional (Singh, 2023) has merits and demerits. Progressivism encourages lower-level critical thinking and engagement and a more in-depth understanding of mathematical concepts, whereas conventional methods can build the discipline required for procedural mastery. On the other hand, a combination of both approaches may be more beneficial in equipping students with competencies in their mathematical study, such that they may not only comprehend but also be able to do mathematics where it is required (Capuno et al., 2019).

5.0 Impact of Progressive-based Instruction in Mathematics on Student Learning

Following on from the previous distinction about teaching methodology, not only is progressivism considered different from conventional instruction, but it holds that a progressive approach does result in effective mathematics learning. Due to their curiosity and purposeful exploration of learning. Progressive-based instruction provides better development of math concepts. Rather than the more procedural-focused teaching of conventional methods, this approach focuses on developing students' understanding and problem-solving ability. Studies have also shown that students who have been educated through this method of teaching typically excel in subjects that require a high level of reasoning and utilizing numerical skills within real-life situations (Ling & Chang, 2022). Connecting what is taught to real-world situations is valuable not only in assessments but also in the overall academic journey of students.

Progressive-based instruction helps students perform well in their mathematics and overall development. Many studies have discussed progressive-based instruction and its impacts on students. Studies have shown that conceptual understanding improves when people learn mathematics using progressivism-based instruction, i.e., based on exploration and inquiry, emphasizing the transfer of learning to real-world situations (Bui et al., 2021). Bui et al.'s experimental study demonstrated that a realistic mathematics education approach positively impacted some skills required for students in teaching statistical content.

Research by Mat and Jamaludin (2024) has shown that progressivism-based instruction is very effective in improving students' critical thinking and reasoning as it focuses more on student-centered activities and problem-solving. The findings showed that student-centered teaching methods improve primary school students' academic skills, critical thinking, and motivation to participate actively and co-operatively in learning. Similarly, research by Dekker (2020) showed that students believe they enhance their critical-thinking abilities by referencing various perspectives on problems and issues, leading to skepticism towards uncontested knowledge claims and openness to many perspectives.

Hwang and Son (2021) also noted that students in a progressive-based environment had more positive attitudes toward mathematics. Through integrating mathematics in real-world contexts and a hands-on approach to learning, students experienced math as observable and connected to everyday life. Furthermore, their study confirmed a positive relationship between attitudes and mathematics achievement, indicating that students with enjoyment of math (attitude), perceiving the value of math, and having confidence in math (affective aspects) are likelier to do well in math. Therefore, teachers need to measure the attitude of students and make objective help study a positive view of mathematics.

Self-efficacy in math, which is critical for performance in this academic area, also increased under progressive-based instruction. Findings from a study by Kaur and Pendergast (2022) showed a statistically significant increase in students' self-confidence and enjoyment in math due to the short writing intervention (for more details on mean scores of the pre- and post-intervention questionnaire). Qualitative reflections from students also revealed that they generally viewed writing as a helpful communication tool in the mathematics classroom. This implies that educators should aim to include writing as a means of communication and reflection in math classrooms, resulting in improved math attitudes. In addition, addressing the affective domains of students can enhance learning outcomes, help them understand mathematical concepts at a deeper level, and increase their interest in the subject.

Niu et al. (2022) indicated that a perceived supportive learning environment (PSLE) is associated with self-regulation autonomy, creativity, and mathematical achievement. It also showed that aspects of PSLE indirectly affect math results through autonomous self-regulation and creative thinking. The inferences from these findings indicate that constructs promoting a somewhat affirming learning culture could positively influence individuals' autonomous self-regulation, creativity, and mathematical success on their roads to full participation in mathematics classrooms.

However, not all research supports these positive outcomes (Asmida et al., 2018) and highlights challenges between principles underlining progressive methods and the evidence-based approach required for procedural fluency. Progressivism-based instruction centers on deep conceptual understanding, but sometimes, students do not get enough practice with the procedural side of math, i.e., how to calculate stuff quickly or solve equations efficiently (Andal & Andrade, 2022). This gap shows the need for practice using manipulatives with structure within an instructional progression that supports students in attaining both conceptual understanding and procedural fluency.

Studies overwhelmingly point to progressiveness-based instruction having a very positive impact on what students learn and understand doing math, how strategic behaviors they adopt while working that involve thinking critically are fostered by study habits and beliefs, and their capability to navigate through mathematics. Nevertheless, the question remains about reconciling the more extensive learning with progressivism-based instruction and the procedural fluency essential for complete mathematical understanding.

6.0 Summary and Gap

Previous research has offered important and interesting findings on the impact of progressivism-based instruction on children's mathematics achievement and development. Progressivism-based instruction has always been proven to build better conceptual clarity and develop critical and analytical skills in both young adults and adults, forming the basis of some earlier known studies. This teaching style also has a beneficial effect on student attitudes toward math, and creating a relevant and engaging subject improves motivation and positivity. Studies reveal that optimal learning environments also increase self-efficacy and encourage social relationships through collaboration or cooperation, enhancing academic and interpersonal skills.

Nevertheless, there are gaps in the literature. Although the advantages of progressive-based teaching have been established concerning conceptual understanding and student engagement, less is known about how it impacts procedural knowledge, another critical component of mathematical performance. The authors reference several studies that are silent on how this could work in practice. However, the balance is needed given that research cited earlier that deeper exploration usually comes at the expense of procedural fluency. Moreover, much more work must be done to articulate how progression affects students' assessment of topic-based procedures (e.g., standardized tests). Endeavoring to fill the gaps could lead to a more complete picture of how progressive and conventional practices can work together in mathematics education most effectively.

7.0 Conclusion

This literature review highlights the potential of progressivism-based instructional approaches to enrich mathematics learning by centering on active engagement, real-world problem-solving, and student autonomy. The collective findings suggest that progressive methods can foster deeper conceptual understanding, enhance student motivation, and improve attitudes toward the subject—key precursors to sustained success in mathematics. However, questions remain about balancing conceptual exploration and procedural fluency often associated with traditional instruction. In particular, while inquiry-driven activities and collaborative tasks can ignite curiosity and promote critical thinking, insufficient attention to systematic practice may leave students without the technical skills vital for advanced coursework and standardized evaluations. Addressing these dual needs points to the value of blended or mixed approaches, where progressive methods and explicit procedural instruction operate in tandem. Therefore, future research should explore structured yet flexible models that harness the strengths of both paradigms and investigate the effects of progressivism-based strategies across diverse student populations, educational levels, and cultural contexts. Such inquiries will help refine mathematics pedagogy, guiding educators toward instructional practices supporting robust conceptual frameworks and the procedural competencies essential for long-term academic achievement.

8.0 Conflict of Interests

The author declares that there are no conflicts of interest.

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Health Practices and Job-Related Health Concerns in a Tourist Facility in Candijay, Bohol, Philippines

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Abstract. Tourism-related facilities play a vital economic role, significantly contributing to employment generation. These industries often demand fast-paced work and long hours, aiming to deliver high customer service standards. This study aimed to determine the health promotion practices and the work-related health problems among employees in Eleuterio's Can-Umantad Falls & Rice Terraces Resort Incorporated, 2024. The study's outcome served as the basis for formulating an action plan. In particular, the study answers the following: 1) the Health promotion practices of the respondents, 2) the Work-related health problems of the respondents, and 3) the Significant relationship between the respondents' health promotion practices and their work-related health concerns. This study employed a descriptive survey research design to assess the health promotion practices and work-related health problems among the 46 employees of the establishments. This study used a two-part, researcher-made questionnaire assessing the respondents' profiles derived from secondary sources. Most respondents were aged 21-30 (43.47%), single (69.57%), and Roman Catholic (76.08%). Males and females were equally represented (50% each). Most were college-level (41.30%) and worked in the Food and Beverage Department (45.66%). Most had 1-2 years of service (43.48%), with only 6.52% having over 10 years. This study highlighted gaps in health promotion practices and the prevalence of work-related health issues among employees. Issues like respiratory illnesses and physical discomfort call for improved health measures to enhance employee well-being, productivity, and morale. The findings stress the need for holistic health strategies and workplace policies to ensure a healthier, more efficient workforce, serving as a basis for future interventions in the tourism industry.

Keywords: Candijay Bohol Philippines; Health promotion practices; Occupational health and safety; Tourism industry workplace; Work-related health problems.

1.0 Introduction

Tourism-related facilities play a vital economic role, significantly contributing to employment generation. These industries often demand fast-paced work and long hours, aiming to deliver high customer service standards. However, such environments may adversely impact employees' well-being, morale, and productivity. Prolonged exposure to stressful working conditions can lead to severe health outcomes, including illnesses, absenteeism, reduced productivity, disability, or even mortality (Ramesh et al., 2018).

The health status of the workforce is directly linked to national and global economic performance. As Turner (2019) argued, occupational illnesses and injuries create substantial economic losses, hindering economic development. Investing in better working conditions is a health imperative and a critical economic strategy. Similarly, Schneider and Becker (2020) emphasized that work-related injuries, illnesses, and fatalities burden

employers, workers, and organizations. These conditions reduce life expectancy and productivity, ultimately depleting the labor force and diminishing national income and economic output.

Through repeated visits to Eleuterio's Can-Umantad Falls and Rice Terraces Resort, the researchers observed significant changes in employees' health records during annual physical examinations. Over the past three years, the facility has reported a steady rise in absenteeism due to work-related health issues, as the Human Resource Department noted. Specifically, there were 55 absences in 2021, 81 in 2022, and 113 in 2023, with projections of further increases. Common ailments such as cough, fever, headache, and sore throat were the primary causes of absenteeism. This alarming trend has prompted researchers to investigate the factors contributing to these health issues and identify strategies for improvement. This study aimed to determine the health promotion practices and the work-related health problems among employees in Eleuterio's Can-Umantad Falls & Rice Terraces Resort Incorporated, 2024. In particular, the study answers the following: 1) the Health promotion practices of the respondents and 2) the Work-related health problems of the respondents.

2.0 Methodology

2.1 Research Design

This study employed a descriptive survey research design to assess the health promotion practices and work-related health problems among employees of Eleuterio's Can-Umantad Falls and Terraces Resort Incorporated. The descriptive survey design was chosen to provide a detailed and accurate account of employee health and workplace conditions without manipulating variables.

2.2 Research Locale

The study was conducted at Eleuterio's Can-Umantad Falls and Terraces Resort Incorporated, located within the Cadapdapan Rice Terraces in Candijay, Bohol. This site is not only a popular tourist destination, offering activities such as picnics, river trekking, human hamster ball rolling, and swimming, but it also serves as an alternative destination for visitors to the island. Its main attraction, the sixty-foot Can-Umantad Falls – the tallest waterfall in Bohol – is complemented by the scenic terraces, creating a unique environment for recreation and relaxation.

The locale is particularly suited for the current study due to its high employee interaction with a diverse and transient tourist population, which may contribute to workplace health dynamics. The facility has recorded a steady increase in absenteeism attributed to work-related health issues over the past three years, making it an ideal setting to investigate the factors influencing employee health. The availability of detailed health records from the Human Resource Department further supports the suitability of this site for the research. Additionally, its role as a key player in the local tourism industry underscores the importance of addressing workplace health concerns to ensure sustainable operations and maintain its reputation as a premier destination. No sample size computation was necessary, as all individuals meeting the study's criteria were included, ensuring comprehensive data collection and analysis.

2.3 Research Respondents

The respondents of this study were 46 employees working at Eleuterio's Can-Umantad Falls and Terraces Resort Incorporated. These individuals were directly involved in various roles within the resort, including front-line staff, maintenance workers, housekeeping personnel, food service staff, and administrative employees. The population of this study consisted of all employees at the resort, and the sample was selected based on convenience sampling, as all individuals who met the study's criteria were included. This method was chosen due to the availability and accessibility of the entire workforce, ensuring comprehensive data collection from a diverse range of employees across different operational areas. This approach allowed for a more inclusive understanding of the factors influencing absenteeism and health conditions within the facility.

2.4 Research Instrument

This study utilized a two-part, researcher-made questionnaire, assessing the respondents' profiles derived from secondary sources. Part I of the research tool consisted of items evaluating the respondents' health promotion practices, patterned after the Eight Universal Self-Care Requisites. Respondents rated their health promotion practices on a four-point scale: 4 for "Always," indicating the activity was highly practiced; 3 for "Frequent," indicating the activity was moderately practiced; 2 for "Rarely," indicating the activity was seldom practiced; and

1 for "Never," indicating the activity was not practiced at all. Part II of the questionnaire identified the respondents' work-related health problems.

Since the questionnaire was researcher-made, it underwent a thorough validation and reliability testing process. Content validation was performed by a panel of experts in occupational health, human resource management, and survey design to ensure the instrument's relevance and appropriateness. Feedback from the panel was used to revise and refine the items to improve clarity and alignment with the study objectives. A pilot study was conducted with a small group of respondents similar to the study population for reliability testing. The instrument's reliability was measured using Cronbach's alpha, which ensured internal consistency. These steps ensured the instrument was valid and reliable for collecting accurate and meaningful data.

2.5 Data Gathering Procedure

The data-gathering procedures for this study began with careful preparation, starting with securing formal permission from the management of Eleuterio's Can-Umantad Falls and Terraces Resort Incorporated. A letter of request detailing the purpose and objectives of the research and assuring the confidentiality of all collected data was sent. Once approval was granted, the researcher coordinated closely with the Human Resources Department (HRD) to facilitate data collection.

The process included obtaining secondary data, such as the Accident and Illness Quarterly Reports for 2024, which provided essential information about work-related health problems experienced by employees. This secondary data was also used to describe the respondents' profiles, ensuring a comprehensive understanding of the study population. For primary data collection, a two-part, researcher-made questionnaire was administered. Part I evaluated the respondents' health promotion practices, while Part II identified work-related health problems. The instruments were distributed to the respondents, and clear instructions were provided to ensure accurate and honest responses. After completing the questionnaires, they were collected and reviewed to ensure completeness. This systematic approach ensured the reliability and validity of the data gathered for the study.

2.6 Ethical Considerations

The researcher ensured respondents that all information gathered would remain confidential, emphasizing ethical considerations to protect the privacy of the participants and the institution. Secondary data were collected with the formal approval of the Director of the Human Resources Department (HRD). Specifically, the researcher requested and obtained the Accident and Illness Quarterly Reports for 2024, which provided detailed records of work-related health issues experienced by the employees. These secondary data were crucial for understanding absenteeism trends and profiling the respondents.

The choice of this locale was further justified by its unique operational characteristics and the high prevalence of work-related health issues, as evidenced by the secondary data. This resort was identified as an ideal research site due to its significance as a tourist facility, its diverse workforce engaged in various operational roles, and the availability of relevant organizational health records. This combination provided a robust foundation for studying health promotion practices and work-related health problems, making it a suitable setting for this investigation. In addressing the ethical implications of disclosing the institution's name, careful consideration was given to participant confidentiality and institutional reputation. While the name was retained to provide context and credibility, measures were implemented to anonymize sensitive data and mitigate any ethical risks associated with the disclosure.

3.0 Results and Discussion

3.1 Demographic Profile

Table 1 shows twenty (20), or 43.47%, of the respondents who are 21 to 30 years old, got the highest frequency, while the age range of 41 years old and above got the lowest frequency of one (5) or 10.87%. Male and female respondents have the same frequency of twenty-three (23) or 50%. Also, it shows that most respondents were single, with a frequency of thirty-two (32) or 69.57%, while separated and widowed respondents had the lowest frequency of two (2) or 4.35%. Regarding religion, most respondents were Roman Catholic, with a frequency of thirty-five (35) or 76.08%, while Non-Catholic respondents got the lowest frequency of eleven (11) or 23.92%. For the highest Educational Attainment, most respondents were College Level with a frequency of nineteen (19) or

41.30%, while the lowest frequency of ten (10) or 21.74% were College Graduates. In addition, most respondents were in the Food and Beverage Department, with a frequency of twenty-one (21) or 45.66%, while the lowest frequency of one (1) or 2.17% were in the Accounting and Construction Department. Finally, in terms of Length of Service, the respondents who were in one to two (1-2) years of service got the highest frequency with twenty (20) or 43.48%, while the respondents who were more than ten (10) years of service got the lowest frequency of three (3) or 6.52.

Table 1. *Profile of the Respondents (n=46)*

Age	Frequency	Percentage (%)
20 years old below	7	15.2
21-30	20	43.4
31-40	14	30.4
41 years above	5	10.8
Sex		
Male	23	50.0
Female	23	50.0
Civil Status		
Single	32	69.5
Married	10	21.7
Separated	2	4.35
Widowed	2	4.35
Religion		
Roman Catholic	35	76.0
Non-Catholic	11	23.9
Highest Educational Attainment		
High School Graduate	17	36.9
College Level	19	41.3
College Graduate	10	21.7
Department		
Food & Beverage	21	45.6
Human Resource	3	6.52
Front Office	8	17.3
Kitchen	9	19.5
Sales and Marketing	3	06.5
Accounting	1	2.17
Construction	1	2.17
Length of Service		
1 – 2 years	20	43.4
3 – 5 years	12	26.0
6 – 10 years	11	23.9
More than 10 years	3	6.52

3.2 Health Promotion Practices

Table 2 shows the respondents' health promotion in terms of intake of air.

Table 2. *Health Promotion Practices in Terms of Intake of Air*

Indicators	Mean	Description
1. I open the windows in my room and workplace or use a fan or electric fan for fresher air.	3.37	Always Practice
2. I sleep in the upright position or any position that will help me breathe with ease.	3.13	Often Practice
3. I perform deep breathing exercises.	3.13	Often Practice
4. I avoid exposure to air pollution such as smoke, smog, etc.	3.04	Often Practice
5. I do not smoke and avoid smokers.	2.76	Often Practice
6. I avoid people who are smoking or areas where people smoke.	2.98	Often Practice
7. I avoid form going to crowded places.	2.93	Often Practice
8. I refrain from wearing tight or constrictive clothing.	3.07	Often Practice
Sub-composite Mean	3.05	Often Practice

Item no. 1, "In my room and my workplace, I open the windows or use a fan or electric fan for fresher air.," received the highest weighted mean of 3.37, categorized as Always Practice. This signifies that most respondents prioritized ventilation in their living and working environment to ensure a supply, which led to a significant aspect of maintaining a healthy indoor environment. While item no. 5, "I do not smoke and avoid smokers.," obtained the lowest weighted mean of 2.76, described as Often Practice. This suggests that while respondents often try to avoid

smoking and secondhand smoke, it is not as consistently practiced as other health behaviors. The sub-composite mean score of 3.05 indicates that, on average, individuals often engage in behaviors that promote good air intake and respiratory health. This consistent practice suggests a general awareness and proactive attitude toward maintaining optimal air quality in personal environments. Supporting this finding, a study by Mahdavi et al. (2019) demonstrated that individuals who frequently engage in behaviors such as ventilating indoor spaces and avoiding pollutants have significantly better respiratory health outcomes. The study emphasizes the importance of consistent personal practices in mitigating the adverse effects of poor air quality.

Table 3 shows the respondents' health promotion in terms of fluid intake. Item no. 9, "I drink every time I am thirsty," received the highest weighted mean of 3.62 and was categorized as Always Practice. This indicates that most respondents consistently prioritized staying hydrated by drinking fluids whenever they felt thirsty. On the other hand, item 12, "I refrain from drinking alcoholic and caffeinated beverages.," obtained the lowest weighted mean of 2.67, described as Often Practice. This suggests that while respondents often try to limit their alcoholic and caffeinated beverages, it is not as consistently practiced as drinking sufficient water.

Table 3. *Health Promotion Practices in Terms of Fluid Intake*

Indicators	Mean	Description
1. I drink 6-8 glasses of water a day.	3.59	Always Practice
2. I eat foods with high water/fluid content.	3.13	Often Practice
3. I drink every time I am thirsty.	3.62	Always Practice
4. I refrain from drinking alcoholic and caffeinated beverages.	2.67	Often Practice
5. I drink many fluids after activities that result in extreme sweating and fluid loss.	3.02	Often Practice
Sub-composite Mean	3.21	Often Practice

The sub-composite mean score of 3.21 reveals that individuals often engage in health promotion practices related to fluid intake. This highlights that participants are generally mindful of maintaining adequate hydration through regular water consumption and choosing foods with high water content. They also tend to drink when thirsty and rehydrate after activities that cause significant fluid loss. However, there is less consistency in avoiding alcoholic and caffeinated beverages, indicating potential areas for improvement in fluid intake practices. In a study by Popkin, D'Anci, and Rosenberg (2018), the research highlights the importance of consistent hydration for overall health, stating that adequate water intake is crucial for bodily functions and can improve physical and cognitive performance.

Table 4 shows the respondents' health promotion in terms of food intake. In item no. 19, "I always read the labels of food, beverages, and other products in the market, grocery store, and supermarket before I buy them." It got the highest weighted mean of 3.33 and was categorized as Always Practice. This shows that reading labels is the most consistently followed behavior. Conversely, item no. 17, "I refrain from eating unhealthy foods.," obtained the lowest weighted mean of 2.76, described as Often Practice. This suggests that while respondents often refrain from eating unhealthy foods, this highlights additional support or strategies to help individuals more consistently avoid unhealthy food choices.

Table 4. *Health Promotion Practices in Terms of Food Intake*

Indicators	Mean	Description
1. I observe a well-balanced diet in every meal.	2.89	Often Practice
2. I eat meals on time.	3.22	Always Practice
3. I take snacks in between meals.	2.85	Often Practice
4. I refrain from eating unhealthy foods.	2.76	Often Practice
5. I take vitamin and mineral supplements.	2.78	Often Practice
6. I always read the labels of food, beverages, and other products in the market, grocery store, and supermarket before I buy them.	3.33	Always Practice
Sub-composite Mean	2.97	Often Practice

The sub-composite mean score of 2.97 suggests that individuals often practice healthy food intake behaviors. This score reflects a general tendency to maintain a balanced diet, eat meals on time, and make informed food choices by reading labels. While snacks between meals, avoiding unhealthy foods, and taking supplements are also common, they are less consistently followed. This data can be supported by a study by Slavin and Lloyd (2021), which emphasizes the benefits of consistent meal timing and label reading for making healthier dietary choices and maintaining overall well-being.

Table 5 shows the respondents' health promotion regarding bowel and bladder habits. Item no. 24, "I wash my hands with soap and water after using the toilet.," got the highest weighted mean of 3.59, categorized as Always Practice. This suggests a strong awareness and adherence to personal hygiene practices, which are crucial for preventing the spread of infections and maintaining overall health. In contrast, item no. 23, "I defecate every time I have the urge or bowel movement.," obtained the lowest weighted mean of 3.02, described as Often Practice. This less consistent behavior may be affected by factors such as busy schedules, lack of immediate access to restrooms, or other personal habits.

Table 5. *Health Promotion Practices in Terms of Bowel and Bladder Habits*

Indicators	Mean	Description
1. I move my bowels regularly.	3.24	Often Practice
2. I urinate right away when I feel like peeing.	3.43	Always Practice
3. I eat high-fiber foods, including fruits and vegetables.	3.20	Often Practice
4. I defecate every time I have the urge or bowel movement.	3.02	Often Practice
5. I wash my hands with soap and water after using the toilet.	3.59	Always Practice
Sub-composite Mean	3.30	Always Practice

The sub-composite mean score of 3.30 shows that respondents "always practice" healthy bowel and bladder habits. This high score reflects a consistent approach to maintaining good hygiene and regularity in bowel and bladder functions. Key practices such as urinating promptly when needed and washing hands after using the toilet are performed consistently. Additionally, practices like regular bowel movements, high-fiber foods, and responding to the urge to defecate are often followed, though slightly less consistently. This data links to a study by O'Reilly et al. (2019) that underscores the importance of regular bowel movements and proper hygiene for overall health, noting that consistent habits in these areas contribute to digestive health and the prevention of infections.

Table 6 shows the respondents' health promotion regarding activity and rest. In item no. 25, "I exercise regularly," got the highest weighted mean of 3.11, categorized as Often Practice. This reveals that consistent regular exercise practice suggests a strong awareness of its benefits, such as improved physical health, mental well-being, and overall fitness. Meanwhile, item no. 29, "I engage in a wholesome hobby," obtained the lowest weighted mean of 2.67, described as Often Practice. This suggests that time constraints, availability of resources, or personal interests may influence less consistent engagement in hobbies.

Table 6. *Health Promotion Practices in Terms of Activity and Rest*

Indicators	Mean	Description
1. I exercise regularly.	3.11	Often Practice
2. I sleep for 6-8 hours a day.	2.87	Often Practice
3. I take naps daily.	2.83	Often Practice
4. I take rest periods in between activities.	2.87	Often Practice
5. I engage in a wholesome hobby.	2.67	Often Practice
6. I do sports during my free time.	2.78	Often Practice
Sub-composite Mean	2.86	Often Practice

The sub-composite mean score of 2.86 suggests that respondents "often practice" health-promoting behaviors related to activity and rest. This score suggests that while participants regularly exercise and take naps or rest periods, there is less consistency in other areas, such as hobbies and sports. This may reflect challenges in integrating these practices into daily routines. In a study by Fardell et al. (2022), the data highlights the benefits of regular physical activity and adequate rest for overall health. The study finds that while regular exercise and sufficient sleep are crucial, achieving a balance between activity and rest can be challenging for many individuals.

Table 7 shows the respondents' health promotion regarding solitude and social interaction. In item no. 35, "I value the love and respect of my family, peers, and workmates," got the highest weighted mean of 3.57 and was categorized as Always Practice. This indicates that valuing relationships is a highly consistent behavior among respondents. While item no. 33, "I join in social gatherings, recreational activities, civic affairs, etc.," obtained the lowest weighted mean of 2.85, described as Often Practice. This suggests that less consistent participation in social activities. Time constraints, personal preferences, or other commitments could influence this.

Table 7. *Health Promotion Practices in Terms of Solitude and Social Interaction*

Indicators	Mean	Description
1. I spend time with my family, friends and co-workers.	3.24	Often Practice
2. I involve myself in any community organization or service.	2.93	Often Practice
3. I join in social gatherings, recreational activities, civic affairs, etc.	2.85	Often Practice
4. I develop a friendly, working relationship with others.	3.33	Always Practice
5. I value the love and respect of my family, peers, and workmates.	3.57	Always Practice
6. I pray or meditate at my most available time.	3.33	Always Practice
Sub-composite Mean	3.21	Often Practice

The sub-composite mean score of 3.21 indicates that respondents "often practice" behaviors related to solitude and social interaction. This shows a general commitment to engaging in social and community activities, maintaining relationships, and valuing emotional support from family and peers. Practices such as spending time with loved ones, developing friendly relationships, and valuing respect and love are consistently followed. However, involvement in community organizations and social gatherings is less often practiced. The findings can be supported by a study by Cacioppo and Cacioppo (2022) emphasizing the importance of social connections and community involvement for overall well-being. The study highlights that strong social relationships and engagement in meaningful social activities contribute significantly to mental and emotional health.

Table 8 shows the respondents' health promotion in terms of preventing hazards to life, functioning, and well-being. In item no. 41, "I follow safety guidelines, standards, and protocols at the workplace," got the highest weighted mean of 3.63, categorized as Always Practice. This indicates that respondents adhere to safety guidelines and protocols at work, reflecting a strong commitment to maintaining safety standards in the workplace. On the other hand, item no. 37, "I remove fire hazards at home and work," obtained the lowest weighted mean of 3.43, described as Always Practice. This suggests that while it is consistently practiced, it is slightly less emphasized than other safety measures.

Table 8. *Health Promotion Practices in Terms of Prevention of Hazards to Life, Functioning, and Well-Being*

Indicators	Mean	Description
1. I remove fire hazards at home and work.	3.43	Always Practice
2. I safely lock harmful and hazardous chemicals in the cabinets away from children.	3.61	Always Practice
3. I abide by the rules and regulations when driving, commuting, and crossing the streets.	3.52	Always Practice
4. I segregate and dispose of wastes properly.	3.59	Always Practice
5. I follow workplace safety guidelines, standards, and protocols.	3.63	Always Practice
6. I prepare myself for times of disasters, calamities, and other depressing environmental conditions that may likely occur.	3.54	Always Practice
7. I keep myself abreast of the latest workplace safety trends, such as fire drills or BLS training and seminars.	3.46	Always Practice
Sub-composite Mean	3.54	Always Practice

The sub-composite mean of 3.54 signifies that, on average, respondents "always practice" behaviors to prevent hazards to life, functioning, and well-being. This high score reflects a general dedication to implementing and maintaining various safety practices and preparedness strategies. Supporting this, a study by Liu et al. (2021) highlights the importance of rigorous adherence to safety protocols in preventing accidents and ensuring overall well-being. The study emphasizes that consistent safety practices, including workplace safety and emergency preparedness, are crucial for minimizing risks and enhancing safety outcomes.

Table 9 shows the respondents' health promotion in terms of promotion of normalcy. In item no. 44, "I maintain good grooming and hygiene," got the highest weighted mean of 3.52, categorized as Always Practice. This reveals that respondents value personal care and cleanliness, showing a high level of commitment to these aspects of health. On the other hand, item no. 45, "I seek medical and dental examinations once a year," obtained the lowest weighted mean of 2.89, described as Often Practice. This suggests that this practice, while still "often practiced," is less consistently observed than other health promotion activities.

Table 9. Health Promotion Practices in Terms of *Promotion of Normalcy*

Indicators	Mean	Description
1. I submit myself to regular annual physical examinations.	3.17	Often Practice
2. I seek medical and dental examinations once a year.	2.89	Often Practice
3. I maintain good grooming and hygiene.	3.52	Always Practice
4. I monitor my weight, blood pressure, blood sugar.	2.93	Often Practice
5. I perform a self-examination of my body to note any changes, such as testicular examination or breast self-examination.	2.91	Often Practice
6. I consult a physician if I notice unusual in my body.	2.91	Often Practice
7. I take medications only when prescribed by a physician.	3.24	Often Practice
8. I strive for balance within myself, my family, and my work.	3.36	Always Practice
Sub-composite Mean	3.12	Often Practice

The sub-composite mean of 3.12 reflects that, on average, respondents "often practice" behaviors aimed at promoting normalcy, such as regular health monitoring and striving for balance in life, with some variability in adherence. The study of Rosenberg and Patel (2021) highlights the significance of routine health screenings and personal care routines for maintaining overall well-being. The study found that while personal care practices like grooming are consistently followed, regular medical check-ups are less uniformly practiced, impacting early detection and management of health conditions.

Table 10 shows the respondents' summary of their health practices. The highest health promotion practices are seen in Bowel and Bladder Habits (3.30) and Prevention of Hazards to Life, Functioning, and Well-Being (3.54), where individuals "always practice" these behaviors, showing a strong commitment to maintaining regular bodily functions and safety. On the other hand, Food Intake (2.97) and Activity and Rest (2.86) are practiced less consistently, indicating areas where improvement could enhance overall health promotion practices.

Table 10. *Summary of the Health Promotion Practices*

Summary of the Health Promotion Practices	Mean	Description
1. Intake of Air	3.05	Often Practice
2. Fluid Intake	3.21	Often Practice
3. Food Intake	2.97	Often Practice
4. Bowel and Bladder Habits	3.30	Always Practice
5. Activity and Rest	2.86	Often Practice
6. Solitude and Social Interaction	3.21	Often Practice
7. Prevention of Hazards to Life, Functioning and Well-Being	3.54	Always Practice
8. Promotion of Normalcy	3.12	Often Practice
Composite Mean	3.16	Often Practice

The composite mean score of 3.16 indicates that respondents "often practice" health promotion behaviors across various domains. This score reflects a general adherence to health-promoting practices, though not uniformly across all areas. This aligns with a study by Brown et al. (2021), which suggests that while individuals generally engage in health-promoting practices, the degree of adherence varies by domain. This variability highlights the need for targeted interventions to improve consistency in all aspects of health promotion.

3.3 Work-Related Health Problems

Table 11. *Work-Related Health Problems*

Work-Related Health Problems	Frequency	Rank
1. Cough	26	1
2. Headache	16	2
3. Colds	16	2
4. Fever	14	3
5. Hyperacidity	12	4
6. Sore Throat	11	5
7. Flu	9	6
8. Allergies	8	7
9. Dysmenorrhea	8	7
10. Burns	6	8
11. Sprains	5	9
12. Asthma	4	10
13. Joint Pains (Arthritis)	2	11
14. Conjunctivitis	1	12

The data from Table 11 highlights the frequency of various work-related health problems among the participants. The most frequently reported issue is cough, with 26 occurrences indicating it is the most prevalent health problem experienced by individuals in the workplace. Headaches and colds follow this, each reported 16 times, suggesting these are common issues. Other notable health problems include fever (14 occurrences), hyperacidity (12 occurrences), and sore throat (11 occurrences), which rank higher in frequency but are less common compared to coughs, headaches, and colds. Flu and allergies, each reported 9 and 8 times, respectively, and dysmenorrhea, also reported 8 times, represent moderate frequency issues. Health problems like burns (6 occurrences), sprains (5 occurrences), and asthma (4 occurrences) are less frequent but still noteworthy. Lastly, joint pains (arthritis) and conjunctivitis are the least reported problems, with only 2 and 1 occurrence, respectively.

These findings highlight the need for targeted health interventions in the workplace, mainly focusing on the most common issues like coughs, headaches, and colds. A study by Tjepkema et al. (2020) supports the relevance of addressing common workplace health issues, showing that frequent health problems such as respiratory conditions and headaches are significant concerns in occupational health. The study suggests that workplace health programs should prioritize addressing these prevalent issues to improve employee well-being.

4.0 Conclusion

This study provided valuable insights into the health promotion practices and work-related health problems among Eleuterio's Can-Umantad Falls and Terraces Resort Incorporated employees. The findings revealed that while some health promotion practices were moderately implemented, there are still gaps in fostering a workplace environment that fully supports employee well-being. The prevalence of work-related health problems, such as respiratory illnesses and physical discomfort, underscores the organization's urgent need for more comprehensive health and safety measures. These results highlight the importance of proactive health promotion strategies in reducing workplace health risks and enhancing employee productivity and morale. Addressing these challenges is a health imperative and an economic necessity for sustaining the resort's operational efficiency and service quality. This study emphasizes the need for a collective effort from management and employees to adopt holistic health practices, improve workplace conditions, and implement policies prioritizing workforce well-being. The findings can serve as a foundation for future interventions to promote a healthier and more productive workforce in the tourism industry.

5.0 Contributions of Authors

The authors' contributions are as follows: Jesszon B. Cano served as the principal author and was responsible for the conceptualization, design, data collection, and overall analysis of the study. May Amor D. Gucor provided critical oversight as the Ethics Reviewer, ensuring the study adhered to ethical standards. Lilanie M. Olaso contributed as the Data Analyst, focusing on the statistical analysis and interpretation of the results. Arlinda N. Ramasola was the Editor, refining the manuscript for clarity and coherence. Darwin A. Lim acted as the Content Reviewer, ensuring the accuracy and relevance of the study's content.

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7.0 Conflict of Interests

The authors declare no conflict of interest regarding this study's conduct, the data analysis, or the publication of its findings.

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Research Culture and Productivity of STEM Teachers and Students: Basis for Research Intervention Program

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Abstract. The problem of research culture and productivity extends beyond the Philippine education system, representing a global challenge affecting many countries and institutions. This descriptive-correlational study examined the research culture and productivity among Science, Technology, Engineering, and Mathematics (STEM) teachers and students at Esperanza National High School. The research employed complete enumeration, involving 25 teachers and 105 students as respondents. Comprehensive data collection and analysis, like frequency, percentage, mean, standard deviation, and Pearson r correlation coefficient techniques, provided robust insights into research dynamics. The teachers' research culture demonstrated a high overall mean of 4.16, indicating substantial research knowledge, skills, and positive attitudes toward research integration in their professional practice. This high score suggests that teachers have effectively acquired research competencies and view research as an integral component of their teaching methodology, demonstrating a proactive approach to academic scholarship. Students' research culture showed a high overall mean of 3.94, highlighting the school's effectiveness in creating research learning opportunities. The findings particularly emphasized the institution's ability to establish venues for student researchers to learn, relearn, share, and continuously improve their research capabilities. Correlation analysis revealed significant relationships between research culture and productivity. For teachers, a high correlation coefficient of $r_s = 0.70$ ($p = 0.004$) indicated that a robust research culture directly enhances research performance. Students exhibited a significant correlation of $r = 0.47$ ($p = 0.000$), demonstrating that research exposure positively impacts their academic research capabilities and potential for scholarly engagement. The study recommends implementing research intervention programs based on the ADDIE model, providing targeted methodological workshops, encouraging research collaborations, creating supportive research forums, and developing comprehensive research development strategies to enhance research culture and productivity in educational settings.

Keywords: ADDIE model; Descriptive-correlational; Research intervention; Research culture; Research productivity; Intervention program; STEM teachers and students.

1.0 Introduction

One global problem regarding research culture and productivity in Basic Education, specifically in senior high schools, is the need for more opportunities for students to engage in research activities. According to Roxas (2020), many high school and senior high school students need more access to research resources and opportunities to improve their research skills and productivity. Moreover, according to Can (2019), teachers refrain from refreshing their knowledge and professional competencies through activities such as research, while Larionow and Gabrys (2024) state that students also need more passion and inventiveness.

Several important internal and external factors, including integration into the Association of Southeast Asian Nations (ASEAN), global competitiveness, globalization, the incorporation of information and communications technology (ICT) in the classroom, and other significant developments, are causing the Philippine educational system to undergo rapid change. When putting the Philippines' Department of Education's new K-12 program into action across all Basic Education institutions, it is important to think about things like evidence-based policy, better student achievement, better curriculum, instruction, and assessment, teacher quality, and teacher professionalism (Castillo, 2018).

In order to institutionalize action research within the Basic Education system, the Department of Education (DepEd) has implemented and launched numerous activities and initiatives. The department has implemented DepEd Order No. 4 Series of 2016, amended DepEd Order No. 43 Series of 2015 and DepEd Order No. 39 Series of 2016, and adopted the Basic Education Research Agenda, among other significant changes and initiatives, concerning action research. In addition, introducing senior high school in the Philippines expanded the range of subjects available to students. Significant changes have been made to the curriculum for grades 11 and 12, including introducing two new applied courses based on research: Practical Research 1-Qualitative and Practical Research 2-Quantitative, as well as Inquiries, Investigations, and Immersion, in which the students have the freedom to select whichever of the two methods, or a combination of both, they would like to apply to produce a credible research paper that will be of use to the community (Deysolong, 2023).

In light of these, basic education institutions should consider many significant aspects to meet the requirements of an evolving world. Moreover, one of these elements is including action research as a significant function of a teacher (Saro & Taray, 2024) and doing research for students in grades 11 and 12 as part of the DepEd's K-12 curriculum program (Campos, 2023). The research output of teachers still needs to improve despite the institutionalization of research in basic education as well as the numerous efforts and programs of the DepEd. According to the research carried out by Cariaga (2023), educators working in basic education settings, such as senior high schools, are still adjusting to incorporating research into their educational philosophies and practices. This is the case even though research has been incorporated into basic education settings for some time. In addition, numerous studies have been conducted that have focused on the current state of research productivity of teachers and students (Almerino et al., 2020), but only a small number of studies have been conducted to study the underlying cause of this poor productivity (Onyefulu, 2024).

Since 2004, Esperanza National High School has demonstrated an impressive record of continually turning out high-achieving students and winning multiple accolades in regional and national contests. Among these achievements are the National Science and Technology Fair, the Regional Science Fair, and the Research Conferences. These successes show how strongly teachers and students value research. Rico's 2021 study provides more proof, highlighting how teachers actively engage in action research to enhance student development and performance. Nevertheless, no existing studies have examined the research culture and productivity of STEM teachers and students in the institution since implementing the K-12 curriculum. This further justifies the need for the study. This urges the researcher to conduct this study to discover how Science, Technology, Engineering, and Mathematics teachers and students embrace and practice research culture in the field. Furthermore, the study aims to establish a link between the teacher's and students' research culture and their research productivity.

Finally, this study's findings served as a foundation for interventions to close gaps, enabling research culture to become fully embedded in the system for research productivity to become an integral part of school functions and, thus, a more reform-responsive educational environment to emerge. The Proposed Research Intervention Program is a training package that offers to close the gaps so that research culture becomes fully embedded in the DepEd and research productivity becomes an integral part of school function. The Analysis, Design, Development, Implementation, and Evaluation (ADDIE) model guides the intervention program. The ADDIE model provides a robust framework for developing systematic and effective intervention programs in educational research. This instructional design model offers a structured approach to creating targeted interventions, particularly enhancing research culture and productivity.

2.0 Methodology

2.1 Research Design

The study utilized the descriptive-correlational research design to investigate the relationship between research culture (independent variable) and research productivity (dependent variable) of STEM teachers and students. The independent variable, research culture, comprises three specific indicators: research attitude and adaptability, research knowledge and skills, and support for the research forum. The dependent variable, research productivity, is measured through two indicators: research outputs and research involvement. In this correlational research approach, the study will examine how the indicators of research culture potentially correlate with research productivity among STEM teachers and students. By employing a descriptive-correlational method, the research will objectively analyze the natural relationships between these variables without attempting to manipulate or establish direct causation. Miksza and Elpus (2018) define descriptive research as observing behavior to describe attributes objectively and systematically. Steinberg and Lam (2011) describe correlational research as a method that predicts how variables are naturally related in the real world. This methodological approach provides insights into the potential connections between research culture indicators and research productivity indicators in STEM educational environments.

2.2 Research Locale

The study was conducted in Esperanza National High School (ENHS), Mabolo Street, Brgy. Poblacion, Esperanza, Sultan Kudarat.

2.3 Research Participants

The study's respondents were 25 STEM teachers and 105 Grade 12 students of STEM of Esperanza National High School for the school year 2023 – 2024. This study employed complete enumeration as a sampling technique for all the grade 12 STEM students and teachers. Complete enumeration, also known as a census, is a sampling technique involving every population in the study. This technique is often used when the population size is small and the cost and time required for sampling are minimal (Ajithakumari, 2024). The criteria for inclusion in the study were that teachers needed to be STEM instructors at Esperanza National High School. At the same time, students had to be enrolled in Grade 12 STEM at the same institution during the specified academic year. They should also be willing to participate in the study.

2.4 Research Instrument

This study employed two (2) sets of research instruments. The first set is an adapted research survey questionnaire from Tagaro (2015). It determined the level of STEM teachers' and students' research culture regarding research attitude and adaptability, research knowledge and skills, and support for the research forum. The second set is a researcher-made survey questionnaire. It determined the level of STEM teachers' and students' research productivity regarding research outputs and involvement. Each research instrument was validated and tested for reliability to ensure that it produced accurate answers in response to the study question. The researcher gave his advisor a first draft of his two sets of research instruments to review for formatting and indicator errors related to the study's primary variables. His advisor and the other examining committee members were approached periodically to solicit advice and feedback on the instrument's structure, content, and presentation. Experts in the field were asked to review both sets of questionnaires and indicate whether or not they agreed with the study's aims by marking them with a checkmark (/), a single ex (X), or a double ex (XX), respectively. The statements from the survey questionnaire that the content experts validated were incorporated into the final version of the instrument. When an item's agreement ratio was not high enough, it was either fixed or discarded. After making the necessary changes to each item, the research and validation instruments developed by Good and Scates (1954) and revised by Abdullah and Cerado (2015) were sent to the panel of content validators for review. After tallying and averaging the responses from five (5) content validators, the Survey Questionnaire was given an overall mean score of 4.90. Please refer to the section below for a detailed explanation of how to make sense of the validation result. After tallying and averaging the responses from five (5) content validators, the Survey Questionnaire was given an overall mean score of 4.90.

The instrument's reliability for internal consistency was obtained using Cronbach's Alpha. In terms of the research culture of teachers, it has a Cronbach Alpha of 0.93. The following reliability coefficients comprised research attitudes and adaptability of teachers (.89), research knowledge and skills of teachers (.96), and support for

research forums for teachers (.93). While in research productivity of teachers, the Cronbach Alpha resulted in 0.81. The following reliability coefficients include research outputs (.89) and research involvement (.92). Regarding the research culture of students. It has a Cronbach Alpha of 0.91. The following reliability coefficients consisted of research attitudes and adaptability of students (.75), research knowledge and skills of students (.91), and support for the research forum of students (.78). Hence, in students' research productivity, it has a Cronbach Alpha of 0.84. The following reliability coefficients included the research outputs (.84) and research involvement (.83). The reliability coefficient values are at least (.60) and considered acceptably reliable. It was supported by Kilic (2016), who states that a Cronbach's Alpha value of .60 and above indicates that the test items have internal consistency. The study used Spearman's rank correlation. Spearman's rank correlation in this study is highly appropriate given the 5-point Likert scale used to measure research culture and productivity. Spearman's correlation is ideal for analyzing ordinal data, such as Likert items, as it does not assume equal intervals between scale points or require normally distributed data. This method effectively captures monotonic relationships between variables, which is suitable for educational research where relationships may not be strictly linear. Additionally, Spearman's correlation is robust to outliers, making it reliable for Likert scale data that may not meet parametric test assumptions.

2.5 Data Gathering Procedure

The researchers secured all necessary Communication Letters from the Graduate School of Sultan Kudarat State University. For the validity and reliability tests of the two (2) sets of research instruments, they asked permission from the research experts to validate the research instrument. After ensuring the research instrument's validity and reliability, they requested the approval of the Schools Division Superintendent of the Division of Sultan Kudarat to administer the survey questionnaire to the Grade 12 STEM teachers and students of Esperanza National High School. An approval letter from the Office of the Schools Division Superintendent was attached to seek permission from the Principal of Esperanza National High School. After all survey questionnaires were gathered, the results were consolidated for data analysis.

2.6 Ethical Considerations

This research study followed ethical guidelines. The respondents' participation was voluntary, and they could leave the study anytime if they felt uncomfortable. There was no physical, social, psychological, or other harm to the respondents' participation. The dignity and well-being of teachers and students who responded were always protected. The research data remained confidential throughout the study, and the respondents' rights were protected to maintain scientific or academic integrity. In addition, this research study is plagiarism-free and without research misconduct.

3.0 Results and Discussion

3.1 Research Culture of STEM Teachers

The level of the research culture of STEM teachers was measured through its three indicators: research attitude and adaptability, research knowledge and skills, and support for the research forum (see Table 1). It yielded an overall mean of 4.16, which is described as high. This finding implied a positive research culture for STEM teachers with positive attitudes, strong knowledge and skills, high adaptability, and strong institutional support. This indicates that research is well integrated and valued within the educational environment and the context of their professional practice. Moreover, the overall standard deviation is 0.74, less than 1, indicative of a minimal range of dispersion.

Research Attitude and Adaptability of STEM Teachers

As shown, the section mean of 4.14 is described as High. This high level of STEM teachers, research attitude, and adaptability was confirmed by four indicators, which were described as very high, and six with a high description. It indicates that STEM teachers had positive feelings and opinions about research. It also signifies that they accepted and embraced research as part of their daily routine in the teaching profession. In particular, the highest mean of 4.80 with a description of Very High shows that teachers believed that through research, they discovered new teaching strategies and principles that can suit different learning styles of students. In addition, they considered research as a stepping stone toward a successful career. Differently, teachers accepted the task of conducting action research as manifested by 3.72, which was described as high. However, some of them were hesitant to accept research assignments due to their hectic schedule in teaching. It was validated by the lowest

mean they acquired in this indicator. In support of this result, Wajid and Jami (2020) emphasized that positive research attitudes are needed to become effective classroom facilitators since most of the actions taken are anchored to the findings and recommendations of the action research conducted by the teachers. In addition, Milner-Bolotin (2018) underscored that research-informed teacher education and professional development are critical components for effectively executing STEM education changes.

Table 1. Consolidated findings of the level of research culture of STEM teachers

Indicators/Items	Mean	SD	Verbal Description
A. Research Attitude and Adaptability			
1. I believe that research is an important step toward discovering new pedagogies and teaching practices.	4.80	0.50	Very High
2. I clearly understand the benefits of conducting research.	4.52	0.77	Very High
3. I feel fulfilled when I finish conducting a research paper.	4.36	0.59	Very High
4. I recognize that conducting research is one of the jobs of a teacher.	4.32	0.85	Very High
5. I always welcome the idea of gathering data.	4.08	0.64	High
6. I was pleased when I heard the word research.	4.04	0.73	High
7. I am happy to think of the work of a researcher.	3.96	0.68	High
8. I like to read research papers.	3.88	0.73	High
9. I enjoy conceptualizing research problems.	3.76	0.72	High
10. I always welcome assignments to conduct research.	3.72	0.79	High
Section Mean	4.14	0.70	High
B. Research Knowledge and Skills			
1. I can present data in tables and graphical forms.	4.40	0.76	Very High
2. I can collect a review of related literature.	4.24	0.66	Very High
3. I can make a conclusion and recommendation based on the study results.	4.24	0.66	Very High
4. I can identify a research problem.	4.20	0.58	Very High
5. I can identify an appropriate sampling method.	4.20	0.76	Very High
6. I can make references based on the findings of the study.	4.16	0.75	High
7. I can analyze and interpret data.	4.12	0.67	High
8. I can prepare a conceptual framework for the study.	3.96	0.73	High
9. I can construct a data collection instrument.	3.96	0.73	High
10. I can formulate a working research title.	3.92	0.64	High
Section Mean	4.14	0.69	High
C. Support for Research Forum			
1. The school has a pool of research advisers, statisticians, and grammarians.	4.48	0.77	Very High
2. There is visible administrative support the research programs like the school research congress.	4.36	0.81	Very High
3. All teachers in school are encouraged to complete at least 1 research paper yearly.	4.36	0.86	Very High
4. Research works of teachers are given due recognition.	4.36	0.70	Very High
5. The school conducts seminars and workshops on research.	4.32	0.85	Very High
6. Teachers' research outputs are presented in a forum like a school/division/regional research congress.	4.12	0.97	High
7. Issues and concerns concerning the research productivity of teachers are addressed regularly.	4.12	0.88	High
8. There is a mentoring program conducted by teachers who are research experts to assist and develop the competence of beginning teachers.	4.04	0.73	High
9. Research activities are funded.	3.96	0.89	High
10. The school provides financial support for teachers who want to participate in scholarly conferences/seminar workshops.	3.84	0.99	High
Section Mean	4.19	0.84	High
Overall Mean	4.16	0.74	High

Note: 4.21 - 5.00 (*Very High*), 3.41 - 4.20 (*High*), 2.61 - 3.40 (*Moderately High*), 1.81 - 2.60 (*Low*), 1.00 - 1.80 (*Very Low*)

Research Knowledge and Skills of STEM Teachers

This indicator reveals a section mean of 4.14, described as High. This high extent of teachers' research knowledge and skills was established by five indicators described as very high and five indicators with a description of high. It connotes that STEM teachers have acquired enough information, facts, and skills in research. It also implies that they can examine, gather, understand, and assess information about their study. Specifically, the highest mean of 4.40 with a description of Very High illustrates that teachers can present their research outputs using tables and in graphical forms. On the other hand, teachers can construct a working research title, as demonstrated by 3.92, which is described as high. Some of them struggled to craft a good research title, for they needed to be more confident in their acquired research skills and clearly understand the research. Their lowest mean score for this indicator was confirmed. The findings corroborate Caingcoy's (2020) assertion that educators possessing adequate

research knowledge and skills can enhance their confidence and credibility, thereby leading to improved teaching performance that is both effective and efficient. Furthermore, Bugwak (2021) indicated that educators frequently encounter difficulties when confronted with unfamiliar topics beyond their expertise, such as research procedures. Evardo (2024) corroborates this challenge, indicating that out-of-field educators may encounter self-doubt and diminished self-esteem when assigned to unfamiliar disciplines such as research. This study revealed a high level of overall research competency; however, Harrell-Williams et al. (2015) observed that teachers frequently exhibited diminished confidence in more intricate statistical concepts, such as hypothesis testing and group comparison.

Support for Research Forum of STEM Teachers

As Shown, the section mean of 4.19 shows that support for research forums for teachers was high. It is confirmed by five indicators described as very high and five indicators with a description of high. It demonstrates that the institution has established a venue for teacher researchers to get constructive comments from experts in areas/disciplines for improvement of their research outputs and the opportunity to share the results of their study. It also denotes that the school supports and recognizes the teachers' research work. Notably, the highest mean of 4.48 with a Very High description proves that the school has a pool of research advisers, statisticians, and grammarians. On the contrary, the institution provides financial support for the teachers who want to participate in scholarly conferences/seminar workshops, as revealed by 3.84, which is described as high. However, sometimes, the school needs more funds to provide financial assistance to the teachers. Their lowest mean score for this indicator was confirmed. Calma (2010) stressed that the administration's research experience, training, and financial and technical support influence the research output and dissemination. This is consistent with the study by Taylor (2016), which found that teacher research can become the stepping-stone for school improvement formulated, led, and disseminated by teachers serving as teacher leaders. Interestingly, while this study found high overall support for research forums, Harrell-Williams et al. (2015) discovered that teachers often had lower confidence in more complex statistical concepts. This suggests that even with institutional support, there may be specific areas where teachers require additional assistance in their research endeavors.

3.2 Research Culture of STEM Students

The research culture of STEM students was measured in terms of research attitude and adaptability, research knowledge and skills, and support for the research forum (see Table 2). It yielded an overall mean of 3.94, which is described as high. This suggests that a positive research culture for STEM students with positive attitudes, high knowledge, and skills, and appraised strong within institutional support educational which environment places as research seen as by a high integral mean part scores of and their standard academic deviations curriculum for and research something that engagement is and well competence across multiple dimensions. More so, the overall standard deviation is 0.74, less than 1, indicative of a minimal range of dispersion in the respondent's response.

Research Attitude and Adaptability of STEM Students

As shown, the section mean of 3.97 is described as High. This high level of STEM students, research attitude, and adaptability was established by four indicators described as very high, 5 with a description of high, and 1 with a description of low. It demonstrates that STEM students have favorable attitudes and thoughts regarding research. It also indicates that they were open to and enthusiastic about participating in research as part of their academic curriculum in senior high school. In particular, the highest mean of 4.69 with a description of Very High indicates that students believe research is a crucial stage in discovering new learning opportunities and practices. On the other hand, students do not look forward to formulating a research problem. It is demonstrated by a mean of 3.29, which is described as low and is the lowest mean score they have. Roxas (2020) supported this finding by stating that students with sufficient knowledge and research abilities might do research papers with confidence and save time preparing the parts of their papers, resulting in a more productive research journey in senior high school. Nevertheless, according to Aityan (2022), one of the most challenging components of conducting any research is identifying and formulating the problem that has to be investigated. So, rookie researchers like students require utmost caution in the early phases of the research process, which causes them to struggle when trying to conceptualize the problem in the research.

Table 2. Consolidated findings of the level of research culture of STEM students

Indicators/Items	Mean	SD	Verbal Description
A. Research Attitude and Adaptability			
1. I believe that research is an important step toward discovering new learning opportunities and practices.	4.69	0.58	Very High
2. I recognize that conducting research is one of the requirements in the senior high school curriculum.	4.58	0.58	Very High
3. I feel fulfilled when I finish conducting a research paper.	4.57	0.60	Very High
4. I clearly understand the benefits of conducting research.	4.44	0.69	Very High
5. I always welcome the idea of gathering data.	3.90	0.75	High
6. I am happy to think of the work of a researcher.	3.82	0.79	High
7. I like to read research papers.	3.55	0.77	High
8. I was pleased when I heard the word research.	3.49	0.81	High
9. I always welcome assignments to conduct research.	3.48	0.81	High
10. I enjoy conceptualizing a research problem.	3.29	0.77	High
Section Mean	3.97	0.71	High
B. Research Knowledge and Skills			
1. I can make references based on the findings of the study.	3.91	0.74	High
2. I can collect a review of related literature.	3.89	0.70	High
3. I can make a conclusion and recommendation based on the study results.	3.75	0.81	High
4. I can identify a research problem.	3.74	0.76	High
5. I can prepare a conceptual framework for the study.	3.64	0.72	High
6. I can construct a data collection instrument.	3.64	0.72	High
7. I can formulate a working research title.	3.55	0.73	High
8. I can analyze and interpret data.	3.49	0.68	High
9. I can present data in tables and graphical forms.	3.46	0.75	High
10. I can identify an appropriate sampling method.	3.39	0.64	High
Section Mean	3.64	0.73	High
C. Support for Research Forum			
1. The school has a pool of research advisers, statisticians, and grammarians.	4.56	0.73	Very High
2. All graduating students are encouraged to complete at least 1 research paper before graduation.	4.50	0.72	Very High
3. There are visible administrative supports of research programs like school research congress for students.	4.48	0.79	Very High
4. Research works of teachers are given due recognition.	4.41	0.69	Very High
5. The school conducts seminars and workshops on research.	4.36	0.75	Very High
6. Teachers' research outputs are presented in a forum like a school/division/regional research congress.	4.17	0.75	High
7. Issues and concerns concerning the research productivity of teachers are addressed regularly.	4.02	0.83	High
8. There is a mentoring program conducted by teachers who are research experts to assist and develop the competence of beginning teachers.	3.93	0.74	High
9. Research activities are funded.	3.89	0.90	High
10. The school provides financial support for teachers who want to participate in scholarly conferences/seminar workshops.	3.77	0.99	High
Section Mean	4.21	0.78	Very High
Overall Mean	3.94	0.74	High

Research Knowledge and Skills of STEM Students

This indicator reveals a section mean of 3.64, described as High. This high extent of STEM students' research knowledge and skills was confirmed by one indicator described as moderately high and nine indicators with a description of high. It suggests that students in STEM fields have obtained sufficient knowledge, facts, and abilities in the research process. It indicates that they can investigate, collect, comprehend, and evaluate material about their research. Specifically, the highest mean of 3.91 with a description of High indicates that students can draw references based on the results of their research. However, students can identify an appropriate sampling method in their study, as shown by 3.39, which is described as moderately high. Nonetheless, some needed help finding an appropriate sampling method for their research. It was proper because they achieved the lowest mean scores in this indicator. The study of Aporbo (2022) supported this finding when they stated that students with sufficient knowledge and abilities of research might do research papers with confidence and save time preparing the parts of their papers, resulting in a more productive research journey in senior high school.

Support for Research Forum of STEM Students

As shown, the section mean of 4.21 is described as Very High. This extent of STEM students' support for the research forum was supported by five indicators described as very high and five indicators with a description of high. It demonstrates that the school has established a venue for student researchers to learn, relearn, and unlearn things for the improvement of their research papers as well as the opportunity to share the results of their study. Furthermore, the highest mean of 4.56 with a description of Very High denotes that the school has a pool of teachers such as statisticians, grammarians, and research advisers. On the other hand, student research activities are funded, as revealed by 3.77, described as high. However, due to budget constraints, the school is occasionally unable to support some of the research activities of the students. It was confirmed by their lowest mean score for this indicator. Lei et al. (2018) also showed that supporting student research can improve academic achievement and overall student success. Additionally, the availability of resources, such as funding and research advisers, can significantly impact the success of student research outputs (Adebayo, 2020).

3.3 Research Productivity of STEM Teachers

The level of research productivity of STEM teachers was measured in terms of research outputs and research involvement (see Table 3). The total measure, with an overall mean score of 2.95 and a standard deviation of 1.26, indicates that most teachers cannot publish their work in educational journals. Moreover, whereas teachers have a hard time sharing their studies at research forums or conferences, they perform slightly better in presenting titles, defending proposals, and attending research congresses.

Table 3. Consolidated findings of the level of research productivity of STEM teachers

Indicators/Items	Mean	SD	Verbal Description
A. Research Outputs			
1. I helped students to complete their research paper/s.	4.08	0.91	High
2. I developed research proposal/s.	3.20	1.22	Moderately High
3. I had a complete research paper/s.	3.08	1.26	Moderately High
4. My research paper was accepted for Basic Education Research Fund (BERF).	2.28	1.21	Low
5. I was able to publish a research paper/s in an educational journal.	1.88	1.13	Low
Section Mean	2.90	1.14	Moderately High
B. Research Involvement			
1. I served as an adviser to student researchers.	3.64	1.58	High
2. I served as a member of the research examining committee.	3.52	1.58	High
3. I have attended research conferences and presentations.	3.32	1.31	Moderately High
4. I have been a lead researcher in a research study.	2.36	1.15	Low
5. I was able to present a research paper/s in a research forum/conference.	2.20	1.26	Low
Section Mean	3.00	1.37	Moderately High
Overall Mean	2.95	1.26	Moderately High

Research Outputs of STEM Teachers

The section means 2.90, which is described as moderately high. This extent of STEM teacher research outputs was established by one indicator described as high, two as moderately high, and two as low. It connotes that the developed research proposals, completed research papers, and published research papers of teachers are low. The highest mean was 4.08, with a description of high displays showing that teachers helped their students complete their research papers. The majority of the teachers, on the other hand, could not publish research papers in an educational journal. It was demonstrated by a mean of 1.88, which is described as low and is the lowest mean score they have. This is supported by the study of Amalia and Willis (2021), who state that teachers tend to be reluctant to document and report their academic efforts in a research paper like action research. In addition, Yazon et al. (2019) revealed that the academics of teachers of the Department of Education were evaluated and showed moderate research productivity.

Research Involvement of STEM Teachers

As shown, the section mean of 3.00 is described as moderately high. This extent of Science, Technology, Engineering, and Mathematics teachers' research involvement was supported by two indicators described as high, one as moderately high, and 2 with a description of low. The teacher's involvement in research, such as presenting the title, defending the research proposal, and attending the research congress, could be higher. In addition, the highest mean of 3.65 with a description of High denotes that teachers have served as advisers of student-researchers. On the other hand, the dominant teachers could not present their study in a research

forum/conference. It was demonstrated by a mean score of 2.20, which is described as low and is the lowest mean score they have. Ulla et al. (2017) stated that participation in research facilitates a focused examination of one's practice and fosters confidence in educators as professionals. Furthermore, accomplished teacher-researchers can enhance their credibility and confidence, resulting in more effective and efficient teaching (Hatch et al., 2005). On the contrary, Tarrayo et al. (2019) emphasized that teachers are constrained by the notion that their primary responsibility is to teach despite their appreciation of the benefits that research can bring to their duties and responsibilities. This is because they have limited time to conduct research. They require assistance in recognizing themselves as data analysts and information processing professionals.

3.4 Research Productivity of STEM Students

The level of research productivity of STEM students was measured in terms of research outputs and research involvement (see Table 4). The findings suggested that students helped their co-researchers complete their research papers but could not publish them in a research journal. Moreover, students can present their research titles to their research adviser/teacher but cannot participate in a school research congress.

Table 4. Consolidated findings of the level of research productivity of STEM students

Indicators/Items	Mean	SD	Verbal Description
A. Research Outputs			
1. I helped my co-researchers to complete their research paper/s.	4.19	0.84	High
2. I submit the research paper/s to the research coordinator for final checking.	4.08	1.21	High
3. I had a complete research paper/s.	3.80	1.05	High
4. I developed research proposal/s.	3.71	0.84	High
5. I was able to publish a research paper/s in a research journal.	1.02	0.20	Very Low
Section Mean	2.90	0.82	Moderately High
B. Research Involvement			
1. I was able to present the research title/s to my research adviser/teacher.	4.26	1.09	Very High
2. I was able to defend my research proposal/s to my research panelists.	4.08	1.05	High
3. The findings of my research paper/s were successfully defended before the panelists.	3.41	1.28	High
4. I have been a lead researcher in a research undertaking.	3.08	1.32	Moderately High
5. I attended a school research congress.	1.23	0.59	Very Low
Section Mean	3.21	1.07	Moderately High
Overall Mean	3.01	0.95	Moderately High

Research Outputs of STEM Students

The section means 2.90, which is described as moderately high. This level of Science, Technology, Engineering, and Mathematics students was established by four indicators described as high and one as low. It connotes that the research output of the students could be higher. Specifically, the highest mean of 4.19 with a description of High shows that students helped their co-researchers to complete their research papers. Most students, on the other hand, could not publish their papers in a research journal. It was confirmed by a mean of 1.02, which is described as low and is the lowest mean score they have. The result is supported by Aporbo (2021), who mentions that time constraints and a lack of funding are obstacles to publishing research, leading to a relatively low number of student publications.

Research Involvement of STEM Students

As shown, the section mean of 3.21 is described as Moderately High. This high extent of Science, Technology, Engineering, and Mathematics (STEM) students' research involvement was confirmed by one indicator described as very high, two as high, one as moderately high, and 1 with a description of very low. The involvement of students in research could be higher. Specifically, the highest mean of 4.26 with a very high description indicates that students can present their research titles to their research adviser/teacher. However, students were not able to participate in a school research congress. It was proven true because they achieved the lowest mean score of 1.23 in this indicator with a very low description. The result is supported by Alyami et al. (2021), who mention that time constraints and a lack of funding are obstacles to publishing research, leading to a relatively low number of student publications. Niehaus et al. (2018) also emphasize that students who have broad exposure to research activities can use those experiences to see the practical application of their classroom experience represented in research projects.

3.5 Research Culture and Research Productivity of STEM Teachers

Table 5 shows that the Spearman rank correlation was run to examine the relationship between research culture and teacher research productivity.

Table 5. Correlational analysis between the research culture and the research productivity of STEM teachers

Variables	r_s	P	Interpretation
Research Culture	.70	0.004426568	Significant/Moderate or Substantial
Research Productivity			

Note: ns - not significant at .05 level

Significant, moderate, or substantial correlations exist between the two variables, $r_s = .70$, $p = 0.004426568$. The null hypothesis, "There is no significant relationship between the research culture and productivity of teachers," is rejected. It means that teachers' research culture and productivity are directly related, as proven by the positive correlation coefficient ($r_s = 0.70$). These findings suggest that research culture is highly significant in predicting productivity among STEM teachers. The results have important implications for educational policymakers and practitioners in promoting research culture among STEM teachers to enhance their productivity. In support of this study, Ulla et al. (2017) found that teachers who constantly engaged in research had various opportunities to expand the evidence-based research outputs and tremendously increased their understanding of teaching and learning practices. Further, Tagaro (2015) emphasized that research culture covers teachers' behaviors, values, expectations, attitudes, and standards. They added that research culture shapes teachers' academic careers and influences their interest in participating in different research undertakings. Moreover, Naldo and Ubayubay (2024) noted that research culture helps teachers expand their knowledge and build credibility. They added that research culture develops teachers' shared values that consistently help them set high goals and facilitate performing activities of greater significance.

3.6 Research Culture and Research Productivity of STEM Students

The correlational analysis, which aims to determine the relationship between research culture and STEM students' research productivity, indicates that it is significantly positively correlated ($r = 0.47$, $p = 0.00000035$).

Table 6. Correlational analysis between the research culture and the research productivity of STEM students

Variables	F	Df	P	r	Interpretation
Research Culture	29.79	104	0.000000335	0.47	Significant/Moderate or Substantial
Research Productivity					

Note: ns - not significant at .05 level

This data implies that students' research production positively correlates with a more robust research culture. Consequently, the alternative hypothesis was accepted, and the null hypothesis was rejected. The findings suggest that a strong research culture in STEM education can increase research productivity. These results have important implications for educators and policymakers in promoting research culture in STEM education. In layman's language, students' exposure to different research activities allowed them to perform well in their research subjects and other research undertakings. This finding is confirmed by Moore et al. (2016), who stated that research culture helps students pursue their interests, learn something new, refine their problem-solving skills, and challenge their lives in new ways. Working on a group-initiated research project allows them to collaborate closely with their research teacher. Further, Niehaus et al. (2018) support the above finding by noting that the research culture provides a broader educational experience whereby students can explore societal issues through research. They added that students who have broad exposure to research activities could use those experiences to see the practical application of their classroom experience represented in research projects. In addition, Paurillo (2019) stated that research culture develops students' skills in critical analysis and the capacity to make judgments and come to conclusions. They noted that research culture allows students to develop reflexivity as they consider what and how they learn. It enables them to notice quick changes in knowledge. In short, students' high level of research culture improves their participation in research activities in and outside the school.

3.7 Proposed Intervention Program

The research intervention program will be implemented using the ADDIE model. From the Analysis phase, key issues in STEM research culture and productivity have been identified. The goals and strategies to address these issues are in the Design phase. Training materials, mentorship programs, and educational resources will be developed in the Development phase. These materials and programs will be delivered to STEM teachers and

students during the Implementation phase, including organizing research forums. The program's effectiveness will be assessed in the Evaluation phase by measuring the increase in research output and skill improvement. This approach is suitable to ensure that the needs identified in STEM research culture and productivity are adequately addressed for the intervention program.

The Proposed Research Intervention Program is a training package that offers to close the gaps so that research culture becomes fully embedded in the system and research productivity becomes an integral part of school function. The Analysis, Design, Development, Implementation, and Evaluation (ADDIE) model guides the intervention program.

Analysis

The following key issues were identified:

- STEM teachers must be encouraged to document and report their research activities.
- STEM students must develop better research skills, particularly in sampling methods.
- STEM teachers and students need more exposure to research activities to improve their research culture and productivity.

Design

The following are the goals and objectives of the intervention program:

- Boost STEM teachers' and students' productivity and research culture.
- Enhance STEM students' research abilities, especially with sample techniques.
- Motivate STEM educators to record and share their research endeavors.
- Increase the exposure of STEM educators and learners to research activities.

Development

Develop the intervention program, which includes creating the training materials, mentorship program, research forums, and educational materials.

Implementation

Implement the intervention program, which involves disseminating the training materials, mentorship program, research forums, and educational materials to STEM teachers and students.

Evaluation

Evaluate the effectiveness of the intervention program by measuring the impact on STEM teachers' and students' research culture and productivity. The following are the evaluation metrics:

- Increase in the number of research proposals, completed research papers, and published research papers by STEM teachers.
- Improvement in STEM students' research skills, particularly in sampling methods.
- Increase in the number of student publications.
- Increase the number of STEM teachers and students attending research forums and conferences.

4.0 Conclusion

STEM teachers have positive feelings and opinions about research and accept and embrace research as part of their daily routine in the teaching profession. They can examine, gather, understand, and assess information about their study. The institution has established a venue for teacher researchers to receive constructive comments from experts in different areas/disciplines, aiming to improve their research outputs and provide them with the opportunity to share the results of their study. STEM students can investigate, collect, comprehend, and evaluate materials for their research. However, some require assistance finding an appropriate sampling method for their research. The research productivity of both STEM teachers and students has the potential for improvement. While they have developed research proposals and completed and published research papers, their involvement in research activities, such as attending research forums/conferences, is significant. The research culture and productivity of teachers are directly related to each other. A high extent of research culture among teachers tends to increase their research productivity. The higher the level of research culture among teachers, the better their performance in research undertakings. Furthermore, the research culture of students influences their research

productivity. Students' exposure to different research activities allows them to perform well in their research subjects and other research undertakings.

5.0 Contributions of Authors

The principal author contributes to the study's writing and implementation. The co-author edits and supervises the data.

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7.0 Conflict of Interests

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Violence and Motherhood: Comparing the Influence of Physical and Psychological Abuse on Parenting Approaches

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Abstract. Parenting approaches significantly influence children's developmental outcomes, yet understanding how violence against women impacts parenting remains critical. Existing research emphasizes the adverse effects of violence on familial dynamics but lacks a comparative analysis of physical and psychological violence in the Philippine context. This study addresses this gap by examining how these forms of violence influence the parenting approaches of women victims of abuse. The research employed a comparative descriptive design involving 50 women who sought care at the Dr. Jose N. Rodriguez Memorial Hospital and Sanitarium. Data were collected through validated questionnaires assessing parenting styles using a 4-point Likert scale. Respondents were categorized based on experiences of physical (21 participants) or psychological violence (29 participants). Physical violence included forms of assault such as hitting, punching, kicking, slapping, pushing, and shoving, while psychological violence encompassed manipulation, intimidation, and verbal abuse, including name-calling, shaming, and yelling. Key findings reveal that both forms of violence significantly shape parenting behaviors. Women exposed to physical violence tend to adopt stricter and more protective parenting styles, while psychological violence leads to heightened emotional vigilance and self-doubt. Psychological violence exhibited slightly more substantial impacts across dimensions, including emotional bonding, discipline, trust, and self-efficacy. Notably, respondents from both groups reported protective parenting behaviors and challenges with emotional connection. The study underscores the importance of trauma-informed interventions tailored to the distinct impacts of physical and psychological violence. These findings contribute to the development of evidence-based programs aimed at breaking cycles of violence and fostering healthier parent-child relationships in the Philippine context.

Keywords: Parenting; Physical violence; Psychological violence; Violence Against Women; Philippines.

1.0 Introduction

According to Howell et al. (2018), the issue of violence against women continues to be a concern on a global scale, given its direct effect on the psychological wellness of the victims, as well as the occurrence of negative consequences in their familial relationships. In the local context, the 2017 National Demographic and Health Survey released by the Philippine Statistics Authority (Medina, 2018) revealed that at least one (1) in four (4)

married women between the ages of fifteen (15) to forty-nine (49) years old, have experienced abuse in terms of physical, sexual, and emotional aspects from their partners. Physical violence refers to acts of physical harm, such as hitting, slapping, or other forms of aggression that women may experience. On the other hand, non-physical abuse and maltreatment, which include coercive and forceful control, emotional manipulation and influence, and all other actions that damage victims' overall mental health and impair the sense of self of mothers, are elements of psychological violence. The violence experienced by these women, as per Gershoff & Grogan-Kaylor (2016), should be worthy of attention as it can affect their styles in disciplining their children, influence their child-rearing practices, or still perpetuate generational cycles of violence.

Parenting style is crucial in shaping children's emotional and behavioral development. Based on Baumrind's typology, authoritative, authoritarian, permissive, and neglectful parenting styles have varying impacts on child outcomes (Goodman et al., 2020). These overarching styles influence how parents approach specific dimensions of parenting, particularly when faced with challenges. Key dimensions such as protective parenting, emotional bonding and empathy, discipline and consistency, trust and socialization, and self-efficacy and confidence in parenting may be significantly affected, especially in contexts where parents experience stressors like violence or trauma. For women who have experienced intimate partner violence, their capacity for responsive and nurturing parenting may be severely compromised, leading to increased use of maladaptive practices such as psychological control or harsh disciplinary measures (Labella & Masten, 2018). Women and mothers who are victims of physical violence often report higher levels of trauma and stress, causing their ability to provide their children with consistent emotional support to be hindered (Aljuhani & AlAteeq, 2020). In contrast to this, according to the study of Grogan-Kaylor et al. (2020), psychological violence can negatively affect a mother's self-esteem, possibly leading to being emotionally distant from their children or having a controlling parenting approach. This type of abuse is manifested in their experiences with coercive control, emotional maltreatment, and manipulation.

Despite the growing body of research on these aspects and their consequences, limited studies have focused on the comparative effects of physical versus psychological violence in the Philippine context (Valdez et al., 2022). The present study addresses the research problem of understanding how physical and psychological violence influences the parenting approaches of women victims of violence, particularly those seeking care at a public tertiary healthcare facility in the Philippines, Dr. Jose N. Rodriguez Memorial Hospital and Sanitarium, which is formerly known as Central Luzon Sanitarium, and also called the Tala Leprosarium. This study aims to provide insights into how violence impacts specific parenting approaches and to contribute to evidence-based interventions that promote healthier family dynamics and break intergenerational cycles of violence.

2.0 Methodology

2.1 Research Design

This study utilized a comparative descriptive research design to examine the influence of physical and psychological violence on women's parenting approaches. A comparative approach was deemed appropriate to identify and analyze differences in parenting styles between women who had experienced physical violence (hitting, punching, kicking, slapping, pushing, and shoving) and those subjected to psychological violence (manipulation, intimidation, and verbal abuse, including name-calling, shaming, and yelling).

2.2 Research Locale

The study was conducted in the Philippines' public tertiary healthcare facility, Dr. Jose N. Rodriguez Memorial Hospital and Sanitarium, formerly Central Luzon Sanitarium, called the Tala Leprosarium. This medical establishment is at Saint Joseph Avenue, Tala, Caloocan City North.

2.3 Research Participants

The study's respondents comprised 50 women parents who sought assistance at the Women and Children Protection Unit (WCPU) of Dr. Jose N. Rodriguez Memorial Hospital and Sanitarium over three months. These individuals were victims of either physical or psychological violence, with 21 respondents categorized as victims of physical violence (hitting, punching, kicking, slapping, pushing, and shoving) and 29 respondents as victims of psychological violence (manipulation, intimidation, and verbal abuse, including name-calling, shaming, and yelling).

2.4 Research Instrument

Data was collected using a survey questionnaire designed to assess respondents' parenting approaches using a 4-point Likert scale, with responses ranging from Strongly Agree (4) to Strongly Disagree (1). The questionnaire underwent rigorous content validation by three experts in the fields of social work, counseling, and medicine to ensure its relevance and clarity. A pilot test was also conducted to establish the instrument's reliability, resulting in a Cronbach's Alpha coefficient of 0.79, indicating acceptable internal consistency.

2.5 Data Gathering Procedure

The researchers sought approval to conduct the survey. After the approval, the Registered Social Workers identify clients who are women's parents, specifically victims of either physical or psychological violence. Survey forms were administered during the face-to-face assessment processes conducted by the Registered Social Workers under the Women and Children Protection Unit (WCPU) of Dr. Jose N. Rodriguez Memorial Hospital and Sanitarium, where respondents were briefed on the research's purpose and asked for their consent to participate. Each item was carefully explained to the respondents when they answered the questionnaires. Data collection occurred within a structured three-month period, aligning with the respondents' visits to the hospital.

2.6 Ethical Considerations

Ethical considerations were meticulously observed throughout the study. To ensure ethical compliance, participation in the study was entirely voluntary. Respondents were provided with clear information about the research's objectives. They were required to give written consent before participating, in adherence to the Data Privacy Act of 2012 and ethical research practices. Confidentiality and anonymity were maintained, and participants were assured of their right to withdraw from the research at any stage without repercussions.

3.0 Results and Discussion

3.1 Profile of the Respondents

Table 1 shows that the most significant proportion of victims of both physical and psychological violence who reported abuse is between 36-41 years old, accounting for a large chunk of 26% of the total number of respondents. Meanwhile, the lowest percentage, 12%, constitutes victims ages 42 and above. Analyzing these age groups, respondents from 18 to 35 years old combined to form a whopping percentage of 62%.

This aligns with Ellsberg et al. (2008), which underlines that women, particularly in their reproductive years, often report experiencing abuse, both physical and mental. Additionally, Garcia-Moreno et al. (2006) mentioned that intimate partner violence is experienced by many at varied ages, highlighting that younger adults and middle-aged groups are often more vulnerable.

Table 1. Frequency and percentage distribution of respondents in terms of age

Age	Victims of Physical Violence (f)	Victims of Psychological Violence (f)	Total (f)	Percentage (%)
18-23 years old	3	5	8	16.0
24-29 years old	5	6	11	22.0
30-35 years old	5	7	12	24.0
36-41 years old	5	8	13	26.0
42 years old and above	3	3	6	12.0
Total	21	29	50	100.0

Next, table 2 shows that the majority (36%) of the respondents who reported abuse and violence are single parents, followed by those cohabiting individuals with a total of 28%. According to Devries et al. (2013), exposure to violence may be a result of the heightened stress often demonstrated by single parents, and those engaged in cohabiting relationships may lack commitments that are considered "formal." This can potentially lead to less stability and increased conflict, hence, abuse from live-in partners. On the other hand, widowed individuals make up the smallest group at 8%, with two individuals reporting to face both physical and psychological violence.

Table 2. *Frequency and percentage distribution of respondents in terms of marital status*

Marital Status	Victims of Physical Violence (f)	Victims of Psychological Violence (f)	Total (f)	Percentage (%)
Single Parent	8	10	18	36.0
Married	3	6	9	18.0
Separated	2	3	5	10.0
Widowed	2	2	4	8.0
Cohabiting	6	8	14	28.0
Total	21	29	50	100.0

As for educational level, table 3 illustrates that the most significant chunk of respondents who reported receiving both physical and psychological violence only reached high school at 42%. This is followed by another significant number, 32%, who are individuals who have only finished elementary education. Only a tiny portion of 4% reported having no formal education, and only 10% of the total sample finished with a college degree. The data suggests that individuals with lower educational attainment, particularly those with high school or elementary-level education, are more likely to experience violence.

Table 3. *Frequency and percentage distribution of respondents in terms of educational level*

Educational Level	Victims of Physical Violence (f)	Victims of Psychological Violence (f)	Total (f)	Percentage (%)
No formal education	1	1	2	4.0
Elementary	4	12	16	32.0
High School	11	10	21	42.0
Vocational	2	1	3	6.0
With college units	1	2	3	6.0
Bachelor's degree	2	3	5	10.0
Total	21	29	50	100.0

This connects with the research findings by Ellsberg et al. (2008), suggesting that lower educational levels are often associated with limited economic opportunities, reduced awareness of legal protections, and increased susceptibility to abusive environments. Moreover, Garcia-Moreno et al. (2006) emphasize that education can serve as a protective factor against intimate partner violence, as it is often linked to greater empowerment and access to support systems. However, the occurrence of violence across all educational levels underscores that this issue transcends socioeconomic and educational boundaries (Devries et al., 2013).

3.2 Influence of Physical and Psychological Violence in Women's Parenting Approaches

The use of physical force that ends in significant harm, injury, or fear to victims is a manifestation of physical violence. This area of concern has noteworthy studies exploring its overall impact on women's health, including their behavior and mental stability. Research shows that women victims of physical abuse and violence from their husbands or partners pose elevated levels of trauma, stress, and emotional pain, which are often extended and expressed in their styles of parenting their children (Gershoff & Grogan-Kaylor, 2016; Labella & Masten, 2018).

Violence on the psychological side manifests in certain behaviors, such as verbal abuse, manipulation, and intimidation. Much literature suggests that this kind of abuse has a significant and lasting effect on the overall well-being of victims, including mental health concerns. It may have negative consequences on their ability to parent their young ones successfully. Psychological abuse, as compared to physical violence, causes scars that are unseen by the naked eye, which frequently damage a woman's sense of independence and self-worth (Gama et al., 2021).

Table 4 results highlight the varying influence of physical and psychological violence on women's parenting styles, with all statements interpreted as "Strongly Agree" across both groups. For women who experienced physical violence, the highest mean value was 3.76 for the statement, "My experiences have led me to impose strict rules to protect my children from potential harm." This indicates that physical violence strongly influences women to adopt stricter parenting measures to ensure their children's safety. The lowest mean value was 3.43 for the statement, "I am highly concerned about the physical safety of my children," suggesting that while there is agreement, this concern is slightly less pronounced than other parenting behaviors.

Table 4. *Influence of violence in women's parenting approaches in terms of protective parenting*

Indicators	Victims of Physical Violence (Mean)	Interpretation	Victims of Psychological Violence (Mean)	Interpretation
My experiences with violence make me overly protective of my children.	3.48	Strongly Agree	3.59	Strongly Agree
I am highly concerned about the physical safety of my children.	3.43	Strongly Agree	3.66	Strongly Agree
I am more vigilant in monitoring my children's interactions with others.	3.52	Strongly Agree	3.62	Strongly Agree
My experiences have led me to impose strict rules to protect my children from potential harm.	3.76	Strongly Agree	3.97	Strongly Agree
Composite Mean	3.55	Strongly Agree	3.71	Strongly Agree

Note: Mean scores are interpreted as: 1.00–1.75 (Strongly Disagree), 1.76–2.50 (Disagree), 2.51–3.25 (Agree), 3.26–4.00 (Strongly Agree)

These results reveal that physical violence primarily impacts parenting by fostering heightened control and strictness in household rules. As exemplified in the study of Cavanaugh and Classen (2009), mothers with past experiences of violence or histories of physical abuse are often the ones who exhibit a more controlling, demanding, or authoritarian approach to parenting.

On the other hand, women subjected to psychological violence demonstrated slightly higher agreement overall. The highest mean value was 3.97 for the same statement, "My experiences have led me to impose strict rules to protect my children from potential harm," reflecting an even stronger tendency to implement protective measures compared to victims of physical violence. The lowest mean value was 3.59, associated with the statement, "My experiences with violence make me overly protective of my children," though this still reflects a significant influence. These findings suggest that psychological violence exerts a marginally more significant impact on parenting styles than physical violence, particularly in fostering stricter parenting approaches and increased vigilance (Greene et al., 2018).

Overall, the results demonstrate that both forms of violence lead to protective parenting behaviors, with psychological violence producing slightly stronger effects across all dimensions.

Table 5 presents the influence of physical and psychological violence on emotional bonding and empathy in parenting styles. For women who experienced physical violence, the highest mean value was 3.81 for the statement, "I find it challenging to emotionally connect with my children due to my past experiences," indicating strong agreement that physical violence creates emotional barriers in forming connections with their children. The lowest mean value was 3.19 for the statement, "I make a conscious effort to understand my children's emotional needs because of what I have been through."

Table 5. *Influence of violence in women's parenting approaches in terms of emotional bonding and empathy*

Indicators	Victims of Physical Violence (Mean)	Interpretation	Victims of Psychological Violence (Mean)	Interpretation
I find it challenging to emotionally connect with my children due to my past experiences.	3.81	Strongly Agree	3.72	Strongly Agree
My experiences have made me more empathetic and sensitive to my children's feelings.	3.43	Strongly Agree	3.55	Strongly Agree
I often worry that my experiences with violence affect how I express love and affection toward my children.	3.52	Strongly Agree	3.66	Strongly Agree
I make conscious effort to understand my children's emotional needs because of what I have been through.	3.19	Agree	3.69	Strongly Agree
Composite Mean	3.49	Strongly Agree	3.66	Strongly Agree

Note: Mean scores are interpreted as: 1.00–1.75 (Strongly Disagree), 1.76–2.50 (Disagree), 2.51–3.25 (Agree), 3.26–4.00 (Strongly Agree)

This suggests that while physical violence influences empathy, it may slightly hinder efforts to meet children's emotional needs actively. These findings align with the study of Fogarty et al. (2021), which revealed that physical violence predominantly impacts emotional bonding by making emotional connection challenging. For women subjected to psychological violence, the highest mean value was 3.72 for the statement, "I find it challenging to emotionally connect with my children due to my past experiences." This highlights a stronger tendency among victims of psychological violence to make deliberate efforts to address their children's emotional needs. The lowest mean value was 3.55, for the statement, "My experiences have made me more empathetic and sensitive to my children's feelings," which still shows significant agreement. These results suggest that psychological violence creates a more consistent and slightly more substantial impact on fostering emotional responsiveness and efforts to connect with children compared to physical violence (Levendosky & Graham-Bermann, 2000).

Both groups face challenges with emotional connection to their children. However, psychological violence survivors tend to develop greater empathy as they are often more attuned to emotional issues. In contrast, physical violence survivors may experience more emotional detachment due to the physical nature of their trauma.

Table 6 highlights the influence of physical and psychological violence on parenting styles, explicitly focusing on discipline and consistency. As per the study of Hauge and Kiamanesh (2019), the provision of a consistent parenting approach in child-rearing is a challenge for mothers who have experienced receiving physical abuse due to their preoccupation with survival and safety. Such traumatic life events often lead to either an authoritarian parenting style or a permissive parenting approach, as these primary caregivers may overcompensate by being overly and excessively strict to assert control or become too lenient due to their emotional state of guilt or fear of conflict. Relative to this, adverse outcomes for children, including emotional dysregulation and developmental delays, may be a result of these instances (Carlson, 2000).

Table 6. *Influence of violence in women's parenting approaches in terms of discipline and consistency*

Indicators	Victims of Physical Violence (Mean)	Interpretation	Victims of Psychological Violence (Mean)	Interpretation
I struggle to maintain consistent discipline with my children.	3.05	Agree	3.55	Strongly Agree
My experiences made me too strict in disciplining my children.	3.33	Strongly Agree	3.28	Strongly Agree
I sometimes feel that my past experiences interfere with my ability to handle discipline calmly.	3.33	Strongly Agree	3.62	Strongly Agree
I find myself being too lenient when setting disciplinary boundaries.	2.43	Disagree	2.41	Disagree
Composite Mean	3.04	Agree	3.22	Agree

Note: Mean scores are interpreted as: 1.00–1.75 (Strongly Disagree), 1.76–2.50 (Disagree), 2.51–3.25 (Agree), 3.26–4.00 (Strongly Agree)

For women who experienced physical violence, the highest mean values were tied at 3.33 for the statements, "My experiences made me too strict in disciplining my children" and "I sometimes feel that my past experiences interfere with my ability to handle discipline calmly." These results indicate that physical violence significantly impacts their ability to maintain balanced and calm disciplinary practices, often leading to strictness. The lowest mean value was 2.43 for the statement, "I find myself being too lenient when setting disciplinary boundaries," which was interpreted as "Disagree." This suggests that leniency is less of a concern for women who have experienced physical violence, with stricter discipline being more common.

On the other hand, psychological violence affects a mother's emotional availability and consistency in parenting. According to Evans et al. (2008), women who should be serving as primary caretakers of their children but were forced to undergo or have been subjected to psychological abuse frequently exhibit higher levels of depression, anxiety, and post-traumatic stress disorder, which interfere with their ability to provide stable and nurturing environments to their dependents. As a result, these mothers may demonstrate and display neglectful or inconsistent parenting styles, unintentionally exposing their children to emotional insecurity and behavioral problems (Kohl et al., 2011).

For women who experienced psychological violence, the highest mean value was 3.62 for the statement, "I sometimes feel that my past experiences interfere with my ability to handle discipline calmly." This indicates strong agreement that psychological violence disrupts their ability to approach discipline calmly. The lowest mean value was 2.41 for the statement, "I find myself being too lenient when setting disciplinary boundaries," also interpreted as "Disagree." This shows that leniency is similarly not a predominant characteristic in the parenting styles of psychological violence victims.

Overall, both forms of violence significantly affect discipline and consistency. However, physical violence survivors tend to lean more towards over-strictness or reactive punishment. In contrast, psychological violence survivors may feel more emotionally conflicted, leading to swings between too strict or too lenient.

Table 7 presents the influence of physical and psychological violence on parenting styles, explicitly focusing on trust and socialization. Among women who experienced physical violence, the highest mean value was 3.62 for the statement, "My experiences with violence affect how comfortable I am in allowing my children to explore their independence," indicating a substantial impact on their ability to encourage independence. The lowest mean value was 3.10 for the statement, "I often find myself reluctant to involve my children in social activities or group settings," which, while still interpreted as "Agree," suggests a slightly lower influence on group socialization than other aspects of trust and socialization.

Aligned with the research of Urone et al. (2024), physical violence experienced by mothers often leads to overcontrolling and overprotective parenting behaviors that limit children's independence and social engagement due to their past conditions of despair, misery, depression, and social anxiety. Moreover, traumatic events in the past experienced by parents serve to shape their parenting style, thereby potentially conveying such maladaptive behaviors to their children (Christie et al., 2020).

Table 7. *Influence of violence in women's parenting approaches in terms of trust and socialization*

Indicators	Victims of Physical Violence (Mean)	Interpretation	Victims of Psychological Violence (Mean)	Interpretation
I am cautious about allowing my children to interact with others due to my past experiences.	3.52	Strongly Agree	3.28	Strongly Agree
My experiences have made me less trusting of others when it comes to my children's safety.	3.24	Agree	3.45	Strongly Agree
I often find myself reluctant to involve my children in social activities or group settings.	3.10	Agree	3.14	Agree
My experiences with violence affect how comfortable I am in allowing my children to explore their independence.	3.62	Strongly Agree	3.69	Strongly Agree
Composite Mean	3.37	Strongly Agree	3.39	Strongly Agree

Note: Mean scores are interpreted as: 1.00–1.75 (Strongly Disagree), 1.76–2.50 (Disagree), 2.51–3.25 (Agree), 3.26–4.00 (Strongly Agree)

For women who experienced psychological violence, the highest mean value was 3.69 for the same statement, "My experiences with violence affect how comfortable I am in allowing my children to explore their independence," reflecting even stronger agreement compared to physical violence victims. The lowest mean value was 3.14 for the statement, "I often find myself reluctant to involve my children in social activities or group settings," showing that reluctance to involve children in social settings is present but less prominent.

As exemplified in the study of Milan et al. (2021), mothers who have experienced emotional maltreatment in the past are at increased risk for problems in navigating parenthood, especially when it comes to trust and socialization behaviors, which are then exhibited in their child-rearing approaches.

In comparison, both groups distrust others regarding their children's safety. However, physical violence survivors are more likely to limit social interactions because of direct fear of harm. In contrast, psychological violence survivors tend to worry more about emotional harm or psychological manipulation.

Table 8 explores the influence of physical and psychological violence on self-efficacy and confidence in parenting. For women who experienced physical violence, the highest mean value was 3.91 for the statement, "I feel that my experiences have had a lasting impact on my role and identity as a mother." This reflects a strong perception that violence significantly shapes their maternal role and identity. The lowest mean value was 3.48 for the statement, "My experiences have made me feel less confident in my parenting abilities," suggesting that while confidence is affected, it is slightly less prominent compared to other dimensions of self-efficacy.

Overall, these findings indicate that physical violence impacts both self-perception as a parent and decision-making abilities; according to the research of Wang et al. (2022), this may be connected to mothers' feelings of helplessness and being "handicapped" in their parenting skills, ultimately compromising their perception of self-confidence and efficacy in child-rearing.

For women subjected to psychological violence, the highest mean value was 3.83 for the same statement, "I feel that my experiences have had a lasting impact on my role and identity as a mother," highlighting a comparable but slightly stronger perception of this impact compared to physical violence victims. The lowest mean value was 3.62 for the statement, "My experiences have made me feel less confident in my parenting abilities," which still reflects significant agreement. These results suggest that psychological violence creates a slightly more substantial and more consistent impact on self-efficacy and confidence compared to physical violence, particularly regarding decision-making and maternal identity, since, according to Levendosky & Graham-Bermann (2018), psychologically abused mothers often have low self-esteem, and a reduced sense of agency and competence, leading to decreased confidence in their parenting abilities.

Table 8. *Influence of violence in women's parenting approaches in terms of self-efficacy and confidence in parenting*

Indicators	Victims of Physical Violence (Mean)	Interpretation	Victims of Psychological Violence (Mean)	Interpretation
My experiences have made me feel less confident in my parenting abilities.	3.48	Strongly Agree	3.62	Strongly Agree
I often second-guess my decisions as a parent because of what I have been through.	3.86	Strongly Agree	3.72	Strongly Agree
I feel that my experiences have had a lasting impact on my role and identity as a mother.	3.91	Strongly Agree	3.83	Strongly Agree
My experiences have influenced my sense of competence and effectiveness in parenting.	3.81	Strongly Agree	3.79	Strongly Agree
Composite Mean	3.77	Strongly Agree	3.74	Strongly Agree

Note: Mean scores are interpreted as: 1.00–1.75 (Strongly Disagree), 1.76–2.50 (Disagree), 2.51–3.25 (Agree), 3.26–4.00 (Strongly Agree)

Relative to this, there are still studies that highlight the potential of women victims to rise from the occasion and the likelihood of post-traumatic growth for those who overcame and succeeded in dealing with psychological violence (Arabaci, 2018). These mothers may adopt authoritative parenting styles characterized by warmth and structure, using their adverse experiences as a catalyst to provide a more supportive environment for their children (Cort & Cline, 2017).

Both groups struggle with parenting insecurities, but the fear of perpetuating violence is stronger in physical violence survivors. In contrast, psychological violence survivors may primarily struggle with emotional uncertainty and self-criticism.

Lastly, the data in Table 9 highlights significant differences in how physical and psychological violence impact various dimensions of parenting approaches among women victims of abuse. Psychological violence, with a mean score of 3.71 for protective parenting, exerts a slightly more decisive influence than physical violence (3.55). This could be attributed to the heightened emotional vigilance caused by psychological abuse, such as verbal attacks and shaming, which leads mothers to adopt overly protective behaviors as a coping mechanism. Similarly, emotional bonding and empathy are more profoundly affected by psychological violence (3.66) than physical violence (3.49), likely due to the emotional toll and self-doubt instilled by prolonged psychological manipulation.

These findings underscore the more profound, often invisible impacts of psychological violence on parenting, especially in fostering emotional connection and empathy with children.

Table 9. *Comparative Summary of Means: Effects of Physical and Psychological Violence on Parenting Approaches*

Dimensions	Victims of Physical Violence (mean)	Victims of Psychological Violence (mean)
Protective Parenting	3.55	3.71
Emotional Bonding And Empathy	3.49	3.66
Discipline And Consistency	3.04	3.22
Trust And Socialization	3.37	3.39
Self-Efficacy And Confidence In Parenting	3.77	3.74
Composite Mean	3.44 (Strongly Agree)	3.54 (Strongly Agree)

Note: Mean scores are interpreted as: 1.00–1.75 (Strongly Disagree), 1.76–2.50 (Disagree), 2.51–3.25 (Agree), 3.26–4.00 (Strongly Agree)

In contrast, physical violence appears to affect self-efficacy and confidence in parenting slightly more than psychological violence, with victims reporting a mean of 3.77 compared to 3.74. This suggests that while physical violence has devastating effects, some women may feel a greater sense of control in addressing tangible threats, allowing for slightly higher confidence in their parenting abilities. However, psychological violence's more pervasive impact is evident in areas such as discipline and trust, where victims of psychological abuse exhibit lower consistency and more challenges in building social and trusting relationships with their children. These results emphasize the need for trauma-informed interventions that consider the unique impacts of both physical and psychological violence on parenting, with a focus on rebuilding emotional stability and confidence for healthier parent-child relationships.

4.0 Conclusion

The results of this study reveal that both physical and psychological violence have a profound influence on women's parenting approaches, particularly in the areas of protective parenting, emotional bonding, empathy, discipline, consistency, trust and socialization, and self-efficacy and confidence in parenting. Across all dimensions, respondents consistently reported that their experiences with violence shaped their parenting behaviors, often resulting in heightened vigilance, stricter rules, emotional barriers, and challenges in maintaining trust and socialization. Psychological violence, however, showed a slightly more significant impact across most dimensions compared to physical violence. Women subjected to psychological violence demonstrated more substantial agreement regarding their struggles with discipline, emotional bonding, trust in social settings, and self-perception as parents. This is particularly evident in their tendency to implement stricter protective measures and consciously address their children's emotional needs. In contrast, women who experienced physical violence reported higher tendencies toward strictness in discipline and struggles with emotional connection due to their past experiences. Overall, both forms of violence significantly affect parenting styles. However, psychological violence tends to result in more consistent and far-reaching impacts on parenting behaviors, particularly in fostering self-doubt and shaping maternal identity.

These findings underscore the importance of providing individualized support and interventions for women who have experienced violence, addressing not only their trauma but also its influence on their parenting styles to promote healthier parent-child relationships. With this in mind, it is recommended that institutions, such as women and children protection units, social service units, and hospitals, both public and private, implement trauma-informed parenting support programs tailored to the specific needs of women who have experienced physical or psychological violence. These programs should focus on rebuilding self-confidence in parenting, promoting consistency in discipline, fostering emotional bonding with children, and addressing trust and socialization challenges.

From a clinical perspective, the results of the study also hold significant implications for mental health professionals, social workers, and other service providers working with women who have experienced violence. Mental health professionals can leverage these insights to develop targeted interventions that address specific parenting challenges associated with physical and psychological violence. For example, therapy sessions can improve emotional resilience, rebuild maternal self-confidence, and foster healthier emotional connections with children. Psychological counseling and therapy must be a priority to help mothers process their trauma and develop healthier parenting strategies. These sessions should address self-doubt, improve emotional resilience,

and support maternal identity, with specific interventions designed for victims of psychological violence who exhibit a higher tendency toward self-doubt and strict parenting behaviors.

Social workers and community-based service providers can also integrate trauma-informed approaches when working with mothers, ensuring that interventions are sensitive to their unique experiences and needs. These efforts could include designing parenting programs that equip mothers with practical skills and create supportive environments where they feel validated and understood. Additionally, service providers should work collaboratively with women to address the long-term impacts of violence on their parenting styles and maternal identity, emphasizing empowerment and resilience-building strategies.

In addition, parenting workshops and skills training should be organized to provide practical guidance on effective parenting practices, including fostering independence in children, maintaining balanced discipline, and understanding children's emotional needs. These workshops should incorporate evidence-based techniques to empower mothers and mitigate the impact of violence on their parenting styles. Community and peer support programs are also recommended to foster long-term resilience, creating safe spaces for women to share experiences, receive support, and learn from one another. While the findings provide valuable insights, the study has certain limitations. The relatively small sample size and potential sampling biases from relying on participants from a single institution may limit the generalizability of the results. Additionally, the scope of both physical and psychological violence investigated was restricted to specific behaviors, which may not fully capture the broader spectrum of such experiences. When interpreting the findings, these limitations should be considered and underscore the need for further research.

To improve future studies, it is recommended to increase the sample size to provide a more comprehensive understanding of the effects of physical and psychological violence on several dimensions of parenting. It is also best to explore other forms of abuse, such as sexual, socioeconomic, and domestic violence, to name a few. Including a broader demographic group, such as women from different socio-economic backgrounds or regions, could enhance the generalizability of the findings. Furthermore, incorporating qualitative methods, such as in-depth interviews or focus group discussions, would allow researchers to explore more profound insights into participants' personal experiences, complementing quantitative findings. Finally, longitudinal studies could be conducted to assess the long-term impacts of violence on parenting approaches, providing a more dynamic perspective on how these behaviors evolve.

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The authors indicate equal contribution to each section. The authors reviewed and approved the final work.

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7.0 Conflicts of Interest

The authors declare no conflicts of interest about the publication of this paper.

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Furthermore, the researchers acknowledge that motherhood is a multifaceted journey, encompassing various stages from pregnancy and early infancy to adolescence and adulthood. This study aims to contribute to a deeper understanding of the challenges mothers face across these stages, particularly in the context of violence. Through this, may the researchers elevate the need to hear them and amplify their voices, to break cycles of violence and foster healthier parent-child relationships.

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Perceived Social Support as a Predictor of Mental Health among First-Year College Students at a State University

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Abstract. . The perceived support from family, friends, and peers plays a critical role in helping students navigate the challenges of university life. Strong social support is shown to alleviate stress and improve overall well-being. In contrast, insufficient support is linked to poorer mental health outcomes. While existing research has explored the general link between social support and well-being, the specific ways perceived social support predicts mental health outcomes among first-year college students have not been thoroughly studied locally. This study highlights how perceived social support predicts first-year students' mental health, which can be used to develop targeted counseling support interventions. This quantitative study utilized a predictive correlational design to investigate the relationship between perceived social support and mental health among first-year college students (n=104) at a state university in Pampanga, Philippines. The sample size was determined through G*Power 3.1.9.7, and the respondents were selected using a purposive sampling technique. Data analysis using JAMOVI version 2.4.14 revealed a weak and negative connection ($p < 0.001$, $R = -0.48$) between perceived social support and mental health among first-year college students. Furthermore, the data demonstrated that first-year college students' mental health can be predicted by 23% of perceived social support. The findings indicate that while perceived social support can benefit some, excessive support can lead to distress, psychological suffering, hindered autonomy, and weakened stress-coping abilities. Perceived support from a demanding family environment can decrease mental health outcomes among first-year college learners. Stressor type and support provider characteristics may influence this negative association. The importance of perceived social support in predicting mental health emphasizes the need for supportive environments that increase mental well-being among first-year college students.

Keywords: College students; Counseling; Mental health; Perceived social support.

1.0 Introduction

Transitioning to college life from the secondary level can be challenging for first-year students. Significant changes can lead to pressure and concern, like adapting to a fresh setting and creating new contacts. This study assessed the correlation and prediction of first-year college students' perceived social support and mental health. Student independence helps develop the skills and mindset needed for academic success and lifelong learning, allowing them to become engaged, self-reliant learners (Szwedo et al., 2017). This transition introduces factors that can significantly impact first-year college students' mental health, such as social challenges, academic pressure, and mental health issues. Studying these issues is essential to enhance student support systems, leading to better mental health and educational outcomes. Adapting to a new social environment can be intimidating; students may struggle to fit into a new environment, and an unfamiliar support system can intensify feelings of loneliness

compared to what they are used to. Adjusting to college life can be overwhelming for first-year students, as academic pressure, such as maintaining good grades, can cause various mental health issues. Stress, anxiety, and depression are usual during this transition period. Students who lack social support may find it hard to handle these mental health issues. Mental health professionals should assess social support networks and consider cultural and individual differences when designing interventions (Huang et al., 2021).

Evidence shows that students with better self-reported perceived social support have improved mental health outcomes. Perceived social support is defined as reliable confirmation from the social environment that one is cared for by family, friends, and peers (Cobo-Rendon et al., 2020). Student's mental health is a fundamental aspect of a person's overall well-being, characterized as the relationship functioning of mental processes in thought, mood, and behavior, enabling productive activities, positive social interactions, and the ability to adapt, change, and cope with adversity (Hersi, 2017). According to Torres-Harding et al. (2020), depression is a common and treatable condition that exerts a profound significance on one's emotions, thoughts, and behaviors, resulting in despair, loss of enthusiasm for once-enjoyed activities, and potential mental and physical complications. Stress encompasses feelings of anxiety or mental pressure stemming from challenging situations that, when managed effectively, can catalyze personal growth (World Health Organization, 2022). Transitioning to college is an era of remarkable stress for students due to the new social and academic environment and personal struggles. If learners cannot handle stress well, it can lead to anxiety and depression. Lack of social support will lead to a higher rate of mental health issues among the students. However, if students perceive strong social support, it serves as a key source of help. Social support helps first-year college students manage stress more efficiently, minimizing the chance of depression, which leads to enhanced mental health. The mental health needs of students are described in the literature as affecting approximately 35% of students on a college campus; these students can even meet the diagnostic criteria for at least one common mental health condition (Auerbach, 2018).

Understanding the predictors of mental health among first-year students can provide insight into what sets changes in mental health among the population. The prevalence of mental health problems in university students is increasing and attributable to academic, financial, and social stressors. According to Alsubaie et al. (2019), the lack of social support is a known determinant of mental health problems. Harandi and Taghinasab (2017) explained that perceived social support is a phenomenon that involves interactions between people, so when a person offers social interaction, it has a significant role in his health. It represents the number of supports that a person perceives. According to Cox and Naylor (2018), social support has been identified as predicting students' integration into academic life. It represents the amount of support a person perceives and reports. Family support has consistently been recognized as necessary for academic persistence, while support derived from peers and support groups is associated with positive academic outcomes (Kim et al., 2018). To optimally benefit from their educational experiences, students must learn to cope effectively with stress (Carnicer et al., 2019), and higher levels of social support have consistently been identified as associated with lower stress levels and a more remarkable ability to manage stressors (Mishra, 2020).

The range of social support that students receive from the student's families, friends, and the academic community can directly influence the person's ability to deal with the challenges associated with university life. The transition to university life introduces significant challenges for first-year students, which include academic pressure, social adjustments, and living independently. Mental health issues such as stress, anxiety, and depression are common among this group of people. Research conducted in multiple countries has identified that the experience of transition to third-level education is a potential source of stress for students (Cage et al., 2021). During the early stages of university life, students often experience the highest stress levels compared to the remainder of that student's studies (Conley et al., 2020). Individuals who believe that everyone has the necessary social support are generally less stressed. In addition, it influences the way people respond to stress, interact with others, and make wise decisions. Mental health is crucial at all phases of life, from early childhood and teenage years to maturity. Positive student outcomes, including academic achievement and overall well-being, are consistently linked to social support (Maymon et al., 2019). Moreover, Harikandei (2017) has discovered that higher life satisfaction relates to higher levels of social support from friends and family.

This study is supported by the Social Support Theory, which asserts that people will seek emotional, practical, and information help from social connections and relationships during stressful or difficult times. This theory

suggests that an individual's social support network can significantly enhance their mental health, coping abilities, and overall well-being. Many can offer social support, including friends, family, coworkers, and community groups. By understanding the importance of social support in people's lives, people can better figure out how to provide meaningful help to those going through difficult times (Blackbyrn, 2023). Whereas in this study, social support is believed to be linked to better mental health, what processes underlie this association is still unknown. A strong perceived support system can make challenging events feel less intimidating, leading to improved mental health and a reduced risk of adverse psychological outcomes (Acoba et al., 2024).

While prior research has found a general link between social support and mental health results, there is a gap in understanding how perceived social support relates to the mental well-being of first-year college students going into a critical life transition. Moreover, few studies have been conducted on this issue locally. This study filled that gap by analyzing the correlation and prediction of first-year college students' perceived social support and mental health. Using this insight, the study seeks to understand how to enhance student social support. The findings can be used to improve support systems that can lead to better student outcomes and a more supportive learning environment. Furthermore, identifying predictors of mental health can help school counselors recognize what flourishes and languishes in the well-being of first-year college students at an early stage. Moreover, it can be used to design appropriate interventions that address the mental health issues of students. This study answers the following questions: What is the demographic profile of the first-year college students at a state university in Pampanga, Philippines? What are the perceived social support and mental health levels among first-year students? Is there a significant relationship between perceived social support and mental health among first-year college students? Does perceived social support predict the mental health outcomes of first-year college students? Exploring these questions provided valuable insights for school counseling interventions that foster first-year undergraduates' well-being.

2.0 Methodology

2.1 Research Design

This study uses a quantitative method, collecting numerical data to investigate patterns and relationships. According to Allen (2017), quantitative research allows the use of data from a sample population to explore psychological, social, and economic phenomena. This study used survey questionnaires to gather data on perceived social support and mental health among first-year college students. Specifically, a predictive correlational design was utilized to explore how perceived social support predicts the mental health of first-year college students. Predictive correlational design is a research approach that examines relationships between variables to make predictions. It is commonly used in educational and psychological studies (Bozkurt et al., 2023). A correlation must be established to understand the connection between perceived social support and mental health, which measures the strength and direction of the relationship between two variables (Kumari & Yadav, 2018). Furthermore, this design can determine how much perceived social support (independent variable) explains first-year college students' mental health (dependent variable). This research method and design quantify the relationship and provide valuable insights into how perceived social support may impact first-year college students' well-being.

2.2 Research Locale

The study was conducted in a state university in Pampanga, Philippines. The institution provides an accessible education to diverse students. This setting was selected due to its substantial number of first-year participants adjusting to college life, making it ideal for studying perceived social support and mental health.

2.3 Research Participants

The participants for this study are 104 first-year college students from a state university in Pampanga, Philippines. Through G*Power software, the researchers determined the needed sample size. G*Power is a free software tool widely used for sample size calculation and power analysis in research. It supports various statistical methods and is valued for its ease of use and time-saving capabilities (Santabarbara, 2022). The set parameters are a statistical power of 95% chance and a significance level 0.05. In this case, there is a 95% chance that the real value is within 5% of the measured value. Moreover, purposive sampling was used to select participants for this study. This method was chosen because it targets individuals who meet specific criteria relevant to the research. The respondents were first-year students in a transitional period of their college life, 17-18 years old, bonafide students

at the chosen state university, and living in Pampanga, Philippines. The study revealed how perceived social support influences the mental health of these students during this critical transition phase.

2.4 Research Instrument

The researcher utilized two open-access survey questionnaires for this study. First, the Multidimensional Scale of Perceived Social Support (MSPSS) was developed by Zimet et al. (1990) is a 12-item questionnaire with a 7-point Likert scale ranging from “1-Strongly Disagree” to “7-Strongly Agree” The instrument assesses perceived support from family, friends, and significant others. The MSPSS has shown excellent internal consistency, with Cronbach's alpha values typically above 0.90. Test-retest reliability is good, with coefficients ranging from 0.78 to 0.90. The scale has demonstrated convergent validity through correlations with measures of life satisfaction, depression, and health-related quality of life (Cartwright et al., 2020). The scores for the 12 items are divided into three subscales: (1) significant other: sum across items 1, 2, 5, and 10, then divided by 4. The (2) family subscale: sum across items 3, 4, 8, and 11, then divide by 4. Moreover, (3) friends subscale: sum across items 6, 7, 9, and 12, then divide by 4. The researchers emailed the authors to convert the instrument into digital format.

The second scale used is the Adolescent Mental Health Continuum-Short Form (AMHC-SF) developed by Keyes (2009). This 14-item questionnaire measures the frequency of first-year college students' mental health experiences regarding emotional, social, and psychological well-being. The scale has a 6-point Likert scale ranging from “1-Everyday” to “6-Never.” The instrument is reliable and valid across various populations. It exhibits high internal consistency ($\alpha = 0.73$ to 0.90) and test-retest reliability ($\alpha = 0.86$ to 0.93). Meanwhile, convergent validity shows an acceptable coefficient of 0.77 (Söderqvist & Larm, 2021). A score of 1 or 2 indicates flourishing on at least one of the three emotional well-being items and six or more on the 11 positive functioning items. A score of 5 or 6 marks languishing on at least one of the emotional well-being items and six or more on the positive functioning items. Moderate mental health describes those who are neither flourishing nor languishing. Similarly, the researchers contacted the developers for permission to convert the scale into Google Forms.

2.5 Data Gathering Procedure

The researchers initiated the study by emailing the developers of the two survey questionnaires to request permission for use. The researchers then distributed an online survey through Google Forms to 104 first-year student respondents from a state university, including questions on the demographic profile and the actual statements from each scale. Respondents were invited to complete the form at their convenience, and all responses were securely stored. After collecting all the data, the researchers reviewed the responses and compiled the information to analyze the results. JAMOVI 2.4.14 software was utilized for data cleaning, coding, and analysis. The preliminary assumptions were checked, and it was identified that the internal consistency for Social Support is ($\alpha=0.94$) while Mental Health is ($\alpha=0.91$). The collinearity statistics revealed a variance inflation factor of 1.00, which means that the two variables studied are independent. The normality test through Shapiro-Wilk probability showed that the dataset is normally distributed (p . 0.31). Descriptive analysis was used in this study to gather specific data for the respondents' demographic profiles, including age and sex assigned at birth. Moreover, the researchers used the mean and standard deviation (SD) to determine first-year college students' perceived social support and mental health levels. Second, correlation analysis was used in this study to identify a significant relationship between perceived social support and mental health. The results from this correlation analysis indicated the direction and strength of the connections between the variables, shedding light on how social support contributes to the mental well-being of students. Lastly, linear regression analysis examines respondents' prediction of social support and mental health. According to Georgia State University (2024), linear regression tests the effect of predictor(s) on the outcome variable. It quantifies how much the perceived social support explains the mental health of first-year college students.

2.6 Ethical Considerations

In conducting this study, the researchers prioritized the participants' rights and well-being by obtaining informed consent and allowing the students to understand the study's goal and procedures before deciding to participate. Confidentiality was ensured by anonymizing data and securely storing the dataset on a password-protected device, which the researchers can only access. The researchers only gathered and kept the necessary information, adhering to the Data Privacy Act 2012. The study allowed participants to understand their experiences better and contributed to gaining new knowledge. The results were promised to be communicated to the participants after

the completion of the study. The researchers ensured that the respondents were not harmed during the data-gathering procedure and provided necessary assistance to the subjects whenever necessary.

3.0 Results and Discussion

3.1 Demographic Profile of the Respondents

Table 1 shows the demographic profile of the respondents, focusing on age and sex assigned at birth. The data revealed that there was a total of 104 first-year college students who participated in this study. Regarding age, 98 students (94.23%) are 18, while only 6 (5.77%) are 17. This distribution suggests that the sample primarily consists of students of legal age. For sex assigned at birth, there are 31 male respondents (29.81%) and 73 female respondents (70.19%). This suggests that there are more females in this research.

Table 1. *Demographic Profile of First-Year Students*

Age	Frequency	Percentage
17	6	5.80
18	98	94.2
Sex		
Male	31	29.8
Female	73	70.2

3.2 Levels of Social Support among First-Year College Students

The data presented in Table 2 revealed that participants generally recognized a strong sense of perceived social support, as specified by high mean scores for statements such as "There is a special person with whom I can share joys and sorrows" ($m=5.29$, $SD=1.62$) and "I have friends with whom I can share my joys and sorrows" ($m=5.20$, $SD=1.50$). Friends are the foundation of social support groups and the cornerstone of wholesome relationships. Both individuals volunteer to be essential to each other's support system around a friend. When help is most needed, close companions are the ones who will prioritize assisting. Friends are often preferred over relatives because they tend to be less critical and less inclined to lecture on their beliefs and ideals. Some might even argue that friends understand them better than their relatives do. (Psychology Today, 2024). Moreover, one of teenagers' most significant social ties is with peers. Peer relationships are interpersonal bonds formed via collaboration and communication between people of comparable age. It is one of the most critical metrics for accurately assessing teenagers' capacity to adjust to their social surroundings and handle challenges (Zhou et al., 2023).

Table 2. *Levels of Perceived Social Support among First-Year College Students*

Indicators	Mean	SD	Interpretation
1. There is a special person who is around when I am in need.	5.13	1.61	Mildly Agree
2. There is a special person with whom I can share joys and sorrows.	5.29	1.62	Mildly Agree
3. My family really tries to help me.	5.11	1.51	Mildly Agree
4. I get the emotional help and support I need from my family.	4.86	1.45	Mildly Agree
5. I have a special person who is a real comfort source.	4.96	1.83	Mildly Agree
6. My friends really try to help me.	5.19	1.44	Mildly Agree
7. I can count on my friends when things go wrong.	5.16	1.47	Mildly Agree
8. I can talk about my problems with my family.	4.24	1.70	Neutral
9. I have friends with whom I can share my joys and sorrows.	5.26	1.50	Mildly Agree
10. There is a special person in my life who cares about my feelings.	4.93	1.76	Mildly Agree
11. My family is willing to help me make decisions.	4.99	1.49	Mildly Agree
12. I can talk about my problems with my friend.	5.17	1.55	Mildly Agree
<i>Overall Family</i>	4.78	1.42	<i>Mildly Agree</i>
<i>Overall Friends</i>	5.20	1.37	<i>Mildly Agree</i>
<i>Overall Significant Others</i>	5.08	1.54	<i>Mildly Agree</i>
Overall Weighted Mean	5.02	1.21	Mildly Agree

However, certain statements, such as "I get the emotional help and support I need from my family" ($m=4.86$, $SD=1.45$) and "I can talk about my problems with my family" ($m=4.24$, $SD=1.70$), reflect more nuanced or fluctuating social support. The weighted mean is 5.02, and the standard deviation is 1.21, indicating that participants somewhat agreed with the statements about perceived social support, recognizing its presence in students' lives, even though it was not always robust. Parungao (2024) emphasizes that perceived social support plays a crucial role in safeguarding students' mental health by providing emotional and practical assistance, which helps them navigate academic challenges more effectively. Although close family members offer different kinds of support, learners might have discovered that peers are more approachable or empathetic when discussing private matters.

This finding highlights the importance of students having more extensive social networks to share experiences and overcome challenges. Not having parental support is terrible and requires establishing friendly ties with parents (Kapur, 2023). Social support from relatives, close companions, and other individuals boosts life satisfaction and serves as a crucial safeguard in opposition to mental health issues (Alshammari et al., 2021).

3.3 Levels of Mental Health among First-Year Year College Students

Table 3 shows the levels of mental health among first-year college students, covering perceptions of happiness, growth, societal views, and relationships that are measured by mean scores. The highest mean score is from the item "In the past month, how often did you feel that our society is a good place, or becoming a better place, for all people?" ($m=2.93$, $SD=1.06$); this indicates a relatively positive outlook on societal progress. Likewise, the item "That you had something important to contribute to society?" ($m=2.78$, $SD=1.14$) suggests that respondents perceive themselves as having a meaningful role or purpose. While the items "That people are basically good?" ($m=2.73$, $SD=1.05$) and "That the way our society works makes sense to you?" ($m=2.61$, $SD=1.08$) reflect moderate trust in others and an understanding of the societal system.

Table 3. *Levels of Mental Health among First-Year Year College Students*

Indicators	Mean	SD	Interpretation
1. Happy...?	2.29	0.83	Almost Every Day
2. Interested in life?	2.21	0.96	Almost Every Day
3. Satisfied with your life?	2.40	1.16	Almost Every Day
4. That you had something important to contribute to society?	2.78	1.14	About 2 or 3 times a week
5. That you belonged to a community (like a social group, your neighborhood, your city, your school)?	2.43	1.24	Almost Every Day
6. In the past month, how often did you feel...: that our society is a good place, or becoming a better place, for all people?	2.93	1.06	About 2 or 3 times a week
7. That people are basically good?	2.73	1.05	About 2 or 3 times a week
8. That the way our society works makes sense to you?	2.61	1.08	About 2 or 3 times a week
9. That you like most parts of your personality?	2.45	1.14	Almost Every Day
10. Good at managing the responsibilities of your daily life?	2.31	1.00	Almost Every Day
11. In the past month, how often did you feel...: that you had warm and trusting relationships with others?	2.28	0.92	Almost Every Day
12. That you had experiences that challenged you to grow and become a better person?	2.04	0.98	Almost Every Day
13. Confident to think or express your own ideas and opinions?	2.52	1.06	About 2 or 3 times a week
14. That your life has a sense of direction or meaning to it?	2.56	1.10	About 2 or 3 times a week
Overall Weighted Mean	2.47	0.72	Almost Every Day

The lower mean scores are observed in personal fulfillment and social connections items. The item "Interested in life?" ($m=2.21$, $SD=0.96$) and "Happy...?" ($m=2.29$, $SD=0.83$) indicate that many respondents find joy and interest in life. Likewise, the items "In the past month, how often did you feel that you had warm and trusting relationships with others?" ($m=2.28$, $SD=0.92$) and "That you had experiences that challenged you to grow and become a better person?" ($m=2.04$, $SD=0.98$) highlight areas for self-development and relationship improvement. Also, items like "Good at managing the responsibilities of your daily life?" ($m=2.31$, $SD=1.00$) and "That you like most parts of your personality?" ($m=2.45$, $SD=1.14$) suggest moderate self-assessments in terms of daily life management and self-esteem or acceptance. The item "Confident to think or express your own ideas and opinions?" scores slightly higher ($m=2.52$, $SD=1.06$), showing some confidence level but still having space for growth. The mean scores from these statements indicate that while respondents show strengths in personal fulfillment, relationships, and growth opportunities, improvements are needed in societal optimism and a sense of contribution. The overall mean ($m=2.47$, $SD=0.72$) suggests that while students report moderate social support and well-being levels, personal fulfillment and relationships need improvement. Social support positively reduces stress, particularly during the critical transition to university. Higher levels of support have been linked to lower stress, contributing to better well-being. This aligns with the mean for societal optimism and the sense of contribution to society observed in this study. McLean et al. (2023) observed similar trends, noting that social support varies in effectiveness depending on gender and individual circumstances. Fostering social support tailored to students' diverse needs cannot be understated. Initiatives such as creating opportunities for meaningful relationships and addressing stress have been shown to enhance well-being. Overall, this finding reflects moderate well-being among first-year college students, highlighting the need for targeted interventions to address students' challenges during a crucial transition period.

3.4 Correlation between Perceived Social Support and Mental Health

Table 4 presents the correlational analysis of perceived social support and mental health among first-year college students. It revealed a significant and weak relationship between variables ($p < 0.001$, $R = -0.48$). The researchers, therefore, rejected the null hypothesis. The relationship between social support and mental health is observed as unfavorable, which means that as social support increases, the mental health of first-year students decreases. Conversely, when social support decreases, the mental health of first-year students increases.

Table 4. *Correlation between Perceived Social Support and Mental Health*

Variables	R-value	p-value	Decision	Remarks
Perceived Social Support and Mental Health	-0.48	<0.001	Reject Ho	Significant

This implies that among first-year college students, the greater perceived social support is linked to poor mental health. First-year college students may feel incapable when there is too much social support, leading to low psychological well-being. Seidman et al. (2006) suggested that higher levels of perceived social support do not necessarily result in better mental health but may instead be linked to increased distress. Perceived social support may be deemed a "mixed blessing," decreasing poor results for some while causing psychological suffering for others (Gleason et al., 2008). Moreover, excessive perceived social support can impede resilience and personal agency. If social support fosters dependency, it can limit an individual's ability to develop autonomy (Lepore et al., 2008). Reliance can lead to feelings of helplessness and compromise coping abilities among adolescent students. Parungao (2024) also supports this by highlighting how excessive reliance on perceived social support can be detrimental, especially when it leads to dependency and hampers students' autonomy. The study by Zniva et al. (2017) highlighted the need to balance support and autonomy among undergraduate students. It was suggested that overprotection can weaken the person's stress-coping abilities in the long run. On the other hand, autonomy-enhancing support can help individuals perceive stressors as challenges rather than threats. Hence, overprotective support can increase stress reactivity and subjective stress when the support is discontinued.

3.5 Regression Estimates of Perceived Social Support

Table 5 shows the prediction of perceived social support for the mental health of first-year students. The beta coefficient obtained for the perceived social support (predictor) is -0.28. The standard error computed is 0.05, while the t-value is -5.46. Moreover, the ANOVA for this regression model gauges an F-value of 29.8 with a probability value of <0.001. These results revealed that perceived social support can explain the significant variance in mental health among first-year college students. The coefficient of determination was shown as 0.23, meaning that 23% of perceived social support can predict mental health among first-year college students.

Table 5. *Regression Estimate of Perceived Social Support*

Predictor	Estimate	SE	t-value	p-value	Remarks
Intercept	3.89	0.27	14.51	<0.001	Significant
Perceived Social Support	-0.28	0.05	-5.46	<0.001	Significant

Note. DV= Mental Health, $R^2=0.23$, Adjusted $R^2 = 0.22$, F-value=29.8

While generally beneficial, social support may negatively impact mental well-being in specific contexts, including perception of the receiver, self-reliance, family demands, and providers' characteristics. When social support is provided by family members or peers who are judgmental and controlling, it can harm the students' mental health instead of enhancing it. Negative perceptions of family support strongly correlate with emotional and behavioral problems in adolescents, while negative school perceptions relate specifically to behavioral issues and negative peer perceptions to emotional difficulties. Furthermore, studies have found that demanding family environments can increase stress and depression among college students (Khallad & Jabr, 2017). The relationship between received support and mental health outcomes can be detrimental in some situations, influenced by factors like stressor type and support provider characteristics (Uchino et al., 2022). Moreover, young people who are more self-reliant are less likely to seek help to address their mental health needs, which can lead to poor mental health outcomes. Ishikawa et al. (2022) highlighted that higher self-reliance in young people is associated with lower intentions to seek informal and professional help for mental health issues, with perceived social support fully mediating the association.

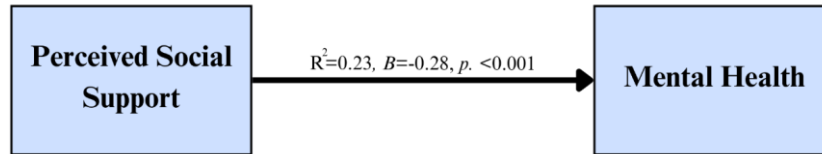


Figure 1. Simple Linear Regression

Figure 1 presents a simple linear regression analysis between perceived social support (x) and mental health (y) among first-year college students. The results show a significant connection between the two variables ($p. < 0.001$). Perceived social support predicts 23% of the variance in mental health ($R^2=0.23$, $B=-0.28$). The beta coefficient is -0.28, implying that each one-unit increase in perceived social support leads to a 0.28-unit decrease in mental health. This indicates a negative relationship between perceived social support and mental health. Furthermore, it suggests that mental health tends to decrease as perceived social support increases, though the relationship is relatively weak. While perceived social support can benefit some, excessive support can lead to distress (Seidman et al., 2006), psychological suffering (Gleason et al., 2008), hindered autonomy (Lepore et al., 2008), and weakened stress-coping abilities (Zniva, 2017). Demanding family environments can increase stress and depression among college students (Khallad & Jabr, 2017), while the relationship between received support and mental health outcomes can be influenced by factors such as stressor type and support provider characteristics (Uchino et al., 2022). Additionally, higher self-reliance can reduce help-seeking behaviors mediated by perceived social support, leading to poor mental health outcomes (Ishikawa et al., 2022).

4.0 Conclusion

The researchers concluded that higher perceived social support is linked to poor mental health among first-year college students. Excessive social support can make students perceive themselves as incompetent, lowering their psychological wellness. At this stage, the ability to make their own choices and do what is needed to succeed and finish college is part of the greater independence that first-year college students desire. Young people explore their identities, try different roles, and experiment with various activities and behaviors to build a strong sense of self and mental health. Students who make choices and take charge of their education can better overcome obstacles and adjust to novel circumstances. Moreover, enhancing academic performance helps adolescents prepare for the demands of the workforce. Being independent as students builds the skills and mindset needed for school success and lifelong learning, helping them become active and self-sufficient learners. Creating positive social support networks through counseling that support students without increasing pressure is essential to foster better mental health. When developing interventions, mental health professionals must evaluate social support systems and consider cultural and personal differences. These programs should focus on building personal agencies and overcoming academic transitions among first-year college students. Moreover, future studies should explore the interaction between perceived social support and other variables, such as coping styles, cultural contexts, family dynamics, stressors, support provider characteristics, and individual tendencies toward self-reliance, to further refine understanding of its impact on student well-being. School counselors must provide interventions considering the students' support network dynamics and personal perceptions of the social support received by friends, family, and significant others. Institutions should implement policies that ensure the integration of mental health services into the campus environment, particularly for first-year students. Future research should investigate the long-term effects of perceived social support on mental health, using longitudinal studies to establish more conclusive causal relationships. Potential researchers can also examine the types of support that contribute most to student well-being and their role in promoting mental health. One limitation of this study was the small sample size, which may affect the generalizability of the findings. Therefore, forthcoming researchers must increase the sample size to enhance the universality of the conclusions. Additionally, using probability sampling techniques, such as random stratified sampling, could ensure a more representative sample, improving the results' accuracy and providing insights into different subgroups within the student population.

5.0 Contributions of Authors

The authors indicate equal contribution to each section. The authors reviewed and approved the final work.

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7.0 Conflict of Interests

The authors declare no conflicts of interest in the publication of this paper.

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Employment Outcomes of Office Administration Graduates of Bohol Island State University - Candijay Campus, Philippines

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Abstract. This tracer study aimed to assess the employability of Bachelor of Science in Office Administration graduates from Bohol Island State University - Candijay Campus (2021–2023) and evaluate how their competencies align with workforce demands. Employability is a key indicator of a university's success in preparing graduates for professional careers, directly influencing institutional reputation and graduate career outcomes. Using a modified Graduate Tracer Study (GTS) questionnaire, quantitative data were collected through online surveys targeting 245 graduates, yielding 143 responses. Statistical analysis revealed that most respondents were female, single, and employed as office or clerical staff. Many earned monthly salaries ranging from PHP 10,000 to PHP 20,000, with salary and benefits highlighted as critical factors in job satisfaction. Lack of work experience was identified as the primary barrier to employment, underscoring its importance in hiring. Furthermore, the alignment between graduates' fields of study and their current roles demonstrated the relevance of the program's curriculum to industry needs. Graduates identified communication skills as the most valuable competency acquired during their studies, reflecting the effectiveness of the university's curricular offerings in equipping students for professional success. This study contributes to understanding graduate employability by emphasizing the role of targeted skill development and work experience in enhancing career readiness.

Keywords: Employability; Graduate Tracer Study (GTS); Office Administration Graduates.

1.0 Introduction

Employment is critical in society, driving economic growth and national development. For academic institutions, the employability of their graduates is a vital indicator of success, reflecting how effectively they have prepared students to meet workforce demands. A high employability rate enhances the institution's reputation and improves the graduates' chances of securing meaningful employment. Employers often consider the alumni record of schools when making hiring decisions, emphasizing the importance of tracking graduate outcomes to boost institutional recognition and improve educational practices.

Tracer studies are widely used in higher education to evaluate the performance of graduates in the workforce. According to Cuadra, Aure, and Gonzaga (2019), tracer studies are powerful tools to assess the alignment between graduates' skills and industry needs while offering insights into their professional trajectories. As the International

Training Center (ITC) highlights, such studies provide essential data for shaping academic programs and career services.

Despite the value of quality education in enhancing employment prospects, college graduates often face challenges such as limited job opportunities, mismatches between academic training and industry demands, and reduced competitiveness caused by gaps in education quality. These issues underscore the need for targeted studies to assess and address graduate employability.

The College of Business Management, formerly known as the College of Technology and Allied Sciences at Bohol Island State University - Candijay Campus, recognizes the importance of understanding graduate outcomes. Building on previous studies, such as Catubig et al. (2023), which highlighted the importance of communication skills and the alignment between college coursework and employment, this study focuses on a specific group of graduates: Bachelor of Science in Office Administration, alumni from 2021 to 2023. These graduates have not been previously tracked, creating a research gap that this study aims to address. Tracer studies at BISU-Candijay have been conducted since 2017, but this study seeks to extend the scope by focusing on recent batches to explore their employment status and career paths. Tracking graduate employability in this context is particularly significant, as it provides valuable data to improve curricula, address skill mismatches, and refine institutional strategies for preparing students for the workforce.

This study aims to trace the employability of Bachelor of Science in Office Administration graduates from 2021 to 2023 at BISU Candijay Campus. Specifically, it seeks to answer the following questions: What are the demographic profiles of the respondents? What is their employment status? How relevant is their college course to their current job? What are their reasons for staying in their jobs or remaining unemployed? By addressing these questions, this study aims to benefit stakeholders—including universities, graduates, and policymakers—by identifying trends, refining educational strategies, and enhancing alignment between education and workforce demands.

2.0 Methodology

2.1 Research Design

The researchers used a descriptive survey method to collect data, utilizing a Graduate Tracer Study (GTS) questionnaire initially designed by the CHED. The questionnaire was based on the same study completed by the Bachelor of Science in Office Administration program in June 2023. Information and records from the registrar's office were gathered to determine the lists of BSOA graduates from 2021 to 2023 of the BISU Candijay Campus. Therefore, this approach acts as a mechanism for gathering data and information, facilitating the achievement of this study's primary objective.

2.2 Research Locale

The locale of the study is Bohol Island State University-Candijay Campus, located in Barangay Cogtong, Municipality of Candijay Bohol. The target respondents of the study were the Bachelor of Science in Office Administration students from two consecutive batches spanning from 2021 until 2023. The batch of 2021-2022 has 17 males and 102 females, while the next batch of 2022-2023 has 21 males and 105 females. In total, the study aimed to involve 245 graduates. The total enumeration method thoroughly examines all possibilities and provides a complete understanding of the research problem.

2.3 Research Respondents

The study aimed to involve 245 graduates in total. The total enumeration method ensures a comprehensive examination of all possibilities and provides a complete understanding of the research problem.

2.4 Research Instrument

The research employed a descriptive design, utilizing a modified questionnaire as the primary data collection tool. The questionnaire was adapted from the Commission on Higher Education's Graduate Tracer Study (GTS), widely recognized for its reliability in collecting graduate employment data. To ensure the reliability of the modified questionnaire, it was reviewed and validated by experts in the field, and a pilot test was conducted with a sample of graduates to assess its consistency and clarity. The questionnaire was divided into two parts: the first section gathered the demographic profiles of the respondents, while the second section focused on their employment

data. This rigorous process ensured that the instrument effectively captured relevant and accurate information for the study.

2.5 Data Gathering Procedure

Before the study was initiated, the researcher asked permission to acquire from the Campus Director, Dr. Luzminda G. Machete, through a formal letter of request with the support of the Dean of the College of Business Management of Bohol Island State University, Candijay Campus, to conduct a survey. After being granted permission, the researchers requested a list of all Bachelor of Science and Office Administration graduates from the school year 2021- 2023 from the campus registrar. Subsequently, the total number of graduates was determined. The researchers gathered information on the participants and emailed graduates working in various fields and locations. The idea for this study was developed through analyzing and identifying issues concerning graduate students. Following this, the questionnaires were distributed via email, messenger, or another online mode, using a Google form with a letter informing the graduates of the purpose of the study. Moreover, requesting their participation during their availability and followed up by the researchers. The questionnaires were retrieved, followed by the data tabulation, analysis, and interpretation. All entries were double-checked to ensure the accuracy and reliability of the results.

2.6 Statistical Treatment

All the data collected was thoroughly inspected, evaluated, and interpreted to ensure the research's reliability. To summarize the distribution of the respondents, they were categorized based on their characteristics, and to ascertain the number of answers to each questionnaire item that described the employability of graduates, the researchers combined the data using frequency counts and percentages. A frequency count was used to tally the respondents' answers to their general information and employment data. Percentage distribution was used to determine the quantitative relation of individual response to the whole response.

3.0 Results and Discussion

3.1 Demographic Profile

This section shows the respondents' demographic profile, which includes their age, sex, civil status, location of residence, and region of origin. The demographic profile is vital in understanding and analyzing various aspects that helped our research study. The data is presented in Table 1.

Table 1. *Profile of the respondents (n=143)*

Indicators	Frequency	Percentage (%)
Age		
20-24	95	66.4
25-29	42	29.3
30 years above	6	4.20
Sex		
Male	28	19.5
Female	115	80.4
Civil Status		
Single	129	90.2
Married	10	6.99
Single Parent	1	0.70
Born with a child but not married	3	2.10
Location of Residence		
City	16	11.1
Municipality	127	88.8
Region of Origin		
Region 4	1	0.70
Region 7	137	95.8
Region 8	5	3.5

Table 1 summarizes the frequency and percentage distribution of Bachelor of Science in Office Administration graduates of 2021-2023. Out of one hundred forty-three (143), ninety-five (95) participants are aged 20-24, which comprises 66.43 percent of the total number, and forty-two (42) participants are aged 25-29 years old, with a percentage of 29.37 percent featured as young adulthood, and 4.20 percent under 30 and above. The results show

that the graduates find jobs at their younger adulthood stage, which was considered the age of the experiment. This emphasizes that the respondents are eager to look for a job. EPRA International Journal of Multidisciplinary Research (IJMR) - Peer Reviewed Journal (2024) shows that the predominant age of respondents is 24 years, with 78 individuals (26.09%), since most of them completed their education in their twenties.

Regarding Sex, the data shows that 80.42 percent of the respondents are female, and 19.58 percent are male. Thus, female graduates are usually higher than male graduates in BISU–Candijay. According to CHED (www.ched.gov.ph), more women finished college than men in the Philippines.

According to Zippia (2022), 80.3% of office administrators in the United States are female. This is 2.2 percentage points higher than last year. Additionally, the percentage of female office administrators has increased by 0.4 percentage points since 2010. That means there are 769,705 female office administrators in the U.S. and 188,832 male office administrators in the United States.

Regarding the civil status of the respondents, the majority are single, with a total of 90.21 percent, while the single parent has the lowest rank, which is 0.70 percent. This implies that most respondents prioritize their careers over their own families. It indicates that they emphasize earning money and focus on their profession. Among the 299 respondents of the study by EPRA International Journal of Multidisciplinary Research (IJMR) - Peer Reviewed Journal (2024), 268 (89.63%) were single, and 31 (10.37%) were married. Specifically, the single respondents from the BSOA are 89.63%. This trend is primarily attributed to prioritizing and establishing graduates' careers before committing to a serious relationship. They may want to concentrate on building their professional lives and achieving financial stability first. Likewise, individuals have different priorities and timelines for starting relationships and settling down. Some may prioritize personal growth, travel, or other experiences before committing to a serious relationship.

Concerning residence location, the highest proportion of the respondents are from the municipalities, with 88.81 percent living in the municipalities and 11.19 percent living in the city.

Regarding the region of origin, 95.80 percent of the respondents are still living within region VII, while Region IV has the lowest rank, comprising 1 or 0.70 percent.

3.2 Employment Status

Table 2 shows the frequency distribution of respondents according to their employment status. The majority, or 84.62 percent, of the graduates are presently employed, while 15.38 percent are unemployed. The data showed that BISU-Candijay Bachelor of Science in Office Administration graduates have a high degree of employability within the last 3 years. This high percentage of respondents employed implies that a significant majority of the graduates have successfully transitioned from education to the workforce, indicating positive job prospects for the majority. The study of Escandallo J. et al. (2024) shows the employment rate of the respondents. Most of them, 75 (86.2%), were employed, while 12 (13.8%) were not. The result of this study regarding the employability percentage is almost the same as in the study of Ojeda-Jintalan (2020), which is 83.96%. This implies that the graduates can contribute to the growth of the national and local economy, as depicted by their employability.

Table 2. *Frequency distribution of respondents according to their employment status (n=143)*

Indicators	Frequency	Percentage
Employment Status		
Employed	121	84.6
Unemployed	22	15.3

According to their job position level, office staff or clerical got the highest percentage of 72.72. At the same time, HRM, Brokerage, Enumerator, Pharmacy Assistant, Data Analyst, QA Specialist, and Product Supervisor had the lowest with 1 or 0.83 percent. This indicates that most graduates are working in jobs related to their field of study, suggesting a strong alignment between their education and their job roles. This finding was also relevant to the study of Ojeda (2020), which reveals that most respondents occupied a clerical position, meaning that the BSOA graduates were gainfully employed in line with their field specialization.

Regarding the monthly salary of employed graduates, the majority got 44.63 percent, ranging from 10,000 to less than 20,000 pesos, while the employed graduates who earned 30,000 and above got the lowest rank. It denotes that the respondents received sufficient salaries for their daily expenses. The data shows that while most graduates earn a sufficient salary to meet their everyday expenses, a smaller proportion achieves higher earnings. This scenario is typical in many job markets, where entry-level positions or roles in specific sectors may offer lower starting salaries, which can gradually increase with experience and career progression. According to the ASEAN Briefing, the average minimum wage in the Philippines is P 8,061.06, and graduates are overwhelmingly earning above the minimum wage, ranging from 10,000 to 20,000.

3.3 Job Level

In regard to competencies learned, respondents identified communication skills as the most valuable competency in their employment (47.11 percent), while entrepreneurial skills received the lowest ranking (5.79 percent). Communication skills are essential for personal and professional success, enabling clear expression and understanding between individuals.

Table 3. *Frequency distribution of respondents according to their job level (n=143)*

Indicators	Frequency	Percentage
Job Level Position		
a. Office Staff or Clerical	88	72.7
Professional		
Accountant	2	1.65
HRM	1	0.83
Brokerage	1	0.83
Enumerator	1	0.83
Teacher	2	1.65
Pharmacy Assistant	1	0.83
b. Technical		
Network Administrator	10	8.26
Data Analyst	1	0.83
QA Specialist	1	0.83
c. Supervisory		
Department Supervisor	2	1.65
Product Supervisor	1	0.83
Customer Service	5	4.13
Supervisor	2	1.65
d. Managerial or Executive	3	2.48
Self-employed		
Monthly Salary		
Below 10,000	48	39.6
10,000 to less than 20,000	54	44.6
20,000 to less than 30,000	14	11.5
30,000 and above	5	4.13
Competencies Learned		
Communication Skills	57	47.1
Human Relation Skills	30	24.8
Entrepreneurial Skills	7	5.79
Critical Thinking Skills	10	8.26
Technical Skills	17	14.0

Additionally, effective communication aids in persuasion and influence, helping to drive actions and decisions. Overall, mastering communication skills enhance emotional intelligence, helping individuals navigate social situations and achieve their goals more quickly. This result was congruent with the study of Albina (2020), in which most respondents considered communication skills as the forecast competency they learned in college that they found helpful in their jobs. Also, Valentina et al. (2021) claim that communication in the workplace is critical. Not only do you need to pay attention to what you say verbally, but it is also important to consider the messages you send to others through your body language. Entrepreneurial skills are often less utilized in office work because many office environments emphasize established procedures, routine tasks, and hierarchical structures over the innovative thinking and risk-taking entrepreneurs typically engage in.

3.4 Relatedness of the Job to their College Course

Table 4 shows promising results about the relation of course with their job. Eighty-five-point ninety-five (85.95) percent affirm that their job is related to the course they took. Since most of the employed graduates work in the office (Table 3), it is highly probable that their job matches or is related to their course. This high percentage indicates that most graduates can apply the knowledge and skills acquired during their studies in their professional roles. On the other hand, 14.05 percent of the respondents admitted that their job is unrelated to their course. This dilemma is inevitable in today's ever-demanding industry and may be experienced by some graduates. Most graduates find their jobs relevant to their course, but a significant minority experiencing a mismatch reflects a broader challenge. This situation underscores the need for ongoing support and adaptation in career services and educational programs to align graduate skills with industry demands better. According to Woya (2019), the result percentage is much higher than in his study, where 59.5 % of respondents perceived their work is directly aligned with their field of study.

Table 4. *Frequency distribution of respondents according to the relatedness of the job to their college course (n=143)*

Job-Related	Frequency	Percentage
Yes	104	85.9
No	17	14.0

3.5 Reason for Staying on the Job

Table 5 reveals that 33.88 percent of the respondents agreed that salaries and benefits are the primary reasons they opted to stay in the company. Related to the course, surprisingly, it came in second at 17.36 percent, followed by financial stability at 14.88 percent. Peer Influence had the lowest rank, with 1.65 percent. Salary is still an important factor throughout an employee's career, but it is not the sole motivator to attract and retain them. Salary may not be the most important benefit, but that does not mean it is not on the list. Companies that tend to underpay their employees will turn off top talent. Kudos (2019) stated that one cannot disregard commissions, bonuses, or allowances. This implies that a person's wage for many jobs is not only their annual take-home pay. A terrific benefits package, quarterly or annual bonuses, monthly wellness allowances, and other items can also be included.

Table 5. *Frequency distribution of respondents according to the reasons for staying on the job (n=143)*

Reasons for Staying the Job	Frequency	Percentage
Salaries and Benefits	41	33.8
Career Challenge	3	2.48
Job Satisfaction	17	14.0
Financial Stability	18	14.8
Positive Work Environment	8	6.61
Related to Course	21	17.3
Proximity to residence	6	4.96
Peer Influence	2	1.65
Family Influence	5	4.13

Additionally, Leonard (2019) supported the study, saying that savvy employers understand that attracting and retaining outstanding workers entails offering a competitive salary and benefits package. Wages, salaries, bonuses, and commission plans all fall under the compensation category. Employers should not overlook the benefits component of employee compensation and benefits since these add value to employment contracts by addressing the needs of most workers. Aside from courteous treatment, 63 percent of U.S. employees are income and benefits in determining work satisfaction, according to the Society for Human Resource Management. Since they directly affect an employee's performance and motivation at work, compensation and benefits are significant factors in determining how satisfied an employee is with their employment. If this is done, employees will be assured that the firm values them and appreciates the job they perform. After all, a company's greatest asset is its people (Wooll, 2022).

3.6 Reason of Unemployment

Table 6 disclosed that out of the 22 respondents with no jobs or were never employed, 40.91 percent of the graduates chose a lack of work experience for not working. 18.18 percent of these incidents were caused by family concerns and the decision not to find a job. 13.67 percent is because they did not look for a job. 13.63 percent because of health-related reasons. 9.09 percent for educational pursuit. Lastly, caregiving responsibility with 4.55 percent. Due to competition in the workplace, graduates of today have realized the increasing need to upgrade

their credentials. Companies always tend to look for candidates who have more work experience. This is congruent with the study of Suppramaniam (2019), wherein he states that employers prefer skills and experience, capabilities, personal qualities, and skills beyond educational background and are in line with current labor market demands. These findings are also relevant to the study of Mulders (2019), in which he reveals that employers have some perceptions about unemployed graduates as some of them cannot be the best performers in their organization. They feared hiring them because of the issues that happened with fresh graduates. Employers have more rules to engage their employees.

Table 6. Frequency distribution of respondents according to reason of unemployment (n=143)

Reasons of Unemployment	Frequency	Percentage
Educational Pursuits	2	9.09
Family concerned and decided not to find a job	4	18.18
Health-related reasons	3	13.63
Lack of work experience	9	40.91
Caregiving Responsibility	1	4.55
Did not look for a job	3	13.64

4.0 Conclusion

Based on the result of the study, the majority are female, single, and prefer to work in their local area. Most graduates are employed, having secured jobs within one to two years after graduation. Most hold professional roles, often as office or clerical staff in the companies. Financial incentives, particularly salary and benefits, are the primary reason employed graduates remain in their initial positions. Conversely, lack of work experience is the main obstacle for unemployed people. The majority of employed graduates earn between 10,000 and 20,000 pesos monthly. Communication skills are considered the most valuable competency acquired during their studies, and language proficiency plays a crucial role in their work. The data strongly suggests that the degree programs offered at BISU-Candijay effectively equip students with the skills necessary for successful employment. This is evidenced by the high percentage of graduates who perceive their degrees as highly relevant to their current jobs.

5.0 Contributions of Authors

The authors' contributions are as follows: Ashley Zapanta served as the principal author and was responsible for the conceptualization, design, data collection, and overall analysis of the study. Jennilyn Lebita provided critical oversight as the Ethics Reviewer, ensuring the study adhered to ethical standards. Vicenta De la Peña contributed as the Data Analyst, focusing on the statistical analysis and interpretation of the results. Jaycel Suso served as the Editor, refining the manuscript for clarity and coherence. Dr. Deliarita O. Casundo and Dr. Jesszon B. Cano acted as the Content Reviewer, ensuring the accuracy and relevance of the study's content.

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7.0 Conflict of Interests

The authors declare no conflict of interest regarding this study's conduct, the data analysis, or the publication of its findings.

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Degradation of Low-Density Polyethylene Using Laccase Produced by *Trametes versicolor* (Turkey Tail) Cultured on *Oryza sativa* (Rice) Stems

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Abstract. Plastic pollution remains an environmental crisis both locally and globally, and the Philippines' insufficient waste management and significant dependence on single-use plastics generate 2.7 million tons of plastic waste annually. LDPE is commonly used in bottles, garbage bags, plastic gloves, and single-use containers that decompose for up to 1,000 years. Rice (*Oryza sativa*) stems are discarded as agricultural waste, containing cellulose and hemicellulose, which are essential to act as substrates for solid-state fermentation. Turkey tail (*Trametes versicolor*) is a fungus capable of producing laccase that can break down chemical structures due to mono-electronic oxidation. This study tests the degrading ability of laccase produced using turkey tail in rice stems as a fermentation medium. Researchers buried LDPE strips (1 x 0.5) inches with initial weights of 0.63 grams and in quintuplicates per set-up, incubating them at 5, 10, and 15 days, respectively. Groups A, B, and C were laccase-treated in each incubation period, while Groups D, E, and F received no treatment. After incubation, LDPE strips were cleaned, weighed, and had a corresponding percentage weight loss of 12.30%, 18.26%, and 30.56% for experimental; 11.11%, 12.30%, and 14.68% were computed for negative control. One-way ANOVA, paired, and independent samples t-tests were performed, setting the alpha value to 0.05 to determine significant differences between set-ups. The ANOVA result showed that 15 days in the experimental set-up had the highest degradation compared to 5 and 10 days of groups, indicating significant differences with a p-value of 3.84E-06. T-tests revealed that Group C significantly differs from all groups, resulting in a p-value of 3.38E-05. Findings suggest that laccase produced by turkey tail cultured on rice stems degraded LDPE. All set-ups degraded LDPE, but the experimental groups demonstrated a higher degradation than the negative control groups. The degradation process is more efficient the longer it is incubated.

Keywords: Plastic pollution; Low-density polyethylene; Rice stems; Turkey tail; Laccase; Plastic degradation.

1.0 Introduction

Approximately 400 million tons of plastic waste is produced annually worldwide. The amount of plastic produced will be tripled if the trend continues by 2060. Around 60% of all generated plastic waste causes environmental damage and is seen in surroundings or landfills (Lai, 2024). In 2020, 367 million metric tons of plastic waste were produced, and only 9% was successfully recycled. It has indicated that plastic production has increased two-fold since 2000, reaching 460 million tons in 2019 (OECD, 2022). In the same year, the Philippines contributed the most significant amount of plastic to the ocean, adversely impacting marine ecosystems (Ramos, 2024). It is marked by

inadequate waste management and a heavy reliance on single-use plastics, generating 2.7 million tons of plastic waste annually in the Philippines (Moaje, 2024). A study revealed that 80% of plastic waste originated from the polluted Pasig River, making it the most contaminated river globally (Meijer et al., 2021).

Low-density polyethylene (LDPE), derived from the monomer ethylene, is commonly used in products like squeezable bottles, garbage bags, plastic gloves, and single-use containers (Jambeck et al., 2015). It is marked on plastic products by the number "4" within an arrow triangle. LDPE is a thermoplastic polymer that is flexible, odorless, transparent, and fully recyclable. The molecular structure of LDPE resembles that of a tree branch. The tree-branch-like structure gives LDPE lower crystallinity, resulting in flexibility (De Naoum & Schadeegg, 2024). Currently, there are 28.09 million tons 2024 of LDPE produced worldwide, and there is an expected growth in its demand between 2019 and 2024 (Mordor Intelligence, 2024). Unfortunately, LDPE products can take up to 1000 years to break down, highlighting the urgency for environmentally friendly alternatives (Promotherapy, 2019).

Microorganisms can break down plastic and offer potential solutions to plastic waste. Using microbial biodegradation techniques provides an economical and environmentally reliable approach to addressing the plastic waste crisis (Shilpa et al., 2022). Enzymes can be sourced from microorganisms such as Turkey tail (*Trametes versicolor*), which are fungi capable of producing laccase. Plastic degradation through microbial or enzymatic means is a promising strategy to break down petro-plastics into recyclable monomers or mineralizing them into carbon dioxide, water, and biomass, generating higher-value bioproducts (Montazer et al., 2019).

Laccases are monomeric glycoproteins with multifaceted enzymatic properties belonging to blue copper oxidases (Temporiti et al., 2022). They are used in breaking down chemical contaminants due to their broad substrate specificity and a wide spectrum of complexes through mono-electronic oxidation (Dong et al., 2023). According to Guerberoff and Camusso (2019), laccase acts as a catalyst that speeds up degradation, with the oxidation of lignin concentration influencing their production. A study by Mishra and Upadhyay (2020) stated that enzymes exhibit two fundamental properties: one increases reaction rates without affecting itself, and the other affects reaction rates without altering the chemical equilibrium between reactants and products.

Rice (*Oryza sativa*) is an abundant crop in the Philippines, with its stems consisting of 13.5% lignin, 24.0% cellulose, and 27.8% hemicellulose by weight (Rosado et al., 2021). Liu et al. (2017) studied the presence of laccase within the genome of 30 genes, which showed that this enzyme can degrade various organic compounds. Swetha and Shivaprasad (2019) extracted and isolated laccase from rice stems, which is essential in this study that makes an ideal fermentation medium where it uses the chemical composition of rice stems as a food source for Turkey tail for growth and the ability to degrade LDPE.

Perdani et al. (2020) performed solid-state fermentation using Turkey tail that produced laccase, where they used steam-exploded rice husks, bagasse, and cornstalk as substrates, which was a candidate for enzyme production as an application in biosensor. It exhibited that the enzyme is oxidized with decreasing substrate. Similarly, Chandrasekaran et al. (2021) performed serial dilution of 1 g of collected soil samples where laccases were isolated. A plate assay was performed, dropping 0.01% of guaiacol, and the appearance of a brown zone around the bacterial growth suggested laccase production. 1 g samples were buried in soil treated with bacterial culture and evaluated its degradation for three months. The percentage weight loss was calculated to demonstrate the extent of laccase as a plastic degrading ability.

This study uses rice stems as a fermentation medium and food source for growing turkey tails to produce laccase. The application aims to degrade low-density polyethylene as it is a predominant material for packaging goods and contributes to plastic waste. This research assessed the degrading capability of laccase produced through solid-state fermentation, isolated, and transferred them to soil pits embedded in LDPE. The researchers examined only three incubation periods (5, 10, and 15 days) with 5-day intervals. The researchers observed its percentage weight loss as a parameter determining the extent of LDPE degradation. Furthermore, the study's findings can help understand how laccase can break down organic compounds, contributing to a more efficient and less polluting way to reduce plastic waste. Further research can help establish the concentration and threshold of laccase produced using turkey tail cultured on rice stems from degrading LDPE and other plastics.

2.0 Methodology

2.1 Research Design

A quantitative research design was used as a systematic approach to examine and resolve a specific problem. This approach tested hypotheses and produced results using numerical data and statistical analysis. Furthermore, statistical analyses, like one-way ANOVA, Paired, and Independent Samples t-tests, were used to evaluate if there were significant differences. The researchers employed experimental quantitative data to determine the current issue, using a scientific method that involves altering one or more variables to see how they influence another variable. It offers numerical facts that can be verified and quantified in nature. In line with the quantitative approach and experimental design, the study consists of six groups, divided into three set-ups for experimental (laccase treated in LDPE) and three for negative control (no treatment in LDPE). Both groups underwent five trials to establish validity and incubated at 5, 10, and 15 days. The study's design aimed to determine the highest degradation among incubation periods.

2.2 Research Locale

The study was conducted at San Beda University-Rizal, the Chemistry laboratory on the 4th floor, and the Physics Stockroom on the 3rd floor of the JHS building.

2.3 Research Participants

No research participants were used in this study. The researchers used low-density polyethylene and divided into six groups: three for experimental (Group A, B, and C) and three for negative control groups (Group D, E, and F), with incubation periods of 5, 10, and 15 days each, respectively.

2.4 Research Instrument

This study used laboratory equipment, such as a spectrophotometer, to determine laccase activity obtained from solid-state fermentation of turkey tail in rice stems. While an analytical balance measured the initial and final mass of LDPE per group and calculated the percentage weight loss, the formula is expressed as:

$$\% \text{ Weight Loss} = \frac{W_0 - W}{W_0} \times 100$$

W_0 is the initial weight before plastic degradation (mg), and W is the residual weight after plastic degradation (mg).

2.5 Data Gathering Procedure

Materials

Four hundred and thirty grams of rice stems were obtained from Purok 1 Bakir, Nueva Vizcaya, and Duran Farm, Bulacan. A plant sample was authenticated at the University of the Philippines-Diliman. At the same time, five turkey tail cultures and ten potato dextrose agar plates were purchased from Mycosphere, Nueva Ecija, and were certified for authenticity. All other materials, including low-density polyethylene, guaiacol, containers, sodium acetate, and soil pH buffer, were purchased from their suppliers.

Substrate Preparation

The leaves and roots were separated and discarded after harvesting rice stems at their respective locations. It was washed with distilled water and air-dried for a day. 430 g rice stems were obtained after being weighed, cut into (0.25 in), and autoclaved at 121°C at 15 psi for 15 minutes and set aside to cool at room temperature (Najafpour, 2013).

Turkey Tail Sub-cultures

Five turkey tail cultures were refrigerated for one day before being subculturing to potato dextrose agar (PDA) plates (Birhanli & Yesilada, 2010). The researchers used a scalpel to cut a portion (22 x 22 cm) of turkey tail culture containing mycelia. The culture was transferred to ten PDA plates and incubated for two weeks at 25°C for the maturation of fungi (Bains & Chawla, 2020).

Laccase Plate Assay

A plate assay was performed to confirm if turkey tail subcultures excreted laccase. 4 mM of guaiacol was dropped to the ten PDA plates and incubated for 24-48 hours at 25°C. The reddish-brown result indicated an oxidation reaction that confirmed laccase was present (Chandrasekaran et al., 2021).

Solid-State Fermentation

The prepared rice stems were placed in a sterilized sizeable plastic tray and in a fume hood to prevent contamination. Researchers used a scalpel to cut a (22 x 22 cm) turkey tail subculture, which was placed evenly on rice stems. It was incubated for 12 days at room temperature for cultivation (Perdani et al., 2020). Solid-state fermentation was achieved to stimulate the growth of the turkey tail on rice stems for laccase production (Adekunle et al., 2016).

Laccase Extraction

After fermentation, each batch contains 8.27 g of fermented rice stems with 10 mL of sodium acetate buffer (50 mM, pH 5.0), was mixed for 4 minutes, and was ice bath at 4°C for 5 minutes. The solution was centrifuged at 3,000 rpm for 30 minutes, filtered by Whatman no. 1 filter paper, and mixed with 80 mL of sodium acetate buffer (Perdani et al., 2020). 50 µL of guaiacol was dropped on the resulting solution as screening for laccase production. An enzyme screening was performed with two solutions, both with standard buffer, but one was dropped with guaiacol and incubated for 24 hours before spectrophotometric analysis.

Spectrophotometric Analysis of Laccase

The spectrophotometer was used to determine the wavelength of laccase activity at its peak absorbance. 2 samples were used: both with standard sodium acetate buffer but 1 containing guaiacol for oxidation. The reading was set to (200-1000 nm) with increments of (25 nm) where all graphical data was presented, and samples were scanned in triplicates and averaged (Avian Technologies LLC, 2020). Pant (2022) stated that the fluctuation of the absorbency of the samples was observed, and the sample's absorbency indicates enzyme activity.

Soil Pit Preparation

The soil was sieved to remove rocks, and the pH level was controlled using an acidifier mixture and monitored using a pH meter daily. LDPE sheets were cut into strips with a measurement of (1 x 0.5 in) and weighed with an initial weight of 0.63 g per group (Chandrasekaran et al., 2021). Six large containers were prepared: 3 for experimental and 3 for negative control. LDPE sheets were embedded in five soil pits containing 75 grams each and placed inside a larger container for each group to ensure environmental control.

Incubation of LDPE

After soil pit preparation, 160 mL of the laccase solution was poured into the containers embedded with LDPE. The researchers incubated the soil pits with laccase for the experimental groups for 5, 10, and 15 days. In contrast, soil pits had no treatment for the negative control groups with the same incubation periods as the experimental (Helen et al., 2017). After each incubation, the LDPE strips were collected and washed with distilled water, air-dried, weighed, and recorded.

Percentage Weight Loss Measurement

After collecting LDPE from soil pits embedded in laccase solution and with no treatment, the strips were weighed before and after treatment using an analytical balance to assess the extent of percentage weight loss. The equation $\% \text{ Weight Loss} = \frac{\text{initial weight} - \text{final weight}}{\text{initial weight}} \times 100$ calculated the percentage weight loss of the LDPE.

Statistical Analysis and Data Interpretation

The researchers analyzed and interpreted the weight loss data collected, calculating whether there were significant differences between the weight loss in the incubation periods of the experimental group (laccase-treated) and the negative control (no treatment) groups. A one-way analysis of variance (ANOVA) and t-tests (paired and independent samples) were used.

2.6 Safety Considerations

Risks

The study involves subculturing turkey tails to increase hyphae development during solid-state fermentation. This method increases the risk of breathing fungal spores; researchers can cause allergic reactions without personal protective equipment. All procedures are carried out under the supervision of laboratory professionals to ensure safety and mitigate risk while protocols are being followed.

Fungi handling

The fungi used in the study, specifically the turkey tail, is known to cause allergic reactions in humans once its spores are inhaled. Therefore, the researchers should properly store the fungi cultures in a place where no one usually goes to avoid inhalation. Furthermore, practicing the wearing of surgical masks can also prevent the inhalation of spores.

Proper waste disposal

Researchers collected rice stems from solid-state fermentation and turkey tail subcultures and transferred them to large containers, where chemical disinfection was employed while PPE was equipped. A 10% household bleach solution was soaked in the waste for 30 minutes. After disinfection, the stems were transferred to leakproof plastic containers labeled as biohazards.

3.0 Results and Discussion

Enzyme screening for laccase was done before the soil treatment with the isolated product. The extracted solution was separated and transferred into two separate beakers. Both solutions were treated with standard sodium acetate buffer (50 mM, pH 5.0), one as is, while the other was dropped with guaiacol. A change in the laccase-treated solution's color was observed in Figures 1 and 2 after 24 hours.



Figure 1. Presence of laccase in standard buffer solution without guaiacol

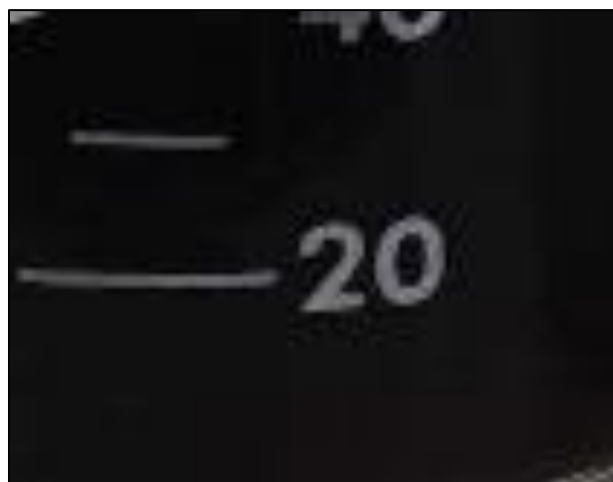


Figure 2. Presence of laccase in standard buffer solution with guaiacol

Perdani et al. (2020) combined the fermented product with fifty milliliters of sodium acetate buffer (50 mM, pH 5.0). For 60 minutes, the mixture was agitated using a rotary shaker set to 120 rpm. Afterward, a muslin cloth was used and filtered; mixed results were centrifuged for 10 minutes at 4°C at 9000 rpm. A crude laccase extract is the resultant supernatant. In this study, laccase was observed in Figure 1 after 24-hour incubation. At the same time, Paraschiv et al. (2022) isolated laccase-producing microorganisms from natural substrates using a spread-plate or streak-plate method. Screening methods using chromogenic substrates, like guaiacol, are carried out to determine the most productive colonies. Umar and Ahmed (2022) stated that the color change after dropping guaiacol into the solution indicates the presence of laccase. Oxidation reaction occurs when guaiacol interacts with laccase. Figure 2 shows that the solution's color changed to reddish-brown due to the guaiacol's reaction (Shrestha et al., 2016).

Figure 3 shows the laccase solution's average absorbency with and without guaiacol after enzyme screening. Observations reveal that at lower wavelengths (200-450 nm), both solutions exhibit high absorbance, where guaiacol solution is maintained at a constant up to 500 nm. In comparison, the sodium acetate buffer solution gradually declines at 450 nm. As the wavelength decreases at 500 nm, the absorbance of the guaiacol solution decreases steadily, and the sodium acetate buffer solution demonstrates a more significant decrease. It suggests that laccase has a higher activity with guaiacol due to oxidation reaction, while the decreasing value of standard solution implies minimal light absorption by the solution itself.

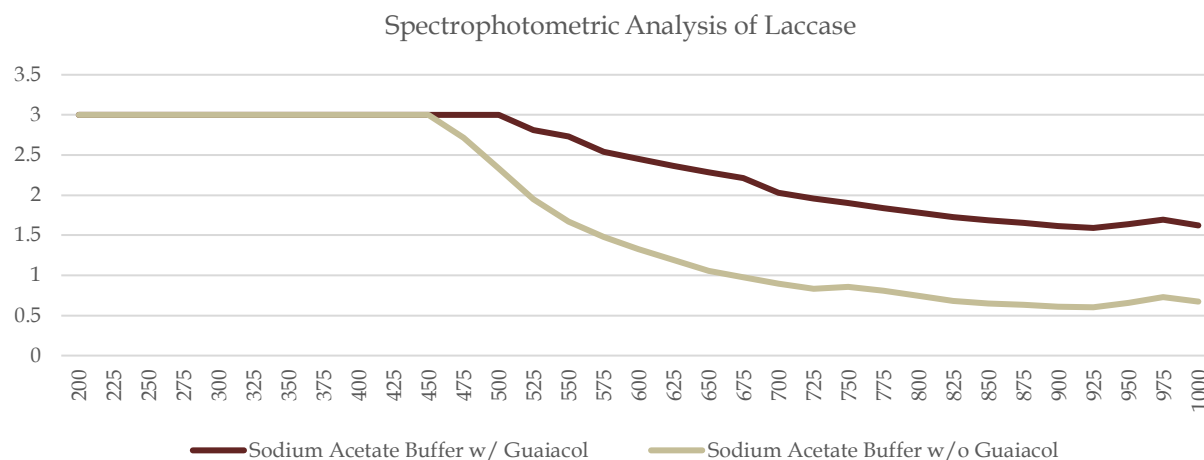


Figure 3. Spectrophotometric analysis and comparison of sodium acetate buffer solution of laccase w/ and w/o guaiacol

According to Senthivelan et al. (2019), a spectrophotometer observes the sample's color change through absorbency. This phenomenon is explained by Beer's Law, which states that absorbance (A) is directly proportional to the concentration (c) of the absorbing sample in a solution and the path length (ℓ) of the light passing through the sample, expressed mathematically as $A = \epsilon \ell c$ (Mayerhöfer & Popp, 2018). In this study, the absorbing sample is laccase oxidation using guaiacol. The change in absorbance is directly proportional to the concentration of the color produced, which determines the laccase activity. According to Hoekstra and Smith (2023), enzymes like Proteinase K and PLA depolymerase effectively degrade bioplastics, achieving a 20-30% breakdown. By measuring absorbance changes at specific wavelengths, researchers can quantify enzyme activity and optimize conditions for enhanced degradation. It provides a strong framework for advancing research in bioplastic biodegradation and developing more efficient strategies for mitigating plastic pollution.

Table 1 summarizes the degradation analysis of experimental and negative controlled groups' average pre- and post-weight, expressed as grams and percentage weight loss in percent, with the raw data in quintuplicates. At the same time, soil pH changes were noted and maintained using a pH meter. With 15 incubation days, the experimental group, Group C, exhibited the highest weight loss, highlighting the impact of the laccase present, which shortens the time for plastic degradation. In contrast, Group F, with 15 incubation days, indicated a slower degradation due to the absence of laccase in the soil pits but had the highest degradation among negative control groups.

Set-up	Group	Incubation Period (days)	Pre-weight (g)	Post-weight (g)	Percentage weight loss (%)
Laccase-treated	A	5	0.63	0.55	12.30
	B	10	0.63	0.52	18.26
	C	15	0.63	0.44	30.56
	D	5	0.63	0.56	11.11
No treatment	E	10	0.63	0.55	12.30
	F	15	0.63	0.54	14.68

These results correlate with the study of Helen et al. (2017), where they performed an in-vitro biodegradation assay of the bacteria isolates for 40 days with 5 days as intervals. It was shown that one isolate peaked at 15 days

while the other at 35 days. It can depend on the microorganism capable of producing laccase, which is directly proportional to the incubation days of its production and threshold. Another study by Makut et al. (2023) indicated the effect of pH at (5, 6, 7, 8, and 9) during incubation periods as it supports regulating the soil pH at 5.0 during incubation.

Table 2 presents the one-way ANOVA test performed on the experimental and negative control groups with an F value of 16.34. With the alpha value set at 0.05, the $F_{0.05}$ was 5,18 = 2.77. The p-value of 2.77 is 3.84E-06, indicating that the test statistic is larger than the critical value deemed significant. Therefore, there are significant differences in the weight loss difference of LDPE.

Table 2. ANOVA analysis on weight loss difference between groups

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	0.042	5	0.0084	16.34	3.84E-06	2.772
Within Groups	0.009	18	0.0005			
Total	0.051	23				

Moreover, Table 3 presents the paired samples t-test analysis regarding the weight loss difference between the experimental and negative control groups. Significant differences are observed between the pre- and post-weight results of Groups A to F with p-values of 0.01831, 0.00982, 3.38E-05, 0.00121, 5.13E-04, and 0.00168, respectively.

Table 3. Summary of paired samples t-test analysis of pre- and post-weight per group

Comparison		t Statistic	P-value	Significance
Pre-weight	Post-weight			
A	After 5 days	4.69	0.01	p < .05
B	After 10 days	5.88	0.00	p < .05
C	After 15 days	40.2	0.00	p < .05
D	After 5 days	12.1	0.00	p < .05
E	After 10 days	16.1	0.00	p < .05
F	After 15 days	10.8	0.00	p < .05

In a study by Kim and Kim (2019), enzymes function as biological catalysts, which hastens molecular-level chemical processes in organisms. They significantly regulate several biological processes, including metabolism, signaling, transcription, replication, and protein synthesis. In addition, Xia et al. (2023) stated that laccase is a highly effective biocatalyst for environmentally harmful substances. These enzymes work similarly to inorganic catalysts, increasing the rate of chemical reactions by lowering the activation energy of those reactions. In this study, Groups A, B, and C containing laccase broke down LDPE strips faster than untreated Groups D, E, and F.

Table 4 provides an analysis using independent samples t-test between experimental groups to determine significant differences in weight loss per group. There is no significant difference in Group A vs. B with a p-value = 0.24061. Compared to Group A vs. C and B vs. C, significant differences result in p-values of 5.43E-04 and 0.00525.

Table 4. Summary of independent samples t-test analysis of between experimental groups

Pairwise comparison	t Statistic	P-value	Significance
A (after 5 days) vs B (after 10 days)	1.30	0.24	insignificant
A (after 5 days) vs C (after 15 days)	6.69	0.00	p < .05
B (after 10 days) vs C (after 15 days)	4.27	0.00	p < .05

It supports a study by Roohi et al. (2017), who explored the use of enzymes to control the degradation of biodegradable plastics and emphasized their potential role in managing plastic waste. In addition, a study by Santo et al. (2012) specifically focused on using bacterial laccase enzymes for plastic degradation. Similarly, Banerjee et al. (2014) demonstrated the ability of enzymes to degrade polymers, opening doors for more sustainable solutions in various industries.

Table 5 provides an analysis using an independent samples t-test between negative control groups to determine significant differences in weight loss per group. There are no significant differences between Groups D, E, and F, resulting in a p-value = 0.35592, 0.07178, and 0.17634, respectively.

Table 5. Summary of independent samples t-test analysis between negative control groups

Pairwise comparison	t Statistic	p-value	Significance
D (after 5 days) vs E (after 10 days)	1.00	0.35	insignificant
D (after 5 days) vs F (after 15 days)	2.18	0.07	insignificant
E (after 10 days) vs F (after 15 days)	1.53	0.17	insignificant

In contrast, the degradation of the negative control groups is supported by Bläsing and Amelung (2017), who reported that minimal degradation of synthetic polymers was tested in soil. In addition, Scalenghe (2018) cited a study conducted by Albertsson and Karlsson (1988) where 10 years of medium-term studies on 0.02-0.16 mm of LDPE films shows that without oxidation additives, only evolved 0.2% weight of CO₂, while UV sensitizer was irradiated of the percentage of weight loss in a few weeks. Similar results were obtained by Selke et al. (2015), who concluded that 3 years is a very short degradation time for films.

Furthermore, Table 6 provides an analysis using independent samples t-test between groups to determine significant differences in weight loss per set-up. No significant differences are observed between Groups A, B, D, and F when compared, resulting in a p-value = 0.68319, 1.00000, 0.45068, 0.08708, 0.14337, and 0.42744, respectively. Compared to Group C and grouped with D, E, and F, there are significant differences with p-values of 3.35E-06, 2.66E-06, and 5.13E-05.

Table 6. Summary of independent samples t-test analysis between groups

Comparison		t Statistic	p-value	Significance
Treated	Untreated			
A (after 5 days)	D (after 5 days)	-0.43	0.68	insignificant
A (after 5 days)	E (after 10 days)	0.00	1.00	insignificant
A (after 5 days)	F (after 15 days)	0.81	0.45	insignificant
B (after 10 days)	D (after 5 days)	-2.04	0.08	insignificant
B (after 10 days)	E (after 10 days)	-1.68	0.14	insignificant
B (after 10 days)	F (after 15 days)	-0.85	0.42	insignificant
C (after 15 days)	D (after 5 days)	-16.3	0.00	p < .05
C (after 15 days)	E (after 10 days)	-16.9	0.00	p < .05
C (after 15 days)	F (after 15 days)	-10.2	0.00	p < .05

According to Pandey (2003) and Shraddha et al. (2011), solid-state fermentation is the most suitable way to produce enzymes using fungi. Using agricultural residues that contain lignin, cellulose, and hemicellulose. It aims to grow microorganisms in an environment with little to no complimentary water or free-flowing aqueous phase. Furthermore, in a study by Perdani et al. (2020), this method was used to produce laccase enzymes. Their study subjected turkey tail cultures with bagasse, cornstalk, and rice husks serving as the substrate. It significantly increased laccase production using SSF through steam-exploded pre-treated corn stalk as a substrate (Adekunle et al., 2016). As a result, Group C, which is laccase-treated, had the highest degradation.

4.0 Conclusion

The researchers concluded the following based on the findings concerning the effect of incubation periods of low-density polyethylene strips buried in soil pits treated with laccase extracted from the solid-state fermentation of cultured turkey tail on rice stems and without treatment. The extraction and isolation of laccase from turkey tail cultured on rice stems using a standard buffer solution was successful. Based on the spectrophotometric analysis, the interaction of laccase with guaiacol caused an oxidation reaction, which led to fluctuations in the sample's absorbency compared to the sodium acetate buffer solution with fewer fluctuations. The data indicates that Group C (laccase-treated) had the highest percentage of weight loss degradation at 30.56% among experimental and negative control groups. In contrast, Group F (no treatment) had the highest percentage of weight loss degradation at 14.68% among negative control groups. The researchers noted that as the incubation period is longer, the percentage of weight loss degradation is higher. The data analysis shows that one-way ANOVA had significant differences between groups in terms of their weight loss difference at varying incubation periods. At the same time, paired t-tests revealed that comparing pre- and post-weights of Groups A, B, C, D, E, and F was significant, while independent t-tests showed that only Group C was significant compared to all groups. The researchers' findings indicate that more extended incubation periods in the experimental groups can enhance laccase enzyme activation, thereby determining its threshold in the degradation process where industrial applications seeking

efficient plastic waste management can be adopted. Implementing this approach could result in more effective and sustainable plastic degradation processes while reducing the environmental impact of plastic waste.

5.0 Contributions of Authors

All authors contributed equally to each section, reviewed, and approved the final work.

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The authors declare no conflict of interest in this study.

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Flipped Classroom versus Lecture-based Instruction in Enhancing the Understanding of Grade 9 Students in Physics

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Abstract. This study investigated the effectiveness of flipped classroom instruction compared to lecture-based instruction in enhancing Grade 9 students' understanding of physics concepts. The limited research on the comparative effectiveness of flipped classroom instruction and lecture-based instruction in K-12 Philippine science education, along with the challenge of teacher-created video production, highlights a gap in understanding their practical implementation and impact. The researcher employed a quasi-experimental design, using a one-stage cluster sampling technique to assign 61 students to experimental and control groups randomly. Both groups demonstrated comparable prior knowledge based on their Third Quarter Science 9 performance, verified through a Mean Performance Score (MPS) analysis and a t-test: Two-Sample Assuming Equal Variances. Data treatment involved using the Mean, t-test for dependent data, and t-test for independent data. The findings revealed that while both instructional methods significantly improved student performance, the flipped classroom approach yielded higher post-test results than lecture-based instruction. The study concluded that flipped classroom instruction is a more effective strategy for fostering active learning and improving comprehension of key physics topics, such as projectile motion, impulse and momentum, linear momentum conservation, and mechanical energy conservation. The research encourages future researchers to replicate this study in other educational settings and expand its scope by exploring additional factors that influence the effectiveness of flipped classroom instruction.

Keywords: Flipped classroom; Lecture-based instruction; Grade 9 Science; Physics; Curriculum development.

1.0 Introduction

Science Education aims to develop scientific literacy among students (Osborne, 2023). Multiple studies have shown a global decline in student interest and achievement in science subjects despite the well-structured science curriculum (Hasni & Potvin, 2015; Kang, 2017; Teppo, 2021). This downward trend is evident in ASEAN countries, Australia, and various Western nations (Leung & Zhu, 2011; Chang, 2015; Muruyama et al., 2013; Hamdan, 2020). It raises alarms about the effectiveness of current educational strategies and calls for urgent interventions.

The recently released 2022 Programme for International Student Assessment (PISA) results further confirm Filipino students' decline in science performance. The results show no significant improvement in science performance compared to 2018 [PISA 2018 Results (Volume I), 2019; PISA 2022 Results (Volume I), 2023]. The

alarming performance has prompted reactions from various stakeholders, including former Education Secretary Sara Duterte, who has called for collective action (Malipot, 2023). Advocacy groups like the Philippine Business Education (PBE) have echoed these concerns, emphasizing that the Philippines' persistent low rankings indicate a systemic education crisis (Malipot, 2023b). At Bais City National Science High School, the shift to Online Distance Learning during the pandemic, followed by the transition to Blended Learning, exposed major challenges. One significant issue was the limited synchronous class time of 1 hour and 20 minutes, held thrice weekly for Science 9. Educators have found this schedule inadequate for covering all learning competencies while maintaining quality instruction. The difficulty in addressing the Most Essential Learning Competencies (MELCs) has persisted, even after reducing competencies by 34% (Education GPS, OECD, 2024).

Researchers have widely studied flipped classroom instruction and lecture-based instruction in higher education. Still, they have limited the comparative analysis of their effectiveness in K-12 settings, particularly in Philippine science education (Hew et al., 2021). Existing research on flipped classrooms often relies on teacher-created videos, which can be time-consuming (Zamorano et al., 2019). The teacher-researcher implemented flipped classroom instruction and lecture-based instruction in Science 9 to address these challenges. This approach focused on teaching physics concepts at Bais City National Science High School during the 2023-2024 school year, utilizing readily available, high-quality instructional materials and a modified flipped classroom model. The teacher-researcher intends to evaluate the effectiveness of flipped classrooms and lecture-based instruction.

2.0 Methodology

2.1 Research Design

This study employed a quasi-experimental design with a pretest-posttest non-equivalent control group approach. This design allows the researcher to investigate the effect of different instructional methods on student performance while acknowledging the practical challenges of achieving random assignments in educational settings. In this study, the researcher manipulated the instructional methods: the experimental group used the flipped classroom model, while the control group received lecture-based instruction. To mitigate the influence of extraneous variables, the researcher maintained consistent conditions across both groups, such as lesson duration, instructional materials, and testing environments. This design aligns with the study's goal of addressing real-world instructional challenges within the classroom context.

2.2 Research Locale

The researcher conducted the study at a public secondary school in Bais City, Negros Oriental, which is known for its emphasis on academic excellence and modern facilities. The school equips students with resources such as laptops, smartphones, LCD screens, and Internet-enabled classrooms to support innovative teaching methods. The average class size is 40 students, and its facilities include computer laboratories adhering to safety and usability standards. The school's infrastructure enabled the seamless implementation of flipped classroom and lecture-based instruction.

2.3 Research Participants

The study involved two Grade 9 sections comprising 61 students. Participants were selected using a one-stage cluster sampling technique, where entire sections were randomly assigned to instructional groups. Section A was assigned to flipped classroom instruction (experimental group), while Section B received lecture-based instruction (control group), ensuring that group allocation was not influenced by prior academic performance. A pretest on relevant science concepts was administered to establish a baseline measure of students' understanding before the intervention. The comparability of the two groups was verified using a t-test: Two-Sample Assuming Equal Variances, which ensured that initial differences in knowledge were statistically insignificant. While grades from the Third Quarter Science 9 curriculum were reviewed, they were not used as a criterion for group selection, minimizing potential selection bias arising from factors such as teaching quality or socioeconomic status. Using random assignment and a standardized pretest helped mitigate biases, ensuring a fair comparison between instructional methods.

2.4 Research Instrument

The instructional tools included teacher-made lesson plans for the flipped classrooms and lecture-based instruction, developed based on the Science 9 curriculum guide and the Essential Learning Competencies

(MELCs) for Quarter 4. Three experts reviewed these plans using the DepEd Bais Learning Resource evaluation tool to ensure alignment with learning objectives and appropriateness for the participants. Instructional materials included DepEd TV videos, refined NegOr learning activity sheets, and resources from Frontlearners. Modified guidelines from Hew (2021) were also adopted, such as limiting video durations to 20 minutes for the flipped classroom approach. The pretest and posttest questionnaires were developed based on a Table of Specifications, with each test comprising 32 multiple-choice items. These were validated by subject matter experts, a statistician, and the researcher's thesis adviser. Reliability testing through Cronbach's Alpha yielded a coefficient of 0.941, confirming the questionnaire's reliability. Items underwent item difficulty and discrimination analysis to ensure their validity and appropriateness.

2.5 Data Gathering Procedure

Data collection was conducted in several phases: Approval Process: Securing permissions from the school administration and the Schools Division Superintendent. The orientation involved conducting sessions for participants and their parents. The validation phase involved refining the research instruments based on feedback from experts. The dry run tested the reliability and feasibility of the research instruments. The pretest was administered to establish baseline performance levels. The researcher implemented the flipped classroom and lecture-based instruction as part of the intervention for the respective groups. The post-test administration measured student performance after the intervention.

2.6 Data Analysis Procedure

The collected data were analyzed using the following statistical tools: a) The weighted mean was used to determine the student's average performance in the pretest and posttest. b) The t-test for dependent samples was used to evaluate the significant difference between each group's pretest and post-test performances. c) The t-test for independent samples was used to compare the post-test performances between the experimental and control groups. Students' proficiency levels were categorized based on criteria set in DepEd Order No. 73, s. 2012, ensuring consistent interpretation of results.

2.7 Ethical Considerations

The study adhered to ethical research standards. Approval was obtained from the Foundation University Research Office's Ethical Committee. Informed consent was secured from both students and their parents. Participants' confidentiality was maintained by anonymizing their identities and refraining from disclosing the school's name. All potential benefits and risks were communicated transparently to the participants and their guardians.

3.0 Results and Discussion

3.1 Pretest Performances of Students

Table 1 presents the overall pre-test performance of students exposed to the instructional approaches – flipped classroom and lecture-based instruction. The pre-test was administered to assess students' prior knowledge of the following topics: projectile motion, impulse and momentum, conservation of linear momentum, and conservation of mechanical energy.

Table 1. Pretest performances of students

Rating (%)	Verbal Description	Flipped Classroom Instruction (n=28)		Lecture-based Instruction (n=28)	
		f	%	f	%
90 – 100	Outstanding	17	60.7	17	51.5
85 – 89	Very Satisfactory	6	21.4	10	30.3
80 – 84	Satisfactory	5	17.8	5	15.1
75 – 79	Fairly Satisfactory	0	0	1	3.03
	Mean	89.42 (Very Satisfactory)		89.39 (Very Satisfactory)	

The table indicates that, on average, the flipped classroom group scored 89.42%. The lecture-based instruction group scored 89.39%, both classified as "Very Satisfactory." These findings suggest that students in both groups already have fundamental knowledge, skills, and a core understanding of basic concepts. These concepts include projectile motion, impulse and momentum, linear momentum conservation, and mechanical energy conservation (DepEd Order No. 73, s. 2012). The standard deviations of 4.16 for the flipped classroom and 4.25 for lecture-based Instruction suggest that the students' scores are pretty dispersed around the mean. The similar pre-test

performances of both the flipped classroom and lecture-based instruction groups connote that both groups began the study with comparable levels of prior knowledge of physics.

3.2 Posttest Performances of Students

Table 2 shows the overall post-test performance of students who participated in flipped classroom and lecture-based instruction. The results show that, on average, students in the flipped classroom group obtained a 95.04% rating, while those in the lecture-based group obtained 93.03%. These ratings are in the “Outstanding” level. Additionally, the standard deviation (SD) of 2.37 for the flipped classroom group and 2.81 for the lecture-based instruction group indicates that the scores within each group were closely grouped around the mean.

Table 2. *Posttest performances of students*

Rating (%)	Verbal Description	Flipped Classroom Instruction (n=28)		Lecture-based Instruction (n=28)	
		f	%	f	%
90 – 100	Outstanding	28	100	33	100
85 – 89	Very Satisfactory	0	0	0	0
	Mean	95.04 (Very Satisfactory)		93.03 (Very Satisfactory)	

The results clearly show that both groups of students at this level exceed the core requirements regarding knowledge, skills, and understanding of the topics (DepEd Order No. 73, s. 2012).

3.3 Difference Between the Pretest and Posttest Performance

Table 3 compares the pretest and posttest performances of the two groups of students. The mean pretest score for students in the flipped classroom instruction group is 89.42%, while the posttest mean increased to 95.04%, resulting in a mean difference (D) of 5.63. For students in lecture-based groups, the mean pretest score is 89.39%, which also increased to 93.03% in the post-test, resulting in a mean difference (D) of 3.64. The t-test results of 6.54 for the flipped classroom instruction group and 8.82 for the lecture-based instruction group indicate that the improvement in student performances from the pretest to the post-test is statistically significant ($p < .001$). This implies that both instruction methods positively impact students' understanding and retention of Science 9 Physics concepts.

Table 3. *Difference between the pretest and posttest performances of the two groups*

Group	Pretest	Posttest	D	t	p	Decision	Remark
Flipped Classroom Instruction	89.42	95.04	5.63	6.54	<.001	Reject H_{01}	Significant
Lecture-Based Instruction	89.39	93.03	3.64	8.82	<.001	Reject H_{01}	Significant

These findings are supported by various studies highlighting the positive impact of flipped classroom methods and lecture-based instruction on students' understanding and retention of Physics concepts. "Widodo et al. (2022) found that flipped classroom instruction promotes active concept analysis and discussion, leading to a deeper understanding of concepts among students. Similarly, Amarilla et al. (2022) confirmed that students in flipped classrooms exhibited higher motivation, self-regulation, and academic performance.

On the other hand, Chiofalo et al. (2022) reported that lecture-based instruction improved student performance in answering conceptual physics questions, highlighting its effectiveness in physics subjects. Additionally, Narula and Singh (2023) claimed that lecture-based instruction using PowerPoint presentations was perceived by students as more effective, enhancing attention, learning effectiveness, and information retention than chalkboard methods.

3.4 Difference Between the Posttest Performance of the Two Groups

Table 4 reveals the posttest performances between students exposed to flipped classroom instruction and those exposed to lecture-based instruction. The data clearly show a statistically significant performance difference of 2.99 points in favor of the flipped classroom group (p -value = 0.004), rejecting the null hypothesis. In other words, both instructional methods significantly improved student performance, with the flipped classroom instruction group showing a higher post-test performance than the lecture-based instruction group. This affirms that flipped classroom instruction is a more effective strategy.

Table 4. *Difference between the post-test performances of the two groups*

Group	d	t	p	Decision	Remark
Flipped Classroom Instruction & Lecture-Based Instruction	2.01	2.99	0.004	Reject H_{02}	Significant

This finding aligns with several studies. McLaughlin et al. (2021) assert that the flipped model promotes greater student engagement and deeper learning. Furthermore, Long et al. (2019) highlight the positive impact of flipped classroom instruction on student learning outcomes, attributing its success to the model's focus on pre-class content engagement and active in-class participation.

On the other hand, Gyimah (2023) emphasized that lecture-based instruction significantly impacts content delivery and concept mastery. Moreover, Hontarenko and Kovalenko (2024) noted that effective lecture-based instruction requires careful planning, appropriate timing, content reduction, engaging examples, and adaptability, with active student involvement and understanding of delivery stages being crucial for enhancing educational outcomes. Yasmin (2019) added that students found lecture-based instruction to be the most effective teaching method for learning the material. This suggests that although the lecture method may be less interactive than flipped classrooms, it still has value for some students in specific contexts.

4.0 Conclusion

The flipped classroom model, which incorporates active learning strategies such as pre-class preparation and in-class problem-solving, has proven more effective than lecture-based instruction in enhancing the understanding of Grade 9 students in Physics. Unlike lecture-based instruction, the flipped classroom empowers students to engage independently with instructional materials outside class, promoting responsibility and improving time management skills. With repeated exposure to video lectures and supplementary resources, students can process information at their own pace, fostering more profound understanding and critical thinking. In-class activities then allow students to apply their knowledge to real-world contexts, strengthening their problem-solving abilities and improving their grasp of challenging Physics concepts such as projectile motion, impulse and momentum, conservation of linear momentum, and conservation of mechanical energy.

For teachers, the flipped classroom model facilitates the design of interactive and innovative lessons that address diverse learning styles. By shifting content delivery outside of class, more time becomes available for individualized and small-group instruction, enabling teachers to provide tailored support to students who need additional guidance. This approach also allows class time for higher-order thinking activities and collaborative learning, enriching the educational experience.

The findings of this study highlight the superiority of the flipped classroom model in improving Grade 9 students' understanding of Physics compared to lecture-based instruction. Future research could explore its long-term effects on learning retention and student performance in other grade levels and subject areas. Studies could also examine its effectiveness among diverse student populations to assess its broader applicability. Additionally, incorporating qualitative approaches like interviews or focus groups could provide deeper insights into student and teacher experiences. Finally, integrating emerging technologies, such as virtual labs and AI-driven personalized learning tools, could further enhance the flipped classroom approach, paving the way for more innovative and impactful teaching strategies in Physics education.

5.0 Contributions of Authors

The authors confirm their equal contribution to every part of this research. All authors reviewed and approved the final version of this paper.

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7.0 Conflict of Interests

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Structural Equation Model of Students' Interest, Motivation, Self-Efficacy, Persistence, and Perceived Teaching Quality in Mathematics

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Abstract. Understanding the psychological variables of learning mathematics at the high school level is important to designing effective teaching strategies that improve their active engagement and academic achievement in mathematics. This study validated the assumptions of the Self-Determination Theory and Social Cognitive Theory in the context of mathematics classroom learning. This research aims to fill the gap in the literature by confirming a structural equation model based on two combined theories, incorporating the latent variables of self-efficacy, persistence, interest, motivation to learn mathematics, and the perceived teaching quality, areas that have already been explored in previous studies. Data were gathered from 325 selected public high school students (junior and senior high school) using a multivariate-correlational research design. Results revealed that self-efficacy strongly influences motivation ($\beta=0.823$, $p<0.001$) and weakly influences persistence ($\beta=0.267$, $p=0.003$), while perceived teaching quality significantly impacts interest ($\beta=0.769$, $p<0.001$) and self-efficacy ($\beta=0.328$, $p<0.001$). Additionally, student interest enhanced self-efficacy moderately ($\beta=0.471$, $p<0.001$), further reinforcing its critical role in fostering confidence. Motivation to learn mathematics was found to be strongly associated with students' persistence ($\beta=0.557$, $p<0.001$). These findings led to developing a valid and reliable structural equation model characterized by strong psychometric properties and excellent model fit indices. The results profoundly emphasize the interplay of psychological and instructional factors in promoting engagement, motivation, and resilience among high school mathematics learners, offering valuable insights for enhancing teaching strategies and educational policies. High school students should cultivate self-efficacy and motivation in mathematics through self-reflection and goal-setting. Teachers are encouraged to adopt interactive, real-world strategies that enhance interest and confidence, while school leaders should focus on professional development to sustain student engagement. Future research can explore digital tools, gamification, and advanced statistical modeling to investigate non-cognitive factors shaping mathematics learning.

Keywords: Motivation; Perceived teaching quality in Mathematics; Persistence; Self-efficacy; Structural Equation Model; Student interest.

1.0 Introduction

Mathematics education fosters intellectual growth, logical reasoning, and understanding of other disciplines. According to the International Commission on Mathematics Instruction (2024), mathematics is essential for human reasoning and understanding the world. Moreover, mathematical knowledge is vital for comprehending other academic disciplines, including science, social studies, music, and art. These indicate that students are trained to

become critical thinkers and problem-solvers in learning mathematics. The Department of Education Philippines (2023) emphasized in the Revised K-12 (MATATAG) Curriculum that developing mathematical proficiency and critical thinking skills in learners is crucial for addressing real-world challenges effectively. Moreover, Young (2003) stated that many modern technological advancements are owed to the brilliant minds who applied mathematical thinking, which led to the creation of various products people enjoy today. Mathematics education plays a critical role in students' cognitive development, yet the psychological factors influencing their success are complex and multifaceted. Teaching students mathematical skills and critical thinking is vital in the present century for solving real-world problems and contributing to development and progress (Ruszyk, n.d; Firdaus et al., 2015; Syafril et al., 2020). Therefore, examining the variables that profoundly affect the teaching-learning process of mathematics is essential.

Teachers play a significant role in the academic success of students. Kamayubonye and Mutarutinya (2023) proved this notion by finding that aspects of quality teaching mathematics affect the student's learning in Mathematics. In the current generation, it is with utmost concern that we focus on the individual psyche of students when it comes to learning and the substantial factors involved. Students nowadays learn differently, which makes teaching strategies more realistic and student-centered. Each new generation of students we teach requires different teaching and learning strategies (Gurnon, 2020). The Social Cognitive Theory of A. Bandura emphasizes that learning occurs within a social context (Nickerson, 2024). Learning occurs through observing the behavior of others. In the context of education, students can learn from the modeled behaviors of their teachers. High-quality teaching that makes lessons engaging and relevant can spark students' interest in mathematics (Great Minds, n.d.). Resnick and Boltz (2019) stated in their online article that self-efficacy is the belief in one's ability to plan and carry out actions to accomplish a particular goal. Self-efficacy is related to this theory (LaMorte, 2022). It is the desirable change observable in students, reflecting their increased confidence and capability to engage in and persist with tasks, enhancing their overall performance and outcomes.

The motivation to learn mathematics is connected to the self-efficacy and persistence of the students (Osic & Tanaid, 2023; Detrina, 2016; Selden & Selden, 2013). The Theory of Self-determination of Ryan and Deci (2000) indicates that when students' basic psychological needs for autonomy, competence, and relatedness are satisfied, their intrinsic motivation increases. This heightened intrinsic motivation can lead to greater self-efficacy and persistence in learning, as students feel more capable and committed to engaging with mathematical tasks. Moreover, Ariff et al. (2022) revealed that self-efficacy is related to academic motivation. When students believe they can achieve a task in mathematics, their intrinsic motivation is likely higher (Velez & Abuzo, 2024). The interplay of students' motivation, self-efficacy, and persistence is essential for their overall academic success and long-term engagement in mathematics. However, achieving better academic achievement and good study habits remain the top challenges as students must continuously navigate various academic and personal obstacles to sustain their motivation and commitment to learning (Bandala, 2023; Sakirudeen & Sanni, 2017).

Bandala (2023) identified several key issues affecting students' academic performance, including low study habits, moderate parental support, and high technology use. These challenges contribute to difficulties in learning mathematics, with students experiencing a loss of interest, struggles with understanding concepts, anxiety, and varying teaching styles. To address these issues, Bandala suggested implementing a guidance intervention program. Similarly, Casinillo (2019) examined factors influencing students' failure rates in mathematics at Visayas State University, revealing that poor study habits, negative learning attitudes, social and emotional problems, and financial issues play significant roles. The Philippine News Agency (2023) highlighted a concerning trend, the Philippines ranking third from the bottom in science, sixth in mathematics, and sixth in reading according to the PISA 2022 results. This is corroborated by the National Achievement Test (NAT) results, which showed low performance among Filipino students in critical thinking, problem-solving, and information literacy (Branzuela et al., 2023; Philippine Star, 2024). Furthermore, recent evidence gathered by the researcher from three public high schools in Pasig City and Marikina City revealed inconsistencies in class attendance and achievement test results in Mathematics, Science, and English among both junior and senior high school learners. These problems are closely linked to self-efficacy, motivation to learn math, interest, persistence, and teaching quality, as they underscore how various factors, such as inadequate study habits and emotional challenges, can significantly impact students' overall academic engagement and performance.

Metro Manila, with a population exceeding 13.4 million, is among the world's most densely populated urban areas (Aboitiz Infra Capital, n.d.). This led the researcher to select this area as the study locale, choosing two municipalities with a significant number of high school students. High school learners experience a significant transformation in cognitive abilities, moving from concrete operational thinking to formal operational thinking, as discussed by Jean Piaget. This transition, characterized by the development of abstract reasoning and deductive logic, typically occurs during early adolescence and into the teenage years, coinciding with puberty (The Education Hub, 2021). The cognitive development stage that high school learners go through is critical to shaping their ability to think critically, abstractly, and creatively. These skills are paramount in the 21st century, highlighting the need for educational systems to prioritize effective teaching practices that enhance cognitive abilities (Cherry, n.d.). Hence, understanding how self-efficacy, persistence, interest, motivation, and perceived teaching quality interact is important for enhancing high school students' cognitive development and ensuring academic success.

Recent studies have already explored self-efficacy, persistence, interest, motivation to learn mathematics, and the quality of instruction, deriving models through correlational and regression analyses (Nazareth-Tanaid & Osic, 2023; Tambunan et al., 2021; Schweder & Raufelder, 2022). Although these studies focused on various research objectives, they did not produce a comprehensive structural model. Given the absence of a statistical model that integrates self-efficacy, motivation, interest, persistence, and perceived teaching quality, and considering the current challenges students face in learning mathematics, the researcher is motivated to confirm a model that combines the assumptions of Social Cognitive Theory and Self-Determination Theory. This model aims to address academic struggles by providing a structured quantitative approach to enhance student engagement and performance in mathematics. Moreover, this statistical model can be utilized to craft academic policies to improve mathematics learning at the basic education level.

2.0 Methodology

2.1 Research Design

This current research employed a multivariate quantitative research design and is confirmatory. Covariance-Based Structural Equation Modeling tests hypotheses and theoretical models by analyzing the relationships between observed and latent variables (Hair et al., 2019; Byrne, 2016). Covariance-Based Structural Equation Modeling is a statistical method used when testing or confirming a theory based on the relationships between observed variables and their underlying latent constructs, allowing researchers to assess the fit of their theoretical model to the collected data (PARSSU, 2022). This study examines the interrelationships among self-efficacy, interest, motivation to learn math, persistence, and teaching quality through the lens of Bandura's Social Cognitive Theory and Ryan and Deci's Self-Determination Theory (2000). Furthermore, this study also used a multivariate method of analyzing relationships between observed and latent variables, as Civelek (2018) and Fan et al. (2016) discussed in their paper.

2.2 Research Locale

The study was conducted in two urbanized cities in the eastern area of Metro Manila, Pasig City and Marikina City. Two big schools from the former and one big school from the latter were randomly selected, and high school students from diverse backgrounds were selected using simple random sampling. Pasig City Hall Library (2021) revealed that the city has attained the fourth rank in terms of population in the National Capital Region, and around 35% of it are high school students. In addition, the Department of Education – Marikina (n.d.) reported that there are currently 30 secondary schools with enough students. Therefore, the researchers selected these cities as the study's locale due to their ample population of public high school students. This substantial number of learners ensures a robust sample size, essential for generating statistically significant results.

2.3 Research Participants

The respondents of this present study were 325 high school students (junior high school and senior high school) from the municipalities of Pasig City and Marikina City. In measuring the perceived teaching quality, the study considered students and school administrators (head teachers and school heads) respondents of the chosen schools. Selected schools with a corresponding number of respondents were School A (120), School B (110), and School C (95) during SY 2023-2024. Twenty-seven head teachers and three school heads participated in the survey. The sample size of 325 exceeded the required minimum of 223, which was determined by the researcher using the

Daniel Soper Sample Size Calculator. This calculation was based on a 95% estimated power of the test, a 5% significance level, an estimated effect size of 0.30, 24 manifest variables, and 5 latent variables.

The researcher employed simple random sampling to select the high school respondents from the three different schools. This type of probability sampling ensures that every member of the population of interest has a chance of being included in the study (Calmorin & Calmorin, 2007). This is aligned with the notion that random samples are valid for making statistical inferences, as pointed out by Yambot (2020) and Mananghaya (2020) of the University of the Philippines Los Banos.

2.4 Research Instrument

The researcher adapted and contextualized several scales specifically for high school students and mathematics learning: the Self-Efficacy Scale, Motivation Scale, Persistence Scale, Teaching Quality Scale, and Student Interest Scale. The motivation scale indicators were derived from Nurkarim et al. (2023). The persistence scale items were based on Ogbu and Ugwu's (2023) validation study. The perceived teaching quality scale was structured from the studies of Leon et al. (2017) and Çiftçi and Karadağ (2016). The self-efficacy and student interest scales were constructed following the research of Dullas (2018) and Luo et al. (2019). Furthermore, six experts were consulted to evaluate the scale to ensure face and content validity. This process resulted in an overall scale content validity index of 0.850, indicating good validity. Each scale is structured in a five-point Likert system to determine the respondents' level of agreement in each indicator: 4 – Strongly Agree, 3 – Agree, 2 – Disagree, and 1 – Strongly Disagree. Note that the following were used as a range of verbal interpretation: 1.00 – 1.80 (Strongly Disagree), 1.81 – 2.60 (Disagree), 2.61 – 3.40 (Neither Agree nor Disagree), 3.41 – 4.20 (Agree) and 4.21 – 5.00 (Strongly Agree).

After conducting Confirmatory Factor Analysis (CFA) to ensure construct validity, two items were removed from the Teaching Quality scale, one from the Motivation Scale, three from the persistence scale, and one from the Interest scale due to low standardized regression weights and high residual covariances. The remaining items form reliable and valid measures, as evidenced by strong internal consistency and significant factor loadings. These items comprehensively cover the construct based on theoretical and empirical grounds. While a more significant number of items is often preferred, the remaining number maintains the essential components of each scale and offers a parsimonious yet effective measure. Additionally, composite reliability, convergent validity, and discriminant validity results were reported in the discussion to highlight the robustness and accuracy of the refined scales.

2.5 Data Gathering Procedure

The researcher asked permission from the Schools Division Offices of Pasig City and Marikina City and the principal of the three randomly selected high schools. After receiving the approved letter, the researcher administered the actual hard copies of the survey to the respondents, coupled with a short orientation about the study's objective and its relevance to them as students. Informed consent was also distributed to the student respondents and their parents. These were given prior to the actual administration of the survey. Clear instructions were provided to them, and the student-respondents were given assurance that their responses and any information about them were treated with strict confidentiality and anonymity.

Two weeks after the data collection, the researcher organized and tabulated the students' responses to Microsoft Excel. Before tabulating the data, it was thoroughly inspected and cleaned to ensure no missing entries. The data were thoroughly processed and organized using Microsoft Excel. For analysis, SPSS Version 26 was utilized to handle statistical procedures, while SPSS AMOS and Master Validity of James Gaskin were employed for scale validation and structural equation modeling.

2.6 Data Analysis

The researcher solely utilized Covariance-Based Structural Equation Modeling (CB-SEM) as the primary statistical method because the study aimed to confirm the essence of the combined concepts of Social Cognitive Theory and Self-Determination Theory relative to the relationships among the teaching-learning variables of mathematics, such as students' self-efficacy, motivation to learn, interest, persistence, and perceived teaching quality. Civelek (2018) and PARSSU (2022) pointed out that this type of structural equation modeling is appropriate since it is intended for theory testing and comparing possible alternatives based on iterations and adjustments made.

Moreover, this type of SEM was used because the data set obtained achieves both univariate normality and multivariate normality. Using the Shapiro-Wilk Test, each p-value per observed variable is more significant than 0.05. In AMOS, the critical value ratio of 0.945 in the multivariate normality falls between the values -1.96 to 1.96. This indicates that the data meets the assumption of multivariate normality, as the critical value ratio lies within the acceptable range.

Moreover, confirmatory factor analysis (CFA) was conducted as part of the procedures in structural equation modeling. This is to validate the measurement model. This was necessary to confirm that the observed variables accurately reflect the underlying theoretical constructs. The CFA ensured that the constructs, such as students' self-efficacy, motivation, interest, persistence, and teaching quality, were measured reliably and consistently, providing a solid foundation for subsequent analysis and interpretation of the relationships among these variables in the context of mathematics education. In conducting the CB-SEM analysis, the researcher presented standardized coefficients, p-values, and model fit statistics.

2.7 Ethical Considerations

Potential ethical issues and concerns arise about the respondent's participation in this study. Respondents voluntarily completed the survey and felt they were not pressured to participate. A face-to-face orientation was conducted per class section to fully explain the contents of the questionnaire and establish a bond with the respondents. Orientations were conducted outside of class schedules to ensure no disruption to their classes. Data collection and storage of data conformed to the strict guidelines of ethical standards. The personal identities of the participants were not gathered. Moreover, respondents, the majority of belonging to minors age, were given parental consent and informed consent to ensure ethical compliance and protect their rights throughout the study. No information about the respondents and their responses was archived or released in research publications, online, or public repositories.

Pertinent files (including the digital forms) such as actual responses in the survey, correspondences with respondents and parents, and approved letters from the Schools Division Offices were stored in a password-templated folder in the researcher's personal computer. Back-up files were also stored in a safe password-protected file. Direct communication with the respondents and their parents (including the informed consent) was deleted one week after the data analysis and interpretations were conducted. Important files were destroyed in March 2024, three months after the research project concluded, to provide researchers time to identify potential data for use as a reference in future investigations. The findings from this study were disseminated through scientific journals, presentations, and reports, using data that has been anonymized to protect participant privacy.

3.0 Results and Discussion

3.1 Confirmatory Factor Analysis

Table 1 presents the results of conducting Confirmatory Factor Analysis in terms of the factor loadings of each item with the associated p-values. The factor loadings in the matrix indicate strong relationships between the observed items and their respective latent constructs, with all values exceeding the commonly accepted threshold of 0.70 and p-values less than 0.05. This demonstrates the reliability and statistical significance of the items in measuring constructs such as Perceived Teaching Quality, Interest, Persistence, Motivation, and Self-Efficacy. According to Hair et al. (2009), as cited by PARSSU (2022), factor loadings should exceed the 0.50 threshold and demonstrate statistical significance to ensure validity.

Notably, the highest loadings, such as IT3 (0.873), P2 (0.913), and SE3 (0.876), highlight these items as the most representative of their respective constructs. In contrast, even the lowest loadings (e.g., SE1 at 0.751 and TQ3 at 0.766) remain robust and meaningful. The two items (TQ4 and TQ5) from Perceived Teaching Quality, one item (M1) from Motivation, three items (P3, P5, and P6) in Persistence, and one item (IT1) in Interest were deleted from the scale due to low factor loadings, high cross-loadings as observed in the modification indices, and associated p-values greater than 0.05. Hence, the measurement model improved in terms of psychometric properties and model fit.

Item Code	Factor Loading	p-value
TQ1	0.800	<0.001
TQ2	0.830	<0.001
TQ3	0.766	<0.001
IT2	0.781	<0.001
IT3	0.873	<0.001
IT4	0.776	<0.001
P1	0.843	<0.001
P2	0.913	<0.001
P4	0.806	<0.001
M2	0.843	<0.001
M3	0.837	<0.001
M4	0.810	<0.001
SE1	0.751	<0.001
SE2	0.852	<0.001
SE3	0.876	<0.001
SE4	0.827	<0.001

These results confirm the convergent validity of the constructs, showing that each set of items effectively captures its intended dimension of student attitudes and teaching quality in mathematics. The high loadings across all items reinforce the reliability of the measurement model, validating its use in explaining factors influencing student engagement and persistence. Future refinement efforts may focus on enhancing lower-loading items for improved clarity while ensuring the overall model achieves strong fit indices and discriminant validity for comprehensive validation.

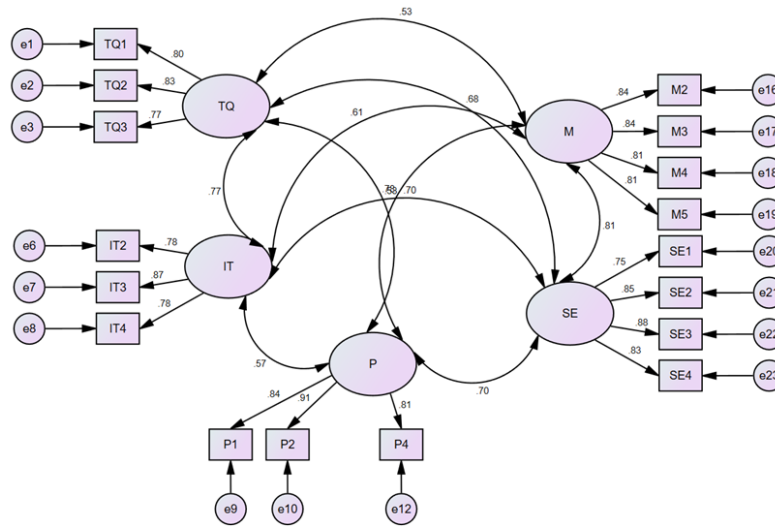


Figure 1. Measurement Model

The measurement model shown is a confirmatory factor analysis (CFA) diagram demonstrating the relationships between latent variables and their respective observed indicators. This five-factor model was determined after two modifications. Multiple indicators measure each latent variable, as factor loadings indicate. These loadings represent the strength of the relationship between the latent constructs and their observed variables, with higher values suggesting stronger associations and better construct validity. Moreover, it is observed that the constructs are strongly correlated to each other, with correlation coefficients ranging from 0.751 to 0.913, indicating a high degree of interrelatedness among the constructs. Oamen (2024) mentioned that correlated latent variables typically yield better model fit, enhancing the reliability of the measured constructs. This suggests that latent variables such as Perceived Teaching Quality, Interest, Persistence, Motivation, and Self-Efficacy are both individually significant and collectively contribute to shaping students' attitudes and engagement in mathematics.

The interconnections among the latent variables signify their correlations, which are key in assessing discriminant validity. The adequacy of the model is further supported by factor loadings above the threshold (commonly 0.50

or 0.60), indicating good convergent validity. These aspects of psychometric properties were computed, assessed, and presented in the succeeding tables.

Table 2. *Model Fit Statistics*

Model Fit Indices	Good Fit	Acceptable Fit	Source	Resulting Value Before Modification	Resulting Value after Modification	Verbal Interpretation
CMIN	$0 < \chi^2 < 2df$	$2df < \chi^2 < 3df$	Engel et al. (2003)	567.441, df = 109	196.436, df = 109	Good
p-value	$0.05 < p \leq 1.00$	$0.01 \leq p \leq 0.05$	Engel et al. (2003)	<0.001	<0.001	Acceptable
CMIN/df	$0 \leq \chi^2/df \leq 2$	$2 < \chi^2/df \leq 3$	Engel et al. (2003), Hair et al. (2009)	5.206	1.802	Good
NFI	$0.95 \leq NFI \leq 1.00$	$0.90 \leq NFI \leq 0.95$	Engel et al. (2003),	0.898	0.951	Good
RFI	$RFI \geq 0.95$	$RFI \geq 0.90$	Kline (2016)	0.890	0.939	Acceptable
IFI	$IFI \geq 0.95$	$IFI \geq 0.90$	Mattan et al., (n.d.)	0.873	0.977	Good
CFI	$0.97 \leq CFI \leq 1.00$	$0.95 \leq CFI \leq 0.97$	Hair Jr et al. (2017)	0.902	0.977	Good
GFI	$0.95 \leq GFI \leq 1.00$	$0.90 \leq GFI \leq 0.95$	Engel et al. (2003)	0.868	0.933	Acceptable
TLI	$0.90 \leq AGFI \leq 1.00$	$0.85 \leq AGFI \leq 0.90$	Magno (2021)	0.905	0.972	Good
SRMR	$0 \leq SRMR \leq 0.05$	$0.05 < SRMR \leq 0.10$	Hu & Betler (1999)	0.084	0.013	Good
RMSEA	$0 \leq RMSEA \leq 0.05$	$0.05 < RMSEA \leq 0.08$	Kenny et al. (2014), Engel et al., (2003)	0.078	0.050	Good

The model fit statistics in Table 2 provide a comprehensive evaluation of the structural equation model's alignment with the data, both before and after modifications. Before modification, several indices fell into the acceptable range, indicating a reasonably well-fitting model, but adjustments were necessary to achieve optimal fit. For instance, the CMIN/df ratio improved from 5.206 (not a good fit) to 1.802 (good), signifying a better balance between model complexity and data representation. The CMIN (Chi-Square) value of 567.441 was enhanced to 196.436, which falls in the range of $0 < \chi^2 < 2df$. The p-value associated with CMIN is also below 0.05. These results still indicate substantial model improvement and a strong alignment with the observed data after modification. Similarly, the Root Mean Squared Error of Approximation (RMSEA) decreased from 0.078 to 0.05, moving from acceptable to good, indicating reduced residual error in the modified model. This suggests that the modifications successfully enhanced the model's precision and reliability.

Post-modification results reveal that most indices reached the "good fit" category, demonstrating the model's robustness. Notably, the Comparative Fit Index (CFI) improved from 0.902 to 0.977, exceeding the threshold for a good fit, and the Standardized Root Mean Square Residual (SRMR) dropped to 0.013, reflecting a nearly perfect match between the observed and predicted data. Normed Fit Index (NFI) improved from 0.898 to 0.951, which is the same case as the Relative Fit Index (RFI), which has an initial value of 0.890 being increased to 0.939. Additionally, indices such as the Tucker-Lewis Index (TLI) and Incremental Fit Index (IFI) showed significant enhancements, confirming the model's validity. While the Goodness of Fit Index (GFI) remained slightly below the threshold for a good fit, its movement from 0.868 to 0.933 indicates substantial improvement. These results collectively affirm that the model is well-calibrated to the data and suitable for explaining the relationships among the constructs.

Composite Reliability (CR) is a critical psychometric property that assesses the internal consistency and reliability of latent constructs in a model. Table 3 demonstrates that all latent variables—Perceived Teaching Quality, Interest, Persistence, Motivation, and Self-Efficacy—exhibit CR values well above the commonly accepted threshold of 0.70, indicating strong internal consistency across the constructs. The computed values reveal that each construct in the scale exhibits strong internal consistency, with coefficients surpassing the threshold of 0.70. This aligns with the conservative standard proposed by Shamim (2021) and the guidelines outlined by Nunnally and Bernstein (1994), as referenced by PARSSU (2022). This suggests that the items within each latent variable reliably measure the same underlying construct, confirming their robustness as indicators.

Table 3. Composite Reliability

Latent Variable	Number of Items	Composite Reliability
Perceived Teaching Quality	3	0.841
Interest	3	0.852
Persistence	3	0.891
Motivation	4	0.896
Self-Efficacy	4	0.897

Among the constructs, Self-Efficacy (CR = 0.897) and Motivation (CR = 0.896) exhibit the highest composite reliability, underscoring their strong measurement precision and suggesting minimal measurement error. Persistence (CR = 0.891) also displays excellent reliability, reflecting consistent item responses. While Perceived Teaching Quality (CR = 0.841) and Interest (CR = 0.852) have slightly lower CR values than others, they still surpass the standard benchmark, confirming their adequacy. These results collectively affirm the reliability of the measurement model and its suitability for structural equation modeling, enabling confidence in the latent variables' contributions to understanding the study's constructs.

Table 4 provides insights into the convergent and discriminant validity of the constructs in the model, which is essential for evaluating the measurement model's psychometric soundness. Convergent validity is supported by the Average Variance Extracted (AVE) values for all constructs, which exceed the recommended threshold of 0.50, indicating that their respective latent constructs explain more than half of the variance in the observed variables. According to Kock (2020), a research instrument exhibits good convergent validity when respondents interpret the item statements associated with each latent construct in the same way as created by the designers. The Average Variance Extracted (AVE) of each constructed was calculated to determine the variance proportion in the items the latent variable explained (PARSSU, 2022). As observed from the matrix, each average variance extracted exceeds the required value of greater than 0.50, as indicated by Shamim (2021) and Fornell and Larker (1981). The high AVE values, ranging from 0.639 (Perceived Teaching Quality) to 0.731 (Persistence), confirm that the constructs are well-measured by their items.

Table 4. Convergent and Discriminant Validity

	Perceived Teaching Quality	Interest	Persistence	Motivation	Self-Efficacy
Perceived Teaching Quality	1	-	-	-	-
Interest	0.770	1	-	-	-
Persistence	0.531	0.570	1	-	-
Motivation	0.530	0.606	0.777	1	-
Self-Efficacy	0.681	0.701	0.703	0.812	1
AVE	0.639	0.658	0.731	0.683	0.685
$\sqrt{AVE}$	0.799	0.811	0.855	0.826	0.828

Discriminant validity is assessed by comparing each construct's square root of the AVE ($\sqrt{AVE}$) with the correlation coefficients between constructs. To attain discriminant validity, the square root of the average variance extracted should be higher than the correlations with the constructs (Fornell & Larker, 1981). This table compares the correlation values between constructs to the $\sqrt{AVE}$ values to check for discriminant validity. The $\sqrt{AVE}$ values (e.g., 0.799 for Perceived Teaching Quality and 0.855 for Persistence) are higher than the corresponding inter-construct correlations (e.g., 0.770 between Perceived Teaching Quality and Interest and 0.777 between Persistence and Motivation). This indicates that each construct is more strongly related to its items than to items of other constructs, confirming adequate discriminant validity. Notably, the highest correlation (0.812) between Motivation and Self-Efficacy reflects a strong but distinct relationship between these constructs. Overall, the results validate the constructs' ability to independently and accurately measure their respective domains within the model.

3.2 Structural Equation Modeling

The assessment of model fit indices in this CB-SEM analysis provides comprehensive insights into the model's adequacy in explaining the observed data. The CMIN value of 246.783 with 128 degrees of freedom (df) falls within the threshold for a good fit ($0 < \chi^2 < 2df$). The CMIN/df ratio of 1.928 also falls within the threshold for a good fit ($0 \leq \chi^2/df \leq 2$). These results indicate that the model closely approximates the observed covariance matrix,

validating its structural accuracy. Although the p-value is below 0.001, indicating statistical significance, this is acceptable in large sample sizes where the chi-square test is sensitive.

Table 5. *Model Fit Statistics*

Model Fit Indices	Good Fit	Acceptable Fit	Source	Resulting Value	Interpretation
CMIN	$0 < \chi^2 < 2df$	$2df < \chi^2 < 3df$	Engel et al. (2003)	193.03, df = 112	Good
p-value	$0.05 < p \leq 1.00$	$0.01 \leq p \leq 0.05$	Engel et al. (2003)	<0.001	Acceptable
CMIN/df	$0 \leq \chi^2/df \leq 2$	$2 < \chi^2/df \leq 3$	Engel et al. (2003), Hair et al. (2009)	1.723	Good
GFI	$0.95 \leq GFI \leq 1.00$	$0.90 \leq GFI \leq 0.95$	Engel et al. (2003)	0.933	Acceptable
CFI	$0.97 \leq CFI \leq 1.00$	$0.95 \leq CFI \leq 0.97$	Hair et al. (2017)	0.979	Good
TLI	$0.90 \leq AGFI \leq 1.00$	$0.85 \leq AGFI \leq 0.90$	Magno (2021)	0.974	Good
NFI	$0.95 \leq NFI \leq 1.00$	$0.90 \leq NFI \leq 0.95$	Engel et al. (2003)	0.952	Good
SRMR	$0 \leq SRMR \leq 0.05$	$0.05 < SRMR \leq 0.10$	Hu & Betler (1999)	0.013	Good
RMSEA	$0 \leq RMSEA \leq 0.05$	$0.05 < RMSEA \leq 0.08$	Kenny et al. (2014), Engel et al., (2003)	0.047	Good

Other fit indices reinforce the model's robustness. The Comparative Fit Index (CFI = 0.979) and Tucker-Lewis Index (TLI = 0.974) exceed the good-fit thresholds ($0.95 \leq CFI \leq 1.00$, $0.90 \leq TLI \leq 1.00$), reflecting excellent model performance in capturing the data's structure. The Standardized Root Mean Square Residual (SRMR = 0.013) further indicates a good fit, as it falls below the stringent 0.05 cutoff. While the Goodness of Fit Index (GFI = 0.933) and Root Mean Square Error of Approximation (RMSEA = 0.047) are in the acceptable ranges ($0.90 \leq GFI < 0.95$ and $0 < RMSEA \leq 0.05$), they still suggest a reasonably close model-to-data fit. Lastly, the Normed Fit Index (NFI = 0.952) exhibited a good-fit threshold and remains within acceptable limits, providing further evidence of the model's reliability. These indices collectively confirm the model's adequacy and potential for meaningful interpretation of latent construct relationships.

The structural model diagram (Figure 2) produced by AMOS visualizes the relationships among the latent constructs and their observed indicators in the study. Each oval represents a latent variable, while rectangles denote observed variables. Factor loadings, depicted as values on the arrows connecting latent variables to their indicators, are all above the commonly accepted threshold of 0.50, indicating substantial item contributions to their respective latent constructs. For instance, indicators for Perceived Teaching Quality (TQ1, TQ2, TQ3) exhibit high loadings (e.g., 0.80, 0.76), signifying the construct's strong measurement reliability.

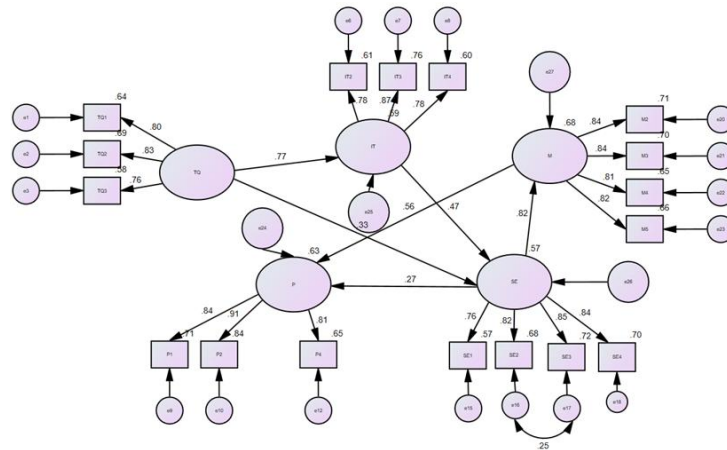


Figure 2. *Structural Model*

The model also displays standardized regression weights for the relationships between latent constructs. For instance, the path from Self-Efficacy (SE) to Motivation (M) shows a strong relationship with a standardized weight of 0.82, indicating that motivation significantly predicts self-efficacy. Similarly, Perceived Teaching Quality (TQ) shows a positive direct influence on Interest (I) with a standardized weight of 0.77, and Interest (I) has a positive direct influence on Self-Efficacy based on the standardized weight of 0.47. Teaching Quality (TQ)

positively influences Self-Efficacy (SE), as evidenced by the standardized coefficient 0.33. Motivation (M) and Persistence (P) exhibited a strong relationship based on the standardized coefficient 0.56. Self-efficacy (SE) positively influences Persistence (P) to a weak extent based on the standardized weight of 0.27. The model's inclusion of error terms (e.g., e16, e17) ensures the accounting of measurement error. The structural model illustrates a robust and coherent framework for understanding the relationships among constructs central to student engagement and learning outcomes in mathematics.

The SEM analysis provided a framework having a sound model fit with good measurement or psychometric properties (AVE > 0.50, Composite Reliability coefficients > 0.80, $\sqrt{\text{AVE}}$ > Inter-construct correlations). The structural model estimates in Table 6 provide a detailed evaluation of the hypothesized relationships between variables, with significant paths being supported by robust statistical evidence.

Table 6. *Structural Model Estimates*

	Hypothesized Path	Standardized Coefficient	Unstandardized Coefficient	p-value	Decision
H1	The self-efficacy of the respondents significantly affects their motivation to learn mathematics.	0.823	0.784	<0.001	Supported
H2	Teaching quality significantly affects the respondent's interest in learning mathematics.	0.769	0.773	<0.001	Supported
H3	The motivation of the respondents to learn mathematics significantly affects their persistence.	0.557	0.523	<0.001	Supported
H4	Teaching quality significantly influences the self-efficacy of the respondents.	0.328	0.328	<0.001	Supported
H5	Interest in learning mathematics significantly influences the self-efficacy of the respondents.	0.471	0.469	<0.001	Supported
H6	The self-efficacy of the respondents significantly affects their persistence	0.267	0.239	0.003	Supported

H1: The self-efficacy of the respondents significantly affects their motivation to learn mathematics.

The standardized coefficient of 0.823 indicates a strong positive relationship between self-efficacy and motivation to learn mathematics. The unstandardized coefficient of 0.784, with a p-value of <0.001, confirms the statistical significance of this effect. This result highlights that students with higher levels of self-efficacy are more likely to exhibit greater motivation in learning mathematics, underscoring self-efficacy as a critical determinant of their drive to engage with mathematical tasks. In a broad sense, Ariff et al. (2022) showed in their study that academic motivation and self-efficacy are statistically correlated. Similarly, Detrina (2016) supported the current result based on her study's empirical findings that motivation to learn mathematics is strongly correlated to student's self-efficacy. In the context of distance learning, these results were aligned with the study of Tanaid and Osic (2023), which concluded that academic and emotional self-efficacy were positively correlated to mathematics motivation. In the context of Self-Determination Theory, the students are motivated to learn mathematics when they feel that their actions are self-determined rather than being influenced or controlled by external factors.

H2: Teaching quality significantly affects the respondent's interest in learning mathematics.

With a standardized coefficient of 0.769, the relationship between teaching quality and interest in learning mathematics is also strong and positive. The unstandardized coefficient of 0.773 and a p-value of <0.001 demonstrate that adequate teaching quality significantly enhances students' interest in mathematics. This finding emphasizes the pivotal role of teaching practices in fostering an engaging learning environment for mathematics education. This finding aligns with the one assumption of Social Cognitive Theory, which posits that learning occurs within a social context. Students' interest in learning mathematics is promoted when teachers deliver mathematics instruction effectively. Tambunan et al. (2021) proved that teacher performance significantly influences students' interest in learning mathematics, which, in turn, affects motivation significantly. Furthermore, Zhu and Kaiser (2022) had supporting findings as they revealed that instructional quality significantly influences student's mathematics interest.

H3: The motivation of the respondents to learn mathematics significantly affects their persistence.

The standardized coefficient of 0.557 reflects a moderate positive influence of motivation on persistence in learning mathematics. The unstandardized coefficient of 0.523, with a p-value of <0.001, confirms that motivated students are more likely to persevere in mastering mathematical concepts and skills. This underscores the importance of

nurturing student motivation to sustain their long-term commitment to learning. Self-determination theory supports this claim as it posits that when students feel motivated, they are more likely to persist in doing mathematics learning tasks because they find the activity itself as important and rewarding to themselves. Vollmeyer and Rheinberg (2000) concluded that motivation is essential for boosting persistence. Meti et al. (2024) implied that motivation enhances student engagement and effort, reflecting persistence, thereby improving mathematics literacy and problem-solving skills.

H4: Teaching quality significantly influences the self-efficacy of the respondents.

The standardized coefficient 0.328 indicates a moderate positive relationship between teaching quality and self-efficacy. The unstandardized coefficient of 0.328 and a p-value of <0.001 confirm that higher teaching quality can significantly enhance students' confidence in their mathematical abilities. This suggests that effective teaching affects academic performance and fosters self-belief in students. As reflected in the assumption of Social Cognitive Theory, self-efficacy is the positive behavioral transformation in students as they gain confidence and improve their learning within the social context fostered by their mathematics teachers. Sudiyatno et al. (2019) concluded that perceptions of teacher quality are significantly related to the student's self-efficacy. Moreover, Zhu and Kaiser (2022) proved that instructional quality has a moderately significant relationship with mathematics students' self-efficacy.

H5: Interest in learning mathematics significantly influences the self-efficacy of the respondents.

The standardized coefficient of 0.471 indicates a moderate positive influence of interest in learning mathematics on self-efficacy. The unstandardized coefficient of 0.469, with a p-value of <0.001 , highlights that students more interested in mathematics are more likely to feel capable of succeeding in the subject. This demonstrates that cultivating interest can directly contribute to building students' confidence. This result aligns with Social Cognitive Theory, highlighting how students' interest in mathematics, shaped by their social interactions and environment, significantly impacts their self-efficacy. Schweder and Raufelder (2022) proved quantitatively that student interest and self-efficacy are significantly correlated in two learning environments. Moreover, the results in this section were also aligned with the findings of Nuutila et al. (2020), which revealed that students' situational interest had a stronger effect on self-efficacy than vice-versa, and both variables also contributed positively to student task performance.

H6: The self-efficacy of the respondents significantly affects their persistence.

The standardized coefficient of 0.267 indicates a weak-to-moderate positive effect of self-efficacy on persistence in learning mathematics. The unstandardized coefficient of 0.239, supported by a p-value of 0.003, confirms the significance of this relationship. This result suggests that students who believe in their mathematical capabilities are more likely to persevere in overcoming challenges and achieving learning goals. This result aligns with Self-Determination Theory, as it underscores how self-efficacy, reflecting a sense of competence, fosters intrinsic motivation that enhances students' persistence in pursuing their goals. In the context of mathematics subject, Selden and Selden (2013) mentioned in their abstract that persistence can be supported by the student's level of self-efficacy, a belief in themselves to succeed in a particular situation. The study concluded that students are more likely to approach tasks with persistence and a willingness to explore when they believe their efforts will lead to personal benefits, emphasizing the critical role of self-efficacy. Halper and Vancouver (2016) inferred that self-efficacy can promote persistence when a person is cognizant of his or her current state of task performance. In a different psychological aspect and direction, Cherewick et al. (2023) produced a structural equation model that proved that persistence and academic self-efficacy are significantly associated with each other both in males and females.

4.0 Conclusion

The results of the SEM analysis emphasize the significant complex relationships between self-efficacy, motivation, teaching quality, and persistence in learning mathematics among public high school students. Self-efficacy emerges as a powerful driver of motivation and persistence, suggesting that students who believe in their mathematical abilities are more motivated and persistent in their learning efforts. This makes them more eager to complete learning tasks assigned to them by their teachers. This finding affirms the assumption of the Self-Determination Theory, which emphasizes the role of intrinsic motivation and competence in fostering persistence. Perceived teaching quality also plays a critical role, as it significantly enhances both students'

interest in mathematics and their self-efficacy, reinforcing the social learning context suggested by Social Cognitive Theory. Furthermore, the positive influence of interest on self-efficacy underscores the importance of fostering student engagement, active learning, and interest in building confidence in their mathematical abilities. Maximizing these variables will enable learners to reach their full potential in dealing with mathematics learning tasks. These findings suggest that an effective educational environment, which promotes self-efficacy and motivation to learn through quality and innovative teaching and engaging learning experiences, is integral for enhancing students' persistence and overall academic success in mathematics.

For high school students, it is recommended to actively engage in self-reflection to build self-efficacy, setting small, achievable goals in mathematics to foster confidence and motivation. Math teachers should embrace interactive, student-centered teaching strategies that cultivate interest and self-belief, using real-world applications to make mathematics relevant. School heads and the Department of Education should prioritize professional development programs that equip teachers with innovative methods to boost student motivation, capture interest, and promote a growth mindset despite many distractions among students nowadays. Future researchers could explore integrating digital tools and gamification in the classroom to enhance mathematical persistence, investigating how virtual environments can support the development of self-efficacy and long-term engagement in learning. Moreover, future researchers could further enhance the model by conducting mediation analysis, moderation analysis, or another type of statistical modeling involving unexplored non-cognitive determinants of mathematics learning at the high school level.

5.0 Contributions of Authors

The author takes full responsibility for the study's conceptualization and design, data collection, statistical analysis, and manuscript writing.

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7.0 Conflict of Interests

To avoid potential conflicts of interest, the researcher implemented predefined protocols. Data collection and analysis were conducted relatively, maintaining neutrality and ensuring no direct affiliations or relationships with the participating learners or instrument validators.

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An Exploration of Work Anxiety, Adaptability, and Help-Seeking Barriers among University Faculty during the Pandemic

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Abstract. The Covid-19 pandemic has profoundly impacted the education sector, especially teachers' psychological well-being. This study investigates anxiety, adaptability, and barriers to help-seeking behaviors among 468 Central Luzon teachers from state universities and colleges (SUCs). It also examines the relationships among these variables. Using a mixed-methods approach, quantitative data were gathered through an online survey, while qualitative insights were obtained from a virtual focus group discussion with seven participants. Results indicate that teachers experienced high anxiety levels ($M=3.59$), driven by health concerns, technology-related challenges, and transportation issues. Despite these stressors, their adaptability to work was also high ($M=3.6$), supported by coping strategies such as self-care, seeking support, and acceptance. However, moderate barriers to seeking professional help ($M=3.0$) were identified, linked to self-reliance, social stigma, and faith. The study further reveals that difficulties in seeking mental health support are associated with lower adaptability at work. These findings emphasize the importance of promoting self-care practices and resilience-building initiatives for SUC faculty during and beyond the pandemic.

Keywords: COVID-19; Anxiety; Adaptability; Help-seeking behavior; SUC faculty.

1.0 Introduction

The COVID-19 pandemic has profoundly impacted the educational system, forcing colleges and universities worldwide to transition abruptly to online learning. This shift disrupted traditional teaching methods, requiring teachers and students to undergo significant adjustments to maintain the quality of education. Teachers faced challenges adapting to blended online learning and balancing personal and professional demands. The anxiety level rose to a significant height among employees on almost all workplaces (Eguchi H, Hino A, Inoue A, Tsuji M, Tateishi S, Ando H, Nagata T, Matsuda S, Fujino, 2021)

Workplace pressures have taken a toll on their mental health, contributing to issues such as stress, anxiety, and depression. Research has documented the mental health struggles of teachers during the pandemic, highlighting the prevalence of anxiety (17%), depression (19%), and stress (30%)—levels notably higher than those in the general population (Ozamiz et al., 2021; Cenat et al., 2021). Contributing factors include the sudden shift to emergency e-learning, increased workload (Palau et al., 2021), and school operations uncertainties (Besser et al.,

2020). While adaptability has been identified as crucial for coping with these challenges (Olson, 2020), studies on teachers' help-seeking behaviors and their barriers to accessing mental health support remain scarce.

Studies have reported prevalence of burn-out, stress, anxiety and depression among teachers during the COVID-19 pandemic. The results of the meta-analytic review of studies on teachers' mental health during the pandemic conducted by Ozamiz, Mondragon, Notivol, Moreno & Santabarbara (2021) show that a high percentage of teachers have symptoms of stress, anxiety and depression. The findings which report that the teachers' levels of anxiety (17%), depression (19%), and stress (30%) were somewhat higher than those found in another meta-analysis conducted in general population during the pandemic (Cenat, Rochette, Kpolou, Noorishad, Mukunzi, 2021) where the prevalence of anxiety was 15.5%, depression was 15.75%, and stress was 13.29%.

Some research on this subject has highlighted the factors contributing to their symptoms of anxiety and stress which include emergency e-learning, teachers' overload (Palau, Fuentes, Morgas & Cebrian, 2021) and the uncertainties in school set-up amid the pandemic (Besser, Lotem & Hill, 2020). With the emergence of increasing levels of anxiety and stress, teachers need to level up on their adaptability to navigate new, changing, and uncertain situations effectively (Olson, 2020) to ensure their well-being and maintain their commitment to work during the COVID-19 pandemic. Seeking support from others especially from mental health professionals is found to be vital in dealing with stress, anxiety and depression. The literature about help-seeking behaviors of teachers is scarce. Thus, this study was conducted to add to the literature about teachers' anxiety, their adaptability and barriers to help-seeking behaviors.

With the situation of COVID-19 pandemic, teachers are facing and dealing with new measures of the delivery of instructions, and the insecurities and uncertainties of the times that are generating a great toll on their mental health. The aim of this study is to determine the level of anxiety that the faculty of state university and colleges in Region 3 are experiencing during the pandemic and the level of their adaptability to work performance. It also explores the barriers to their help-seeking behaviors. Further, this study analyzes the relationship among these variables.

In terms of adaptability, the American Psychological Association (APA) Dictionary of Psychology (2015) defines adaptability as "the capacity to make appropriate responses to changed or changing situations" and "the ability to modify or adjust one's behavior in meeting different circumstances". The onset of the COVID-19 pandemic has brought unprecedented changes in the education setup and these have contributed to the anxieties experienced by teachers. In a study conducted by Delgado, Padilla, Zuniga (2021) on teaching anxiety, stress and resilience during COVID-19 Pandemic, teaching anxiety, preparedness and resilience among academic professionals were measured using the adapted COVID-19 stress scales (ACSS). The results showed an absent to mild to moderate level of anxiety among the teaching professionals and the greatest predictor to adaptability to coping with stress is the high level of resilience they developed throughout the quarantine.

In another study conducted by Vergara-Rodriguez, Anton-Sancho and Fernandez-Arias (2022) which measured variables influencing professors' adaptation to digital learning environments during the COVID-19 pandemic through a validated survey that was answered by 908 university professors, results showed a negative correlation between the pandemic stress and the professors' adaptation skills to digital environment. Moreover, the professors' high level of self-confidence and digital competence showed a positive influence on their adaptation skills.

During the onset of the pandemic, however, a study conducted by Desinova, Ermakov, Skirtach and Korkhova (2020) reported less adaptive coping strategies of university teachers during the transition to online education. The study which was conducted to 119 university teachers aimed to examine the severity of their anxiety, stress level, career maladjustment, and coping strategies. The results indicate an increasing level of stress and anxiety over the use of the internet which was causing discomfort. Teachers demonstrate a high level of career maladjustment. Their preferred coping strategy is to openly complain about work. The difficulties experienced by the teachers in their adaptability is determined by their stable characteristics.

Barriers to Help-Seeking Behavior. In the phenomenological study conducted by Topkaya (2015), she reported that the factors inhibiting psychological help seeking in adults include social stigma, unwillingness to share problems with an unfamiliar person, the belief that private problems should be kept in the family, one's belief that he/she can solve his/her problems, and not knowing enough about the psychological help process.

A review of theories and literature on barriers to help-seeking behaviors among Asians reported multiple factors contributing to the development or suppression of help-seeking behaviors (Naito, 2020). Popularly cited in mental health researches is Henderson's four barriers to help-seeking behaviors (2013): (1) lack of knowledge about the features and traceability of mental illness, (2) ignorance about how to access assessment and treatment, (3) prejudice against people who have mental illness, and (4) expectation of discrimination against people who have a diagnosis of mental illness. Race or ethnicity was added as a barrier to help-seeking behaviors of Asians, specifically the Chinese due to the Chinese origin of the Covid-19 (Naito, 2020). Understanding the barriers to mental health help-seeking behaviors is an important step toward designing intervention programs to eradicate these obstacles and promote good mental health.

Addressing this gap, the present study examines the levels of anxiety and adaptability among faculty members of state universities and colleges in Region 3 during the pandemic. It also investigates barriers to seeking help and explores the relationships among these variables. The findings aim to inform the development of a self-care plan for participants with high anxiety and low adaptability, contributing to future mental health awareness campaigns and support programs for educators.

2.0 Methodology

2.1 Research Design

This study employed a mixed-methods research design, integrating quantitative and qualitative approaches to comprehensively explore the relationships among faculty members' anxiety levels, adaptability to work, and help-seeking behaviors during the COVID-19 pandemic. Quantitative data were gathered using a descriptive-correlational design, which provided a detailed analysis of the variables' characteristics, trends, and interrelationships. To complement this, a qualitative phase was conducted through a focus group discussion (FGD) to address gaps and nuances not fully captured in the quantitative analysis. Data from the FGD enriched and added depth to the findings of the quantitative phase, ensuring a holistic understanding of the research problem.

2.2 Population and Sample of the Study

The population for this study consisted of 4,543 faculty members from 12 State Universities and Colleges (SUCs) in Central Luzon, as recorded by the OPRKM-Knowledge Management Division as of July 8, 2019. Using Slovin's formula, the minimum sample size required was calculated to be 368 participants. However, 468 faculty members participated in the online survey during the quantitative phase of the study, exceeding the minimum requirement. Participants were faculty members – both regular and part-time – teaching in the 12 SUCs of Central Luzon. They were invited to participate by responding to an online survey disseminated through Google Forms. For the qualitative phase, seven initial survey cohort participants participated in an online FGD conducted via Google Meet. These participants provided further insights into their experiences during the pandemic.

2.3 Data Collection Tools

The study utilized three objective instruments, all integrated into a single online survey form administered through Google Forms.

Anxiety During Pandemic Scale (ADPS). This instrument, adapted from the Anxiety Scale developed by Deblina Roya Sarvodaya Tripathy (2020), originally consisted of 18 items rated on a 5-point Likert scale. To ensure relevance, 10 items were selected to measure participants' anxiety levels related to the COVID-19 pandemic over the past two years. The reliability of this tool had been further measured using Cronbach's alpha method for the first factor ($\alpha = .79$), the second factor ($\alpha = .71$), and the whole questionnaire ($\alpha = .79$).

Adaptability Scale: This scale, adapted from Charbonnier-Voirin and Roussel's (2012) assessed faculty adaptability during the pandemic. The scale demonstrated reliability (Cronbach's alpha = 0.81) and construct

validity, with five key factors: (a) creative problem-solving, (b) handling emergencies, (c) interpersonal adaptability, (d) training and learning effort, and (e) stress management.

Barriers to Help-Seeking Scale (BHSS): Adapted from Mansfield et al. (2005), this 31-item instrument was reduced to 15 items to focus on barriers to general help-seeking. Responses were measured on a 5-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). The scale's internal consistency was robust, with Cronbach's alpha ranging from 0.75 to 0.85.

Prior to data collection, a pilot test was conducted with 25 SUC faculty members not included in the main study to evaluate the instruments' feasibility and ensure their clarity and reliability. The actual data gathering took place from March- May 2021.

2.4 Data Collection Procedures

Data collection proceeded in two phases. In Phase 1, participants were invited to complete an online survey through Google Forms. Consent was sought, and participants were assured of the confidentiality and anonymity of their responses. The survey included the three instruments measuring anxiety, adaptability, and help-seeking behaviors. Phase 2 involved an online FGD with seven participants selected from the survey respondents. Conducted via Google Meet, the FGD sought to gain deeper insights into faculty experiences during the pandemic and gather qualitative data that enriched the quantitative findings. Verbatim responses from the FGD were transcribed and analyzed thematically to extract meaningful patterns and insights.

2.5 Data Analysis

Quantitative data were analyzed using the Statistical Package for the Social Sciences (SPSS) software (version 23.0). Descriptive statistics, including frequencies, means, and standard deviations, were used to summarize the demographic characteristics of respondents and key study variables. Pearson correlation analysis was performed to examine the relationships between anxiety levels, adaptability, and barriers to help-seeking behavior. Qualitative data from the FGD were processed by transcribing verbatim responses and summarizing them into thematic categories. This thematic analysis added depth and context to the quantitative findings, enhancing their overall interpretability.

2.6 Ethical Consideration

The study followed the rules that maintained the ethicality of the entire study. Confidentiality of data was carried on as well as anonymity of the participants. Risks were minimized and managed when there was minimal occurrence. Data was managed privately in accordance with the Data Privacy Act of 2012 and RA 10173 applicable in the Philippine setting.

3.0 Results and Discussion

3.1 Profile of the SUC Faculty Participants

Table 1 presents the profile of the Central Luzon SUC faculty participants. It shows that more than 40% of the participants are middle-aged adults (41 to 60 years old), while barely 3% are in their late adulthood. People from Generation Y and Z (21 to 40) comprise more than half (56%) of the participants.

Female participants dominated the study with a count of 274, almost 60% of the entire sample. More than half of the SUC faculty participants are married, while less than half are single. Approximately 3% are either widows, widowers, or separated. 2 out of 468 did not report their civil status. Most faculty participants (35.05%) have been teaching for 3 to 10 years. Those 10 to 20 years in the teaching profession (24.36%) and beyond two decades (23.93%) were almost a quarter of the total sample. Barely 17% of the sample are newbies in the teaching profession, possibly possessing less than 24 months of experience.

More than 60% of the total sample are tenured by academic personnel (regular) in their respective institution, while 35.47% temporarily possess tenure security or work part-time. Almost 60% of the total sample are Instructors, while only less than 6% are at the Professorial level. Those in the Assistant (15.81%) and Associate Professor (19.66%) Levels are less than 20% of the total participants. More than half of the participants hold

master's degrees, while a quarter possess a doctoral degree. More than 23% of them possess only a bachelor's degree.

Table 1. *Profile of the SUC faculty participants*

Profile	Indicator	Frequency	Percentage
Age	21-30 years old	140	29.9
	31-40 years old	122	26.0
	41-60 years old	192	41.0
	61 years old and above	14	2.99
Gender	Male	192	41.0
	Female	274	58.5
	Other	2	0.43
Civil Status	Married	260	55.5
	Separated	4	0.85
	Surviving Spouse	10	2.14
	Single	192	41.0
	Unidentified	2	0.43
Number of Years in Service	More than 20	112	23.9
	10 to 20	114	24.3
	3 to 10	164	35.0
	Less than 2	78	16.6
Employment Status	Regular	302	64.5
	Temporary	76	16.2
	Part-Time	90	19.2
Academic Rank	Instructor	276	58.9
	Assistant Professor	74	15.8
	Associate Professor	92	19.6
	Professor	26	5.56
Highest Educational Attainment	Baccalaureate	108	23.0
	Master	242	51.7
	Doctorate	118	25.2

3.2 Anxiety Among SUC Faculty During Pandemic

Table 2 presents anxiety's mean and standard deviation among SUC faculty during a pandemic.

Table 2. *Level of anxiety during the pandemic*

Indicators	Mean	Interpretation	SD
1. I feel paranoid about contracting the COVID-19 infection.	3.51	High	1.16
2. I avoid going out of home.	3.66	High	1.11
3. I avoid gatherings.	3.94	High	1.06
4. I order food online.	3.04	Moderate	1.28
5. I have difficulty sleeping.	2.66	Moderate	1.27
6. I need to buy and stock all essentials at home.	3.48	High	1.15
7. I feel scared when a friend is reported to be sick.	3.53	High	1.22
8. I feel the need to follow basic health protocols religiously.	4.32	Very High	0.96
9. I feel worried about myself and my loved ones.	4.16	High	1.00
10. News and posts on social media regarding COVID-19 affect me.	3.59	High	1.04

A close examination of the table shows that faculty seems highly anxious about religiously following basic health protocols ($M=4.32$). They feel worried about themselves and their loved ones, so they avoid gatherings and leave their homes. News and posts on social media regarding COVID-19 affect them, and they feel paranoid about contracting the COVID-19 infection and feel scared when a friend is reported to be sick. A weighted mean of 3.59 indicates that, generally, SUC faculty respondents showed a *high level of anxiety towards the COVID-19 pandemic*. With these findings, discussions conducted with the participants through the following FGD questions further revealed the following qualitative data.

The participants were asked, *"What are you most anxious about during the COVID-19 pandemic?"* This question aimed to elicit responses that focused on the determinants of high anxiety among the participants. The following themes were arrived at.

Health Concerns

The outbreak of COVID-19 brought panic and anxiety to the teachers. The need to physically go to work made them anxious about exposing themselves to the virus, getting sick, and even risking their families towards contracting the virus. Their anxieties led them to take extra precautions, like following the basic health protocols to protect themselves and their families. Sample responses of the participants include

"What if I contract the Virus? What if I get my family infected with the virus?"

Technology Issues

The transition to online teaching has brought great challenges to teachers. They struggled to adapt technology to their students. Poor internet connectivity was the primary source of difficulty for teachers. Some teachers need to transfer to other locations to get a better connection. Others spend more money on data connection. Another struggle with technology is that teachers were forced to learn and be trained in using different learning management systems. The time and effort they spent attending webinars and the difficulty coping with the new setup have been too much for the teachers to handle. Sample responses include:

"What I am most anxious about is the internet connection. I have difficulty getting an internet connection because I live in a secluded place. I must go to other places to get better connectivity. I need to find tutorial videos on YouTube to learn more about Google Suite because the webinars were not enough."

Transport Limitations

Many teachers take public transportation to school. Since the quarantine had limited the means of transportation, it had been difficult to get a ride to and from school. This contributed to the worries they felt and the struggles they went through every day. Sample responses include:

"My anxiety stems from where I can get public transport. Community mobility is truly difficult. There is no ride, but we need to report it."

3.3 Level of Adaptability to Work

Table 3 presents levels of adaptability toward work among SUC faculty. While working during the pandemic and encountering various emergencies, risks, or even situations like this pandemic, the faculty analyzes possible solutions and consequences highly (M=4.0) and decides on actions to resolve the problem quickly (M= 3.94). They looked for solutions by having a calm discussion with colleagues (M= 3.96) and that having to take on additional work unexpectedly does not make them anxious anymore (M=2.88). In the face of innovations that were introduced in the academe during this pandemic, faculty looked for every opportunity to enable them to improve their performance (M= 4.12) and prepare themselves for change by participating in webinars and training (M=4.06). When it comes to interpersonal adaptability, faculty try to understand the viewpoints of their counterparts to improve their interaction with them. They develop good relationships with all their counterparts, adapt their work practices to the new normal requirements, and adjust their work practices if someone points out a better solution. The participants generally show high adaptability (M=3.6) towards their work despite the challenges they experienced during the COVID-19 pandemic.

Table 3. Level of adaptability to work

Indicators	Mean	Interpretation	SD
Dimension 1. Handling Emergencies and Crises			
1. I can achieve total focus to act quickly.	3.85	High	0.85
2. I analyze possible solutions and their consequences quickly.	4.00	High	0.84
3. I quickly decide on actions to resolve the problem.	3.94	High	0.86
4. I suppose I am not able to respond quickly.	2.97	Moderate	1.02
Weighted Mean	3.69	High	0.62
Dimension 2. Managing Work Stress			
5. I feel at ease even if my tasks change.	3.37	Moderate	0.99
6. I keep my cool when I am required to make decisions.	3.74	High	0.94
7. Having to take on additional work unexpectedly makes me very anxious.	2.88	Moderate	1.09
8. I look for solutions by having a calm discussion with colleagues.	3.96	High	0.90
9. Work-related stress impacts the quality of what I do.	2.51	Low	1.04
10. My colleagues ask for my advice regularly when situations are difficult because of my self-control.	3.44	High	0.93
Weighted Mean	3.32	Moderate	0.52

Dimension 3. Solving problems creatively			
11. I do not hesitate to go against established ideas to propose an innovative solution.	3.53	High	0.90
12. I use various sources/types of information to develop an innovative solution.	3.92	High	0.84
13. Whatever the problem to be solved, I never use anything but well-known methods.	2.58	Low	0.90
14. I develop new tools and methods to resolve new problems.	3.73	High	0.85
15. Within my department, people rely on me to suggest new solutions	3.27	Moderate	0.93
Weighted Mean	3.41	High	0.49
Dimension 4. Training and Learning Efforts			
16. I am looking for the latest innovations to improve my work.	3.85	High	0.88
17. I undergo training regularly to keep my competencies up to date.	3.79	High	0.87
18. I wait for innovations in the school before I put major effort into relevant training.	2.74	Moderate	1.04
19. I prepare for change by participating in webinars, which enable me to do so.	4.06	High	0.89
20. I look for every opportunity to enable me to improve my performance (training, group projects, exchanges with colleagues, etc.	4.12	High	0.88
Weighted Mean	3.71	High	0.57
Dimension 5. Interpersonal Adaptability			
21. I adapt my work practices to the new normal requirements.	4.13	High	0.85
22. I do not consider negative comments about my work very important.	2.66	Moderate	1.08
23. I adjust my work practices if someone finds a better solution.	4.06	High	0.82
24. I develop good relationships with all my counterparts as an important factor of my effectiveness.	4.21	Very High	0.87
25. I try to understand the viewpoints of my counterparts to improve my interaction with them.	4.22	Very High	0.84
Weighted Mean	3.86	High	0.61
Overall Mean	3.60	High	0.56

The quantitative data were supplemented by the answers derived from the FGD when asked, “*What are your adaptive coping strategies at work?*” This question explored how the participants coped with their anxieties during the pandemic. Their responses were categorized and produced themes that discussed their adaptability or how they managed their anxieties related to their work performance.

Self-care

Faculty tried to manage their anxiety by taking care of themselves physically and mentally. They meditate to relax and calm themselves, which helps them get through their daily work. They strictly follow the minimum health protocol, like wearing face masks and face shields, washing hands, and physical distancing whenever they go out. A sample response is, “*I have my “me-time” when I feel anxious. I meditate to calm down.*”

Self-help

Teachers watched many tutorial videos on YouTube to learn more about ways to manage their classes. They gathered a lot of information and tips on using different digital learning and teaching applications. This has helped them cope with their anxieties brought by the challenges of the remote virtual learning mode. Teachers also shared that reading self-help books and articles is another way of dealing with their emotions, especially their fears, worries, stress, and uncertainties. One participant said:

“I spend time on Google and look for video tutorials about using Google Suite and other platforms. The webinars were not enough. I need to watch videos because it helps a lot.”

Seek Support

Teachers admitted that they could not manage their stress and anxieties without the help of others, such as family, friends, and colleagues at work. Whenever they encounter problems with using the internet, especially concerning concerns about the learning management system they are currently using, they seek help and assistance from a co-worker. The school administration has also been a source of compassion and consideration for teachers requesting a work-from-home set-up during the height of the COVID-19 cases in their areas. Teachers tried everything they could to reach out to people they knew could help them ease their worries and stress during the pandemic. A sample response is

“Being honest and transparent, I wrote a letter to the administration requesting a work-from-home set-up because of the difficulty in commuting and for my protection and my family. The administration supported me, and thank God, it lessened my anxiety.”

Acceptance

The length of time COVID-19 existed has made teachers learn to accept the new normal set-up that they were experiencing. Virtual classes, travel limitations, facemask wearing, washing and disinfecting every so often, seminars, and meetings are done online. Many changes in their everyday lives have become inevitable, and teachers have gotten used to them. They eventually embraced these changes because they believed they were beyond their control.

3.4 Level of Barriers to Help-Seeking Behavior Among SUC Faculty

Table 4 shows the barriers to help-seeking behavior among SUC faculty. The overall level of barriers to help-seeking behavior ($M=2.91$) indicated that the participants are moderately deterred from seeking professional help to resolve their mental health problems. Results showed that participants, though experiencing high anxiety, may not seek help because they perceive the situation as not that serious in the first place. This also implies that they believe they can care for themselves and that the situation is manageable.

Table 4. Level of barriers to help-seeking behavior

Indicators	Mean	SD	Interpretation
1. I feel that the problem would not seem worth getting help for.	2.83	1.00	Moderate
2. I think people typically expect something in return when they provide help.	2.79	1.05	Moderate
3. I would think less of myself for needing help.	3.02	1.10	Moderate
4. I do not want other people to know about my problems because privacy is important.	3.20	1.12	Moderate
5. I do not like to get emotional about things.	3.37	1.07	Moderate
6. I do not like other people telling me what to do.	2.95	1.04	Moderate
7. I do not like to talk about feelings.	2.76	1.01	Moderate
8. I think my problem is embarrassing.	2.44	1.13	Low
9. I would not want to overreact to a problem that was not serious.	3.50	1.14	High
10. I am not aware of what sort of help is available.	2.70	1.05	Moderate
11. I feel better about myself knowing I did not ask for help from others. I cannot afford to pay professional fees.	2.91	1.09	Moderate
12. I would not want to look stupid for not knowing how to figure this problem out.	2.97	1.14	Moderate
13. I do not like feeling controlled by other people.	3.29	1.18	Moderate
14. I do not trust counselors and other mental health professionals.	2.06	1.05	Low
15. I would prefer to wait until I am sure the problem is serious.	2.82	1.16	Moderate
Weighted Mean	2.91	0.72	Moderate

The same “barriers to help-seeking behaviors” were probed during the FGD via a question: “What could be keeping you or another person from seeking help from someone to manage stress and anxiety?” This question explored the different reasons why an individual would opt to seek or not seek help and support from other people, especially from mental health professionals. The following themes were gathered.

Self-reliance

Most of the informants said that they were not open to seeking mental support and services. They felt it was their responsibility or obligation to resolve their problem. They prefer not to seek help because they do not want to bother and burden others with their predicament or let other people get affected by their situation. They felt that they were responsible for solving their problems. Sample responses include:

“I can manage; I will not ask for help. I feel that I will bother them.”

“I did not consult because I do not want to burden others.”

Resilience

The informants believe that people have a way of coping with their stress and anxiety. They spend time on self-care and self-love and become more conscious of what makes them happy, like shopping, spending time with friends and family, and enjoying their “me time.” They also build resilience by being grateful for their lives and what they have. Sample response in

“I have my ways of coping. I am thankful because I have my friends and family. When I get overwhelmed while working, I unwind for a while...visit my mom...a little breather. It is nice to have self-love and self-care.” Social stigma on mental health services.”

Filipinos were not open to seeking mental health services because of the social stigma attached to it. Some would rather seek support from family and friends than go to a mental health professional. Others would not seek help from anyone and just be silent about what they are going through or figure out how they will get through their situation. The informants mentioned that they do not seek help because they do not want to be judged as one with a mental disorder or being dramatic.

Faith

Some teachers reported not seeking professional help because they entrust their problems with God. They feel that it is Him who can provide them with inner peace. They managed to work on their spiritual growth and made God the center of their health. Sample response is

"I chose to entrust myself to God. I seek help by praying to God. With all my anxieties, I feel God will bring me the inner peace I need."

3.5 Relationship Between Anxiety and Adaptability to Barriers to Help-Seeking Behavior Among SUC Faculty Participants

Table 5 shows the relationship between anxiety and adaptability to barriers to help-seeking behavior among SUC faculty participants. The Pearson correlation analysis results showed many significant relationships between the variables investigated in the current study. The level of anxiety during the pandemic emerged to be significantly related to adaptability to work directly. This indicates that SUC faculty, though experiencing high levels of anxiety due to the pandemic, are also manifesting high levels of adaptability to their work performance (0.21). In addition, the level of anxiety is not just a significant direct correlate of adaptability to work in general but also to its various dimensions, such as Solving Problems creatively, Training and Learning Efforts, and Interpersonal adaptability. This indicates that faculty who experienced anxiety during a pandemic are also observed to manifest creativity in solving work problems, make an effort to grow professionally, and are capable of interpersonal adaptation.

Table 5. Relationship between anxiety, adaptability, and barriers to help-seeking behavior among SUC faculty

		1	2	3	4	5	6	7	8
COVID-Anxiety (1)	Pearson Correlation	1							
	Sig. (1-tailed)								
Handling Emergencies and Crises (2)	Pearson Correlation	0.052	1						
	Sig. (1-tailed)	0.131							
Managing Work Stress (3)	Pearson Correlation	0.044	0.561**	1					
	Sig. (1-tailed)	0.171	0.000						
Solving Problems Creatively (4)	Pearson Correlation	0.216**	0.390**	1					
	Sig. (1-tailed)	0.000	0.000	0.000					
Training and Learning Efforts (5)	Pearson Correlation	0.209**	0.493**	0.484**	0.556**	1			
	Sig. (1-tailed)	0.000	0.000	0.000	0.000				
Interpersonal Adaptability (6)	Pearson Correlation	0.219**	0.508**	0.437**	0.539**	0.720**	1		
	Sig. (1-tailed)	0.000	0.000	0.000	0.000	0.000			
Adaptability to Work (7)	Pearson Correlation	0.189**	0.747**	0.752**	0.723**	0.840**	0.830**	1	
	Sig. (1-tailed)	0.000	0.000	0.000	0.000	0.000	0.000		
Barriers to help-seeking Behavior (8)	Pearson Correlation	0.22**	-0.16**	-0.17**	-0.04**	-0.21**	-0.21**	-0.21**	1
	Sig. (1-tailed)	0.000	0.000	0.000	0.203	0.000	0.000	0.000	

** . Correlation is significant at the 0.01 level (1-tailed).

Barriers to help-seeking behavior, on the other hand, are found to be directly related to a significant extent to the level of anxiety. This indicates that as the SUC faculty were getting anxious about the COVID-19 pandemic, there is a moderate chance of seeking help in terms of the resolution of their mental health issues. Furthermore, barriers to help-seeking behavior are significantly and inversely related to adaptability. This indicates that those people who are having difficulty seeking professional help for their mental health issues are also the ones who are less likely to manifest adaptive tendencies towards their work. When correlated to various dimensions of Adaptability

towards work, help-seeking behavior ended up being significantly correlated inversely to 4 out of 5 items, namely: Handling emergencies and crises (-0.17), Managing work stress (-0.17), Training and learning effort (-0.40) and Interpersonal adaptability (-0.21). This further strengthens the relationship between help-seeking behavior and adaptability to work and implies that those who have problems in seeking professional and competent help in resolving mental health issues are also the ones who are less competent in handling emergencies and crises, poor managers of work stress, less likely to seek training and learning opportunities and having a hard time adapting oneself to the workplace social environment.

3.6 Implication for a Self-care Plan

Considering this study's last research problem, which is to devise a self-care plan based on the study results, the question *"What help may be extended to teachers who are going through mental and emotional difficulties during the pandemic?"* was asked during the FGD. This question tried to generate recommendations from the participants on how they could be helped to mitigate their anxieties during the pandemic, especially so that their overall perceived barriers to help-seeking behaviors are "moderate." The following were the themes that emerged from the responses.

Promotion of Mental Health

SUC faculty would love to know more about mental health to reduce misconceptions, understand the importance of maintaining positive mental well-being, and clearly understand professional help. This may be achieved by facilitating seminars or webinars about the topic. Sample response include

"It is very important for us to have a clearer understanding of available professional help of the university."

Establishing Support Groups

Teachers would love to join community sessions with fellow teachers to create an avenue for them to voice out how they are feeling and what they are thinking about the impact of the pandemic and the changes brought by the pandemic in their lives. This will also allow them to listen to their colleagues' stories or testimonies on how they managed and overcame stress and anxieties. A bible study group was also created during the discussion. Some teachers say that this would be beneficial on their spiritual journey. These support groups would give them opportunities to gain inspiration from others, enabling them to go on with their lives feeling relieved, happier, and more secure. They also suggested that the sessions be held regularly. Sample response is

"May there be community or group sessions for us to share our anxieties and stories."

3.7 Insights

This exploratory research is important to enhance understanding of teachers' mental health: their fears associated with the pandemic, their sense of safety related to their work performance, and their receptivity to help-seeking, given the mental and physical health risks. Participants have shown a generally high level of anxiety due to the pandemic. The survey results show that teachers worry about contracting COVID-19, making them anxious about religiously following basic health protocols. Furthermore, determinants of high levels of anxiety among teachers have been found during the focus group discussion to include health concerns, technology issues, and transport limitations. These results are consistent with results reported in the separate studies of Guillasper (2020) and Moralista and Oducado (2020) that a high level of anxiety among teachers was rooted in stress brought by the threats and risks of COVID-19 to themselves and their families and the fact that they are forced to transition into online learning. Moreover, Dziuban (2018) and Rada (2021) report that the sudden shift to online learning is causing distress, confusion, and frustration across the academic community.

The study shows that SUC faculty have a high level of adaptability towards their work despite the pandemic. Survey results showed that faculty tend to highly analyze possible solutions and consequences and decide on actions to resolve the problem immediately. Furthermore, faculty look at the innovations as an opportunity to enable them to improve their performance. They prepare themselves for change by joining faculty development programs. Regarding interpersonal adaptability, faculty try to be more compassionate with their colleagues. During the focus group discussion, participants shared their coping strategies and adaptability that worked in managing their anxieties. The generated themes include self-care, self-help, seeking support, and acceptance.

These have contributed to sustaining their resilience in coping with their anxieties. This result agrees with what Delgado, Padilla, and Zuniga (2021) reported in their study that the high level of resilience teachers developed throughout the quarantine is the greatest predictor of adaptability in coping with stress.

While teachers acknowledge their fear of COVID-19, they are moderately deterred from seeking professional help for the resolution of their mental health problems. They do not consider their problem embarrassing and tend not to overreact to a problem they think is not serious. In the discussion, participants shared different reasons for not seeking help and support from mental health professionals. People are not open to seeking mental support and services because they are self-reliant. They feel that it is their responsibility to resolve their problem, and they do not want to bother and burden others with their problem. People have their way of coping, which has developed their resilience, thus making them shun seeking professional help. Another reason is the social stigma that comes with seeking mental health services. People would rather keep their issues to themselves to avoid being judged inappropriately, or they would rather seek help from friends and family than go to a mental health professional. Moreover, some people do not seek help because of their faith in God; they entrust their problems to Him for the belief that He provides solutions and inner peace.

Many studies have been done into the key barriers to help-seeking. A detailed literature review was published in 2010 by Guillver, et al. The most frequently reported of all the barriers are public-perceived and self-stigmatizing attitudes to mental illness, creating an embarrassment and fear of identifying with a mental illness or seeking help about it. Some teachers prefer to rely on themselves rather than seek outside help for their problems. Although seeking help from someone else is not seen as an indicator of weakness, they think they can deal with normal life problems.

The COVID-19 pandemic continues to present challenges to the quality of education at many different levels. The following discussion by the authors suggests possible interventions or guidelines to maintain and promote teachers' well-being during a difficult time. According to Waters (2021), actions to promote school well-being should be systematized and based on scientific data to gather empirical evidence that will eventually be reported in academic or professional environments. The authors promote goals to empower teachers through teaching practices that integrate wellness practices into their curricula—creating interventions with a context-based approach that will foster skills to increase well-being in the classroom (e.g., Waters, 2021). Social relationships and connections are the building blocks of multidimensional well-being models. Relationships between teachers and students are paramount in developing well-being and are especially important during the COVID-19 pandemic. Studies have revealed the relevance of the interaction between teachers and students in an online teaching environment (Alqurshi, 2020; Bao, 2020; Chanchí-Golondrino et al., 2021; Hamdan et al., 2021; Jelińska & Paradowski, 2021). Perhaps the most important implication for practice is that even moderate levels of distress may warrant intervention due to its pervasive impact. The severity of distress must also be a consideration for intervention.

4.0 Conclusion

The COVID-19 pandemic has brought significant changes to the field of education, leading to heightened anxiety among state university and college faculty. Key sources of anxiety include fears of contracting the virus, challenges in adopting online remote learning, and transportation limitations during quarantine. Despite these difficulties, teachers demonstrated remarkable adaptability to their work, innovations, and interpersonal relationships. This adaptability was supported by self-care practices, resilience, seeking social support, and accepting the “new normal.” However, teachers’ resilience, combined with factors such as social stigma, self-reliance, and strong faith, contributed to their reluctance to seek help from mental health professionals. The study highlights the importance of promoting mental health awareness and creating support groups to address teachers' anxiety and stress. Focus group participants recommended implementing more seminars, webinars, and programs within institutions to dispel misconceptions about mental health and emphasize its importance. Teachers also suggested establishing psychosocial and psychospiritual support groups to provide spaces for interaction, encouragement, and shared inspiration.

5.0 Contributions of Authors

The authors confirm the equal contribution in each part of this work. All authors reviewed and approved the final version of this work.

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7.0 Conflict of Interests

The author declares that they have no conflicts of interest.

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Graphic Health Warning on Cigarette Packs through the Lens of Young Adult Smokers: A Phenomenological Study

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Abstract. This research study aimed to explore the lived experiences of young adult cigarette smokers as they saw graphic health warning images on cigarette packets. Colaizzi's descriptive phenomenological approach was employed to gain deeper insights into understanding the experiences of the chosen demographic. The study was conducted within the ten most populous villages, also known as barangays, in Tuguegarao City, Cagayan, Philippines, utilizing a purposive sampling technique with consideration for the "data saturation" principle. A semi-structured interview guide prepared in Filipino, English, Ybanag, Ytawes, and Ilocano was used as the research instrument. Through these interviews, involving 15 participants, four overarching themes emerged and were meticulously structured: smoking as a means of stress relief for the smokers, negative emotional responses are evoked by the graphic health warnings on cigarette packs, the graphic health warnings showcase the adverse effects of smoking, and difficulties of young adult smokers towards smoking cessation. The findings emphasized the complex factors that influence the smoking behavior of young adults and the challenges of quitting, especially due to the role of smoking as a stress relief mechanism. While graphic health warnings can raise awareness and elicit adverse emotional reactions among young adults, they may not be sufficient to promote cessation. Hence, combining this strategy with stress relief or effective coping interventions may be needed to improve cessation success for this age group.

Keywords: Young adult smokers; Graphic health warnings; Cigarette packets; Experiences.

1.0 Introduction

Cigarette smoking has detrimental effects on almost every part of the body, leading to various diseases and overall compromising the well-being of individuals who smoke (CDC, 2024). The global tobacco crisis stands as a significant menace to public health, ranking among the most formidable challenges in history. Annually, the global tobacco crisis claims the lives of over 8 million individuals worldwide (Tobacco, 2023). Moreover, approximately one in five Filipino adults, totaling 15.1 million individuals aged 15 years and above, are presently using tobacco (Marshall et al., 2024). Young adulthood, from 18 to 25 years, is a distinct development phase marked by crucial tasks facilitating self-discovery and identity shaping. Moreover, a current smoker is an adult who has smoked a total of 100 cigarettes throughout their life and is presently engaged in smoking. Since 1991, this category has been further categorized into "everyday" smokers, indicating those who smoke daily (CDC, 2024).

The Graphic Health Warnings Law, also known as Republic Act (RA) No. 10643 in the Philippines, defined GHWs as "photographic images or graphic health warnings printed on the tobacco product package that accurately depict the hazards of tobacco use and were accompanied by textual warnings related to the picture." The law, which was signed in 2014 and implemented in 2016, introduced the current GHWs on tobacco products. The designs were updated every two years. However, studies suggested that GHWs prompted individuals to consider ceasing smoking, while others claimed that they did not. The state of relevant pieces of evidence to date presents that gaps in knowledge about the problem still exist. Studies suggest that there still needs to be more evidence on policies about tobacco cessation initiatives. Furthermore, they explain that smoking behavior, like that of young adults, also depends on the type of graphics in the packaging; hence, not all smokers are affected by the graphics that they see (Chudech & Janmaimool, 2021; Francis et al., 2019). Relevantly, individuals like young adult smokers have difficulty interpreting the warning labels, and even though they develop the correct interpretation after quite some time, these graphic labels lose effect over time of their intended purpose in encouraging smokers to quit (Drovandi et al., 2019; Perez et al., 2023).

On the other hand, pieces of evidence show that the use of graphics is effective in decreasing the number of cigarettes smoked per day while increasing the intent to quit smoking (Brewer et al., 2016; Joo et al., 2022; Jung, 2016; Moodie et al., 2017). However, even though the latter literature shows that the graphics are compelling, there is still no evidence that these individuals quit smoking. Their evidence only suggests limiting oneself and having an intent, distinguishing between stopping or quitting. Another gap among the existing latter literature is that only one of them used a qualitative research design (Moodie et al., 2017). Almost all relevant literature is quantitative, and some recommend delving deeper into the problem by having a more naturalistic, in-depth exploration. Thus, this study utilized a phenomenological approach to thoroughly investigate participants' subjective experiences and viewpoints, providing insights into the components and aspects of the smoking habit (Yari et al., 2022).

In addition to the presented general gaps, in the local setting, there is no existing data on the explicit number of young adults who are cigarette smokers. Nonetheless, it is noteworthy that in the absence of rigorous research or pieces of evidence, including local statistics, one of the sources of identifying a problem is observations. As such, daily or frequent encounters with young adult smokers gave justification for conducting an objective scientific exploration. There are still contradictions in the results/pieces of evidence of existing literature, and there is a need for more qualitative evidence on the area of concern and local evidence on the specific problem identified. Hence, this study was conceptualized to describe the lived experiences of young adult cigarette smokers in the northern part of the Philippines on the graphic health warnings/ images they encounter on cigarette packs.

2.0 Methodology

2.1 Research Design

This research study employed Colaizzi's descriptive phenomenological approach (Morrow et al., 2015) to explore the lived experiences of young adult smokers toward graphic health warnings to gain deeper insights into understanding subjective perceptions and interpretations. This approach enabled the researchers to better understand the universal nature of the phenomenon under study through an in-depth examination of participants' feelings, perceptions, and beliefs and an exploration of the views of those who had seen graphic health warnings in cigarette packets.

2.2 Research Locale

The research study was undertaken within the top 10 most populated barangays in Tuguegarao City, Cagayan, Philippines. This is a component city and the capital of the province of Cagayan.

2.3 Research Participants

A total of 15 young adult smokers aged 21 to 25 years were included in the study. Since the design was qualitative, no pre-identified number of participants was involved. A purposive sampling technique was used to select participants aged 18 to 25 years, permanent residents of the identified barangays, who smoked cigarettes daily, often consuming at least one pack (20 cigarettes) per day, and who had seen and encountered graphic warning labels on cigarette packets. The majority of the young adult smokers included in the study are males (87%) and

have been smoking for less than 6 years (66%). Furthermore, the data saturation principle was considered regarding the number of participants. Data saturation occurred when the participants' answers were the same, at about the 11th participant, and no new information was being gathered. Once information saturation occurred, the researchers stopped the data-gathering procedure and started with the analysis.

2.4 Research Instrument

A researcher-developed semi-structured interview guide was used during data collection. This allowed the researchers to ask follow-up questions as needed. Face validation was done with the instrument submitted for evaluation to three professional nurses to check the validity and understandability of the questions included. Notably, the researchers prepared the final version of the interview guide in Filipino, English, Ybanag, Ytawes, and Ilocano. Using the language or dialect of each participant helped gather rich information.

2.5 Data Gathering Procedure

The researchers sought the endorsement of the identified barangays before data collection. Moreover, assistance was also sought from the barangay youth leaders to identify the participants of the study. Then, the researchers requested voluntary informed consent from each participant. To be more formal, each participant affixed their signature to the informed consent form. Afterward, each participant was asked about a convenient time and place for the interview session. Before starting the interview session with each participant, additional permission was sought to record the session digitally. Audio recording allowed the researchers and participants to focus more on the interview.

2.6 Ethical Considerations

Before starting data collection, the researchers obtained necessary approvals from the university and barangays or local villages. Voluntary and informed participation of the participants was ensured, with a focus on maintaining participant confidentiality and anonymity throughout the process. Participants were allowed to withdraw at any time due to conflict of interest, distress, or failure to provide accurate data and were compensated with snacks rather than financial payment. The researchers took precautions to avoid conflicts of interest and funded the study themselves. Upon completion, all participant data was securely destroyed. The study provided participants with insights into the health risks of smoking, benefited the community by enhancing health education programs, and contributed to societal health through evidence-based recommendations for tobacco control policies. Lastly, the study was reviewed and approved by the University of Saint Louis-Research Ethics Board, with protocol number 006-2024-04, before the implementation of the research protocol.

3.0 Results and Discussion

Through a comprehensive exploration of the lived experiences of young adult smokers regarding the graphic health warnings seen on cigarette packets, essential insights were gleaned from the informants. Employing Colaizzi's descriptive phenomenological approach to explore the lived experiences of young adult smokers toward these graphic health warnings aimed to gain deeper insights into understanding subjective perceptions and interpretations. This approach enabled the researchers to better understand the universal nature of the phenomenon under study through an in-depth examination of participants' feelings, perceptions, and beliefs and an exploration of the views of those who had seen graphic health warnings on cigarette packets. Four overarching themes emerged and were meticulously structured to underscore the essence of the gathered information. These themes included (i) cigarette smoking as a means to relax and relieve stress, (ii) pictures on cigarette packs eliciting negative feelings, (iii) pictures on cigarette packs serving as a warning of the adverse effects of smoking, and (iv) difficulties with smoking cessation.

Theme 1: Cigarette Smoking as a means to Relax and Relieve Stress

The theme emerged strongly from the responses of young adult smokers as they described smoking in various ways that highlighted its role as a coping mechanism and stress reliever. The theme captures how these young adults perceive smoking not only as a habitual activity but also as a deliberate strategy to manage stress and achieve emotional relief. According to them, smoking's function is beyond mere addiction and highlights its psychological role in managing daily stressors. Young adult smokers indicated that smoking facilitates relaxation and alleviates their stress. Smoking functioned as their primary coping mechanism in response to stress.

Furthermore, they reported that this stress-relief benefit was a key factor in their initiation of smoking and continued to contribute to their difficulty in quitting. The following were described by them accordingly:

"Smoking for me is probably a way to relieve stress and calm down." (I10)

"For me, it is like, just a thing, a coping mechanism when stressed, you know." (I15)

The young adult smokers discussed that smoking was a means to relax and relieve stress, which served as their primary coping mechanism. They initiated smoking due to its stress-relief benefits, which persistently hindered their efforts to quit. The role of smoking as a stress reliever was widely acknowledged in the literature, with various socio-cultural, economic, and work-related factors influencing its prevalence and persistence among different demographic groups. Young adults, in particular, experienced unique challenges in navigating the transition to independence, which often coincided with heightened vulnerability to stressors and substance use. Biological and psychosocial factors influence young adults, distinct from adolescents and older adults. This period of transition was marked by changes in social and environmental contexts, contributing to increased susceptibility to substance use and psychological distress. Consequently, young adult cigarette use exhibited distinct cohort and historical trends, emphasizing the need for a nuanced understanding of the biobehavioral and environmental determinants shaping smoking behavior in this population (Jebai et al., 2023). Moreover, individuals from low-income backgrounds faced compounded challenges in smoking cessation efforts. Guillaumier et al., (2017) Demonstrated that financial hardship often impeded quit attempts among this demographic, as smoking served as a coping mechanism for stressors associated with socioeconomic status. Despite expressing a desire to quit, smokers from low-income backgrounds exhibited fewer successful quit attempts, underscoring the need for targeted interventions addressing the intersection of financial strain and smoking behavior.

Based on the results of this study, the young adults had mixed reactions to smoking and efforts to help people quit. The community saw smoking as a common issue, especially for stress relief. Public health campaigns and educational programs received different levels of support. Young adults often knew the health risks and wanted to quit, but the immediate stress relief from smoking made it hard for them to stop. While support groups and counseling were helpful, they were not enough on their own to address the deeper stress-related reasons people smoked. Additionally, disparities in smoking prevalence persisted among population groups, particularly among those with lower socioeconomic status and racial/ethnic minority groups (Creamer et al., 2021). Financial strain emerged as a significant barrier to quitting, with smokers experiencing financial difficulties demonstrating lower rates of successful cessation attempts (Avila et al., 2022; Guillaumier et al., 2017). However, successful cessation efforts were shown to alleviate financial stress, suggesting a bidirectional relationship between financial strain and smoking behavior (Alexander et al., 2019). Furthermore, work-related factors were crucial in shaping smoking behavior and cessation outcomes. Liao et al., (2022) reported higher absence rates among smokers and ex-smokers in the workforce, highlighting the broader implications of smoking on productivity and workforce dynamics. Young adult smokers typically displayed specific characteristics that influenced their smoking habits. They often started smoking during periods of high stress or transition, such as moving to college or starting a new job. These individuals frequently cited stress relief as the primary reason for their continued smoking. Young adults were also more likely to experiment with smoking due to social influences and peer pressure. Additionally, they often had a stronger belief in their ability to quit in the future, which could delay serious quit attempts. Financial considerations also played a role, with many young adults using part of their limited income or allowances to buy cigarettes despite acknowledging the financial strain it imposed. They smoked for a variety of reasons tied to their social, financial, and emotional lives. Socially, smoking often helped them connect with friends. Despite usually having tight budgets, they still spent money on cigarettes to relieve stress. Psychologically, they were going through significant changes, like starting new jobs or living on their own, which made them more likely to use smoking to cope. These overlapping factors made it hard for them to quit smoking.

Theme 2: Graphic Health Warnings on Cigarette Packs Eliciting Negative Feelings

Young adult smokers openly discussed their emotional responses to the graphic images prominently displayed on cigarette packs. They described how these visuals evoked intense negative feelings such as fear, disgust, and anxiety. Most young adult smokers reported experiencing negative emotions such as fear, anxiety, and disgust when viewing the images on cigarette packs. These feelings were primarily linked to concerns about the potential

adverse effects of smoking depicted in the images. Informants expressed worry that these negative health consequences could happen to them if they continued smoking, particularly fearing illness as they aged. One respondent mentioned that the negative emotions elicited by these images made them consider quitting smoking. However, it was essential to note that while most young adult smokers experienced these adverse reactions, some indicated that the images did not affect them. Their reflections on the psychological impact of these unsettling images are discussed below:

"That is it, I am scared. It is tough when you are in that situation when you have that kind of illness. You are struggling when it is like that." (12)

"Those disturbing pictures made me realize the severe health risks associated with smoking. Of course, they feel disgusted when I see something like that." (19)

Young adult smokers often deal with high stress, social pressure, and a tendency to downplay long-term health risks. They started smoking to manage stress or fit in with friends. Despite having tight budgets, they spent money on cigarettes for quick stress relief, even if it meant ignoring long-term financial and health consequences. Many were in transitional stages, like starting new jobs or living on their own, which added to their stress and reliance on smoking. However, with the proper support and motivation, many young adults were willing to quit smoking. Young adult smokers described experiencing negative emotions, including fear, anxiety, and disgust, upon viewing the images displayed on cigarette packs. These emotional responses were primarily associated with concerns about the depicted adverse effects of smoking. Young adult smokers expressed a sense of worry regarding the possibility of facing similar health consequences if they continued smoking, especially fearing the onset of illness as they aged. However, it was noteworthy that while many young adult smokers reported such reactions, some indicated that the images had no impact on them. These labels often featured graphic images depicting the adverse health consequences of smoking, intending to evoke negative emotions and discourage smoking behavior. This discussion focused on the role of pictures on cigarette packs in eliciting negative feelings among smokers and potential implications for smoking cessation initiatives. Studies have consistently shown that graphic warning labels on cigarette packs evoke negative emotions among smokers. Research indicated that health warnings effectively captured smokers' attention and prompted feelings of unease, fear, repulsion, and worry regarding the adverse outcomes associated with smoking (Perez et al., 2023; Y. Li et al., 2020). Additionally, Smokers were found to have avoided cigarette pack risk messages as they evoked unpleasant emotions (Cho et al., 2018; X. Li et al., 2021; Y. Li et al., 2020). Negative emotional arousal induced by pictorial warning labels was crucial in promoting behavior change and fostering increased attention to warnings (X. Li et al., 2021; (Y. Li et al., 2020).

The locale of the study supported graphic warning labels on cigarette packs, seeing them as effective in discouraging smoking among young adults. Young adults, however, had mixed reactions. Many felt fear, anxiety, and disgust, which made them more aware of smoking's dangers and could have motivated them to quit. However, some young adults said the images did not affect their smoking habits, showing that while these labels worked for some, they were not adequate for everyone. Young adults smoke due to a mix of social, financial, and psychological reasons. Socially, smoking helped them bond with friends. Financially, they often had limited money but still bought cigarettes for stress relief. Psychologically, they were dealing with significant life changes, making them more likely to use smoking as a coping method. These overlapping factors made it hard for young adults to quit smoking. The effectiveness of graphic images in eliciting negative feelings depended on the severity and relevance of the depicted health consequences. Warnings featuring graphic photos of patients suffering from severe diseases such as lung or laryngeal cancer were perceived as the most disturbing. They heightened the perceived risk of smoking-related harms (Chudech & Janmaimool, 2021). Conversely, warnings depicting less severe health consequences were considered less alarming, and emotionally charged warning images were ineffective unless they related explicitly to smoking-related hazards (Shi et al., 2017). Therefore, the relevance and severity of the depicted health consequences influenced the emotional impact of graphic warning labels. Understanding the role of negative emotional responses to graphic warning labels was crucial for designing effective smoking cessation initiatives. Unfavorable attitudes about smoking, elicited by graphic health warning labels, were associated with lower smoking rates, increased interest in stopping, and quit attempts (Evans et al., 2017). Therefore, leveraging negative emotions through graphic warning labels could have contributed to the

success of smoking cessation efforts. However, it was essential to consider individual differences in emotional responses and tailor interventions accordingly (Y. Li et al., 2020). Pictures on cigarette packs played a vital role in eliciting negative feelings among smokers, thereby influencing smoking behavior and cessation efforts. Graphic warning labels that evoked emotional solid responses had the potential to deter smoking initiation and promote quit attempts. Future research should have explored the effectiveness of different graphic images and their impact on smoking-related attitudes and behaviors to inform evidence-based tobacco control policies and interventions.

Theme 3: Pictures on Cigarette Packs Serve as Warning of The Negative Effects of Smoking

Young adult smokers shared their perspectives on how the images on cigarette packs serve as powerful warnings about the adverse effects of smoking. They expressed their opinions and offered advice to their peers and the younger generation. Many emphasized the stark impact of these images, noting that they serve as a constant reminder of the health risks associated with smoking. Most of the young adult smokers highlighted that the images displayed on cigarette packs effectively illustrated the detrimental consequences of smoking. They perceived these images as blatant warnings, urging individuals to either refrain from smoking or to quit altogether. Additionally, informants emphasized that these depictions served as cautionary reminders of the long-term repercussions associated with cigarette smoking. Moreover, they noted that these warnings were mainly directed toward younger individuals, aiming to discourage them from initiating smoking habits. By showcasing the potential health risks and adverse outcomes of smoking, these images served as preventative measures to prevent the younger demographic from starting a habit that could have significant detrimental effects on their health and well-being in the future. They view these warnings as crucial for deterring younger individuals from starting to smoke, stressing the importance of making informed and healthy life decisions.

"Ahmm, what I see in cigarette pictures are its harmful effects on the body and health." (I4)

"Although the pictures were unsettling and bothersome, they served as a reminder of the harmful effects of smoking." (I9)

Young adult smokers are convinced of the effectiveness of the images featured on cigarette packs in vividly portraying the harmful consequences of smoking. They viewed these images as straightforward warnings, compelling individuals to abstain from smoking or quit altogether. Furthermore, participants emphasized that these depictions served as solid reminders of the lasting impacts associated with cigarette smoking. Additionally, young adult smokers pointed out that these warnings were mainly targeted toward younger individuals to dissuade them from initiating smoking habits. By illustrating the potential health risks and adverse outcomes of smoking, these images functioned as preventive measures aimed at discouraging the younger demographic from adopting a habit that could profoundly affect their health and well-being in the future. Visual warnings on cigarette packs, particularly those featuring graphic images depicting the adverse health effects of smoking, played a crucial role in public health efforts to reduce smoking prevalence. Extensive research has demonstrated the effectiveness of such warnings in conveying the risks associated with tobacco use and motivating behavior change among smokers (Cho et al., 2022; Enyame & Nkeigbeng, 2023; Nian et al., 2023). One study focusing on implementing the WHO Framework Convention on Tobacco Control (FCTC), emphasized the importance of large warning labels, preferably with graphic images, to communicate the harms of smoking and the benefits of quitting. This highlighted the significance of incorporating visual elements into warning messages to enhance their impact on smokers (Hammond & O'Connor, 2014).

A similar study, which included both young adult smokers and non-smokers, found that non-smoking participants were more sensitive to scary warning images than smoking participants, indicating that the warnings were more effective in influencing those who had not yet started smoking (Magnan et al., 2022). Warning labels containing graphics and text received higher ratings for enhancing comprehension, imparting additional knowledge, and eliciting increased concern and discouragement among smokers compared to labels containing only text (Magnan et al., 2022). This shows the effectiveness of combining visual and textual elements to convey the risks of smoking and encourage cessation effectively. The reaction of the locale and young adults to the warning graphic labels on cigarette packs was overwhelmingly positive. The images were seen as straightforward warnings that effectively conveyed the harmful consequences of smoking. These warnings influenced young adults in particular and somehow deterred their desire to smoke or gained more knowledge about the dangers of smoking. Furthermore, it highlighted the role of emotional arousal induced by pictorial warning labels (PWLs) in

motivating smokers to contemplate quitting (Y. Li et al., 2020). Their findings suggested that negative emotions triggered by PWLs, such as fear and repulsion, served as mechanisms through which smokers were inspired to consider quitting. This emphasized the importance of evoking strong emotional responses through visual warnings to promote behavior change. However, challenges existed in communicating the message conveyed by visual warnings, particularly among vulnerable population groups. (Guillaumier et al., 2017) found that young people from low-income backgrounds, who often smoked as a coping mechanism for stressors, might face difficulties in deciphering textual warnings about hazardous substances present in cigarettes. This underscored the importance of explicit language and the incorporation of visual components to enhance the effectiveness of warning messages, especially among disadvantaged populations. The themes that emerged from the study were centered around the effectiveness of warning graphic labels in conveying the dangers of smoking. The study found that these warnings were more effective in influencing young adults than text-only warnings, as they evoked more robust emotional responses and were more memorable. The study also highlighted the importance of incorporating visual elements into warning messages, particularly among vulnerable groups such as young people from low-income backgrounds.

Theme 4: Difficulties with Smoking Cessation

Young adult smokers narrated their difficulties with smoking cessation, precisely describing their adversities. Young adult smokers indicated that they persisted in smoking despite experiencing negative emotions when confronted with the images and warnings depicting the side effects of smoking on cigarette packs. Their struggle to quit smoking was closely tied to the primary reason for their smoking behavior, which was to alleviate stress. Additionally, some young adult smokers admitted to being addicted to cigarette smoking, further complicating their efforts to quit. It was noteworthy that one respondent expressed a sense of resignation, stating that nothing could compel or aid them in quitting smoking. They highlighted the addictive nature of smoking, explaining that their bodies crave nicotine, making it extremely challenging to quit.

Yes, especially when I entered college. I tried to quit during senior high, but after a few weeks, I started craving it again. I could not stop, so the habit came back." (15)

"I tried. They prescribed something as a substitute for cigarettes, just a friend's suggestion. Because I was craving cigarettes, right? He told me just to eat candy." (17)

The themes in the context of the young adults revolved around the multifaceted nature of smoking behavior. Critical barriers to quitting included stress management, nicotine dependence, and the psychological and emotional factors associated with smoking. These factors were closely tied to the primary reason for smoking behavior, which was often to alleviate stress. Furthermore, the socio-cultural and economic context, including financial strain and limited access to cessation resources, also played a significant role in smoking cessation efforts. The young adult smokers indicated that they persisted in smoking despite experiencing negative emotions when confronted with the images and warnings depicting the side effects of smoking on cigarette packs. Their struggle to quit smoking was closely tied to the primary reason for their smoking behavior, which was to alleviate stress.

The reaction of the locale and the young adults to smoking cessation interventions was complex and influenced by various factors. Young adults were more likely to make a serious quit attempt than older adults but were less likely to employ evidence-based methods to quit smoking. This highlighted the need for interventions tailored to young adults' unique needs and challenges. Numerous studies have highlighted the role of psychological and emotional factors in smoking cessation. Negative emotions triggered by warnings on cigarette packs, such as fear, anxiety, and disgust, could serve as both motivators and barriers to quitting (Perez et al., 2023). While some individuals might have been prompted to quit due to these emotions, others may have experienced avoidance or denial, hindering their cessation efforts (Cho et al., 2018). Moreover, individual cognitive judgment played a crucial role in determining the effectiveness of warning labels, with emotionally charged images often proving more impactful in promoting behavior change (X. Li et al., 2021; Y. Li et al., 2020). On the other hand, the socio-cultural and economic context also significantly influenced smoking cessation. Young adults from low-income backgrounds may have faced unique challenges, including higher smoking rates, financial strain, and limited access to cessation resources (Guillaumier et al., 2017). Socioeconomic disparities in smoking prevalence persisted despite efforts to reduce overall smoking rates (Creamer et al., 2021). The transition to independence during young

adulthood also introduced new social and environmental factors that may have impacted smoking behavior (Jebai et al., 2023). Consequently, work-related factors could both facilitate and impede smoking cessation efforts. Smokers and ex-smokers may have experienced higher absenteeism rates, affecting productivity and workforce participation (Liao et al., 2022). Workplace smoking cessation programs and policies could have been crucial in supporting cessation attempts and promoting smoke-free environments (Levy et al., 2019). These young adults often face unique challenges such as financial strain, limited access to cessation resources, and the need to balance smoking with other aspects of their lives, such as work and social relationships. The context of the young adults was critical in understanding their smoking behavior and the barriers to quitting. Young adulthood was a period of significant transition, marked by the onset of independence, increased financial responsibilities, and the need to establish a career. This could have led to increased stress levels, which were often managed through smoking. Additionally, young adults might have been more likely to engage in social smoking, which could have made it difficult for them to identify as smokers and thus experience little pressure to quit. Moreover, Financial strain often served as a significant barrier to successful smoking cessation. Smokers facing financial difficulties may have expressed a desire to quit but struggled to make quit attempts due to limited resources and coping mechanisms (Avila et al., 2022). Despite making more quit attempts, financially strained smokers may have been less successful in quitting compared to their counterparts (Guillaumier et al., 2017). To address the difficulties associated with smoking cessation, comprehensive and tailored interventions were needed. These interventions should have considered the multifaceted nature of smoking behavior and addressed psychological, socio-cultural, economic, and environmental factors. Implementing evidence-based cessation strategies, such as increasing access to affordable cessation resources, promoting smoke-free environments, and addressing social determinants of health, could have enhanced the effectiveness of smoking cessation initiatives (Azagba et al., 2020; Catalano & Gilleskie, 2021).

4.0 Conclusion

It can be concluded from the experiences of young adult smokers the complexity of factors that can influence the smoking habit and desire towards smoking cessation. The results emphasize the role of smoking as a stress-relief mechanism and the challenges of quitting due to addiction and socio-economic factors. Young adult smokers rely on cigarettes as a coping strategy for stress, which complicates cessation efforts despite awareness of the health risks, as illustrated by graphic health warnings on cigarette packs. These warnings elicit adverse emotional reactions such as fear, anxiety, and disgust, which in some cases prompt reflection on the harms of smoking but do not always lead to successful quit attempts. While graphic images effectively raise awareness and discourage smoking initiation, their impact on current smokers is mixed, as some individuals continue despite the emotional responses triggered. Due to the influence of various factors that affect the smoking behavior of young adults, the use of graphic health warnings- while they may elicit the intended response- may not be an effective smoking cessation strategy on its own. Combining this strategy with interventions focused on stress relief or better coping mechanisms for stress may be necessary to address the root causes of smoking and improve the chances for successful cessation. These findings are limited to a specific cohort of young adult smokers within the identified locale. Consequently, the results may not be broadly generalizable to other populations or settings. Future research could benefit from a quantitative approach or a comparable qualitative investigation to further explore and contextualize the experiences of young adult smokers in diverse localities.

5.0 Contributions of Authors

All – editing, writing; JAMG, SGRA, ZMEA, ANBB, AMMC-data collection and processing; SKSE, JPS, JAMG-supervising; JPS, JAMG – data analysis; SKSE, JPS-finalization of paper for publication.

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7.0 Conflict of Interests

The authors do not have any conflict of interest in the conduct of this research.

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The Philippine Coast Guards' Training Program: The Prospect for an Institutionalized Human Resource Development Agenda

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Abstract. This study evaluates the Philippine Coast Guard's (PCG) training program in 2024: Strengthening Institutional Human Resource Development (HRD) Agenda. Guided by the New Public Management (NPM) theory, the study assesses the effectiveness of training initiatives in enhancing the PCG's capacity for maritime safety and security. Using a mixed-method approach, the research aimed to assess the Training Program of the Philippine Coast Guard in the prospect of an institutionalized human resource development agenda in terms of Communication Skills, Emergency Response Protocol, Maritime Law Enforcement Awareness, Crisis Management Adaptability, and Marine Environmental Protection Awareness. It sought to identify the Philippine Coast Guard's performance regarding Training Facilities, Training Course Expertise, Training Funds/Budget allocation, Training Period, and Training Policies. To meet the research's goals, three hundred one (301) out of one thousand two hundred twenty-three (1,223) members of the Coast Guard Non-officers who had recently completed training or schooling were selected as respondents for an evaluation of the Philippine Coast Guard training program that was in place and applicable to the program. The findings reveal significant challenges, such as limited funding, inadequate facilities, and insufficient training duration, hindering the program's effectiveness. The study highlights the critical role of experiential learning and tailored training programs to address operational needs and adapt to evolving maritime security threats. Recommendations emphasize enhancing training facilities, increasing budget allocation, and implementing standardized policies to institutionalize HRD effectively. These efforts strengthen PCG personnel's competencies, ensuring their readiness to address maritime safety, law enforcement, and environmental protection. This research contributes to public administration and maritime security discourse, offering valuable insights for policymakers and stakeholders committed to advancing human resource development in the Philippine Coast Guard.

Keywords: Coast Guard training; Human resource development; Institutional frameworks; New public management; Training program.

1.0 Introduction

The growing global maritime challenges have led to increased cooperation among coast guard agencies, with Japan's Coast Guard proposing "Interregional Cooperation" to enhance synergy worldwide (Coast Guard Global Summit, 2017). Coast guards are crucial in maritime security, border control, law enforcement, search and rescue, and environmental protection. Their structures and operations vary based on national geographic, political, and economic factors, ranging from technologically advanced maritime powers to developing coastal states improving

their capabilities. The Philippine Coast Guard (PCG), the country's oldest humanitarian military service, has modernized significantly in response to global maritime security issues, particularly in the South China Sea. It prioritizes training and human resource development through programs like the Coast Guard Officer's and Non-Officer's Courses. Training includes military drills, basic soldiery, customs, and traditions, as well as specialized functional training in maritime security, law enforcement, safety, search and rescue, and environmental protection. The goal is to develop personnel with patriotism, compassion, and discipline.

However, the PCG faces recurring challenges in its training programs, including insufficient funds, inadequate training periods, a lack of instructors, limited facilities, shortages of supplies, and weak policy implementation. Legally, the PCG operates under RA 9993, establishing it as an armed and uniformed service under the Department of Transportation and Communications (DOTC), with the possibility of attachment to the Department of National Defense (DND) during wartime. The law mandates PCG interoperability with other armed services, integration of defense doctrines in training, and active participation in joint exercises. Additionally, the PCG is responsible for marine pollution monitoring and response with specialized Marine Pollution Response Centers. The Coast Guard Education and Training Command ensures the development of skilled and competent personnel to fulfill these responsibilities effectively.

2.0 Methodology

2.1 Research Design

This study was a mixed methods research using quantitative and qualitative approaches. George (2021) states that mixed methods research aims to answer research questions with heightened knowledge and validity by integrating the strengths of qualitative and quantitative methods. Mixed methods research combined elements of quantitative research and qualitative research in order to answer the research question. Mixed methods helped gain a more complete picture than a standalone quantitative or qualitative study, as it integrated the benefits of both methods (T. George, 2021). Mixed methods research was often used in the behavioral, health, and social sciences, especially in multidisciplinary settings and complex situational or societal research (T. George, 2021). The research utilized tools for the quantitative approach, including Percentage and Frequency (PF), Analysis of Variance (ANOVA), and the T-test.

2.2 Research Locale

The study was carried out in the different Training Institutions of the Philippine Coast Guard, namely Coast Guard Education, Training, and Doctrine Command (CGETDC), Maritime Security and Law Enforcement School (MSLES), Coast Guard Inspector General and Internal Affairs - Satellite Training Institute (CGIG-IAS STI), Coast Guard Fleet Education, Training and Doctrine Development Institution (CGFETDDI), Marine Environmental Protection Training Institute (MEPTI), Maritime Safety Service Training Institute (MSSTI), Human Resource Management School (HRMS), Coast Guard Legal Institute for Legal Studies (CGLILS), Coast Guard Weapons, Communication, Electronics, and Information System Training Institute (CGWCEIS-TI), Coast Guard Special Operations School (CGSOS), and Coast Guard Aviation School (CGAS).

2.3 Research Participants

The researcher used purposive sampling to gather three hundred one (301) respondents from different Coast Guard Training Institutions. They were members of the PCG Non-Officers and those who had just completed their schooling or training.

2.4 Research Instrument

This study used a survey questionnaire that was prepared and composed of four (4) parts. The first part focused on the profile of the respondents. The second part focused on how the respondents assessed the Performance of Human Resource Development of the Philippine Coast Guard in terms of Communication Skills, Emergency Response Protocol, Maritime Law Enforcement, Crisis Management Adaptability, and Marine Environmental Protection Awareness. The third part focused on How the respondents assessed the Training Program of the Philippine Coast Guard in the delivery of training services in terms of Training Facilities, Training Course Expertise, Training Funds / Budget allocation, Training Period, and Training Policies. The fourth part focused on the issues and challenges encountered in implementing the Philippine Coast Guard Training Program. The fifth part focused on the possible recommendations that may be made out of the study (to be filled out by the Coast

Guard personnel – non-officers) based on their experiences and problems encountered in training and schooling. It also included recommendations for enhancing the Philippine Coast Guard’s training practices about the prospect of enhancing the Human Resource Development Agenda and, finally, provided solutions or recommendations to the problems evaluated by the researcher.

2.5 Data Gathering Procedure

This study used specific steps to gather the data. After the adviser and all panelists' validation and approval of the questionnaire, the researcher conducted a pilot and validity test of the questionnaires with forty (40) respondents. Upon completing and receiving the certificate of validity test from the statistician, the researcher will request ethical clearance from the University Research Ethics Center (UREC). Once the ethical clearance is available, the researcher will seek out appropriate communication with the concerned units/institutions with the approval of unit commanders for the administration of the questionnaire. Upon approval, the researcher personally administered the questionnaire distribution through the use of Google Forms to the respondents for the quantitative approach and video conference for the qualitative approach. Upon retrieval of the answers, the data were analyzed and interpreted using the appropriate statistical tools.

2.6 Ethical Considerations

This study was planned, designed, and assessed by ethical guidelines and considerations for research, as well as to ensure adherence to the 2012 Data Privacy Act and other pertinent legislation that safeguards the privacy rights of persons. Before engaging the participants in research activities, such as answering the study survey and interview questions, their consent was sought, and their identities were kept private. Their names, residences, and other contact information were not included in any research instrument, which is significant. The researchers obtained permission from the commanders of the institutions involved in this study and maintained appropriate coordination, among other stringent adherence to research regulations. Additionally, there was enough time for the beneficiaries and implementers to finish the questionnaires and answer the interview questions. In discussing and evaluating the findings, this study guaranteed high objectivity, integrity, and transparency in all research techniques. In order to ensure that the study was free of plagiarism, it was conducted with consideration for research ethics.

3.0 Results and Discussion

3.1 Demographic Profile of Respondents

Table 1 shows that the respondents are 274 males, or 91%, and 27 females, or 9%. This highlights that the majority of the respondents are male. This is similar to other findings since the profession is a male-dominated industry.

Table 1. *Frequency distribution of the respondents in terms of gender*

Sex	Frequency	Percentage
Male	274	91%
Female	27	9%

Table 2 shows that the respondents are composed of 169 or 56.1% of Petty Officer Third Class (NO-4), 48 or 15.9% of Petty Officer Second Class (NO-5), 27 or 9% of Seaman/Seawoman Second Class (NO-2), and Seaman/Seawoman First Class (NO-3), 25 or 8.3% of Chief Petty Officer (NO-7), 1 or 0.03% of Senior Chief Petty Officer (NO-8), and none of Apprentice Seaman (NO-1), and Master Chief Petty Officer (NO-9) respondents. This highlights that the respondents were primarily composed of Petty Officer Third Class (NO-4), which covers over half of the respondents. It is followed by Petty Officer Second Class (NO-5).

Table 2. *Frequency distribution of the respondents in terms of rank*

Rank	Frequency	Percentage
Apprentice Seaman (NO-1)	0	0.00%
Seaman/Seawoman Second Class (NO-2)	27	9.00%
Seaman/Seawoman First Class (NO-3)	27	9.00%
Petty Officer Third Class (NO-4)	169	56.1%
Petty Officer Second Class (NO-5)	48	15.9%
Petty Officer First Class (NO-6)	4	1.30%
Chief Petty Officer (NO-7)	25	8.30%
Senior Chief Petty Officer (NO-8)	1	0.30%
Master Chief Petty Officer (NO-9)	0	0%

Table 3 shows that the respondents were composed of 93 or 30.9% CGFETTDI, 79 or 26.2% MSLES, 28 or 9.3% CGTEDC, 22 or 7.3% MSSTI, 20 or 6.6% CGSOS, 12 or 4% CGWCEISTI, 11 or 3.7% HRMS, 10 or 3.3% MEPTI and CGAS, and 8 or 2.7% CGIG-IAS-STI and CGLILS. This highlights that the respondents were mostly CGFETTDI and MSLES, comprising over half of the respondents.

Table 3. *Frequency distribution of the respondents in terms of institution*

Institution	Frequency	Percentage
CGTEDC	28	9.30%
MSLES	79	26.2%
CGIG-IAS-STI	8	2.70%
CGFETDDI	93	30.9%
MEPTI	10	3.30%
MSSTI	22	7.30%
HRMS	11	3.70%
CGLILS	8	2.70%
CGWCEISTI	12	4.00%
CGSOS	20	6.60%
CGAS	10	3.30%

Table 4 shows that the respondents were composed of 185 or 61.5% of those with 6 to 10 years of service, 54 or 17.9% of 11 to 15 years, 31 or 10.3% of 1 to 5 years, 28 or 9.3% of 21 to 25 years, 3 or 1% of 16 to 20 years, and none of 1 year below. This highlights that the respondents were mostly composed of those with 6 to 10 years of service.

Table 4. *Frequency distribution of the respondents in terms of years of service*

Years of Service	Frequency	Percentage
21 to 25 years	28	9.30%
16 to 20 years	3	1.00%
11 to 15 years	54	17.9%
6 to 10 years	185	61.5%
1 to 5 years	31	10.3%
1 year below	0	0.00%

Table 5 shows that the respondents are composed of 220 or 73.1% under Specialization Course (SC), 54 or 17.9% under Functional Course (FC), 25 or 8.3% under CGNOSEC, 2 or 0.7% CGNOAC, and none of those who belong from CGNOC. This highlights that the respondents were mostly those who belong to the Specialization Course (SC).

Table 5. *Frequency distribution of the respondents in terms of career taken*

Career taken	Frequency	Percentage
CGNOSEC	25	8.30%
CGNOAC	2	0.70%
Functional Course (FC)	54	17.9%
Specialization Course (SC)	220	73.1%
CGNOC	0	0.00%

Table 6 shows that the respondents were 50, or 92.59%, from MARSLEC and 4, or 7.41%, from MARSAD. This highlights that the respondents were mostly MARSLEC members, among those who belong to a functional course.

Table 6. *Frequency distribution of the respondents in terms of functional course*

Functional Course	Frequency	Percentage
MARSLEC	50	92.6%
MARSAD	4	7.41%

Table 7 shows that the respondents are composed of 36 or 16.36% from OSRATC, 33 or 15% from EMRATC, 24 or 10.91% from Coast Guard Security and Border Protection Service, 20 or 9.09% from Basic Underwater Special Operations Course, 18 or 8.18% from Aids to Navigation Specialization Course, 13 or 5.91% from EMTRC, MTRC, and Security Border Protection Specialization Course, 12 or 5.45% from Radio Operations and Maintenance Specialization Course, 10 or 4.55% from MEP Specialization Course, Yeoman Specialization Course, and Aviation Machinist Specialization Course, and 8 or 3.63% from Paralegal Specialization Course. This highlights that the

respondents were mostly those who belong to OSRATC, EMRATC, and Coast Guard Security and Border Protection Service, among those who belong to specialization courses.

Table 7. *Frequency distribution of the respondents in terms of specialization course*

Specialization Course (SC)	Frequency	Percent
EMRATC	33	15.0%
OSRATC	36	16.3%
EMTRC	13	5.91%
MTRC	13	5.91%
MEP Specialization Course	10	4.55%
Basic Underwater Special Operations Course	20	9.09%
Yeoman Specialization Course	10	4.55%
Aviation Machine-made Specialization Course	10	4.55%
Coast Guard Investigation Specialization Course	13	5.91%
Coast Guard Security and Border Protection Service	24	10.9%
Aids to Navigation Specialization Course	18	8.18%
Paralegal Specialization Course	8	3.63%
Radio Operations and Maintenance Specialization Course	12	5.45%

3.2 Performance of the Human Resource Development of the Philippine Coast Guards

The grand mean of 3.39 is interpreted as strongly agree (see Table 8). The results also show that “Emergency Response Protocol” got a weighted mean of 3.42, interpreted as strongly agree; “Maritime Law Enforcement Awareness” and “Marine Environmental Protection Awareness” with a weighted mean of 3.41, interpreted as strongly agree; “Communication Skills” with 3.36, interpreted as strongly agree; and “Crisis Management Adaptability” with 3.35, interpreted as strongly agree. This highlights that the Performance of the Human Resource Development of the Philippine Coast Guards gained strongly agree remarks with all variables, with emergency response protocol as the highest, followed by maritime law enforcement awareness, marine environmental protection awareness, communication skills, and crisis management adaptability.

Table 8. *Performance of the human resource development of the Philippine Coast Guards*

Performance of the PCG	Mean	Qualitative Index
Communication Skills	3.36	SA
Emergency Response Protocol	3.42	SA
Maritime Law Enforcement Awareness	3.41	SA
Crisis Management Adaptability	3.35	SA
Marine Environmental Protection Awareness	3.41	SA
Grand Mean	3.39	SA

Note: 3.26 – 4.00 Strongly Agree, 2.51 – 3.25 Agree, 1.76 – 2.50 Disagree, 1.00 – 1.75 Strongly Disagree

The findings support the performance of the Philippine Coast Guard (PCG) 's Human Resource Development Agenda (has been highlighted in the research up to this point: Integrated Emergency Response: Bueger et al. (2019) assert that effective maritime operations necessitate integrated emergency response procedures. The PCG aligns with international best practices, as seen by its excellent ranking in this category. Marine Law Enforcement: Tarriela (2023) highlights how crucial law enforcement is to preserving marine safety. The PCG's dedication to protecting marine areas and upholding environmental regulations is demonstrated by its excellent performance. Environmental Awareness: According to Ismail et al. (2021), training programs should incorporate maritime environmental conservation. The PCG's emphasis in this field aligns with international initiatives to lessen the effects of human activity on marine environments. Crisis Management and Communication: Shaw (2018) emphasizes the importance of crisis adaptation and communication abilities in guaranteeing successful operations. The PCG's training in these areas prepares Staff members to handle crises and promote resilience.

The performance of the Human Resource Development Agenda of the Philippine Coast Guard (PCG) had a grand mean of 3.39 (Strongly Agree), indicating strong effectiveness across all assessed abilities. The PCG's proficiency in environmental protection, maritime law enforcement, and emergency response demonstrates its adherence to operational excellence and conformity to international standards. To guarantee ongoing development and alignment with new issues and worldwide trends, sustaining and improving these competencies should be the goal of future initiatives.

3.3 Performance of the Training Program of the Philippine Coast Guards

Table 9 presents the overall summary of the frequency distribution, weighted mean, and qualitative index for the Philippine Coast Guard training program with a grand mean of 3.24, which is interpreted as agree. The results also show that “Training Course Expertise” got a weighted mean of 3.36, interpreted as strongly agree; “Training Period” and “Training Policies” with a weighted mean of 3.34, interpreted as strongly agree; “Training Facilities” with 3.21, interpreted as agree; and “Training Funds/Budget allocation” with 2.96, interpreted as agree. This highlights that the Philippine Coast Guard training program gained strongly agree remarks with all variables, with Training Course Expertise as the highest, followed by Training Period, Training Policies, Training Facilities, and Training Funds/Budget allocation.

Table 9. *Performance of the training program of the Philippine Coast Guard*

Training Program	Mean	Qualitative Index
Training Facilities	3.21	A
Training Course Expertise	3.36	SA
Training Fund/Budget allocation	2.96	A
Training Period	3.34	SA
Training Policies	3.34	SA

Note: 3.26 – 4.00 Strongly Agree, 2.51 – 3.25 Agree, 1.76 – 2.50 Disagree, 1.00 – 1.75 Strongly Disagree

The findings align with the Philippine Coast Guard's (PCG) Training Program, which has been highlighted in the literature thus far: Trainer Expertise and Quality: Pandian and Kannadas (2020) assert that the proficiency and flexibility of trainers are essential to providing high-quality training programs. The PCG's emphasis on preserving trainer relevance and competency is demonstrated by its high score in this category. Structured Training Periods: To optimize learning outcomes and professional development, Tolsgaard et al. (2015) stress the significance of clearly defined training durations. The PCG's compliance with this best practice is demonstrated by its high score. Policy Alignment: According to Shah (2007), one of the PCG program's strengths is that training policies should align with organizational objectives to guarantee coherence and efficacy. Facilities and Technology: To improve learning experiences, Ismail et al. (2021) emphasize the significance of incorporating cutting-edge technology into training facilities. PCG's facilities received a mediocre rating, indicating room for improvement. Budget Allocation: Julnes (2017) emphasizes that adequate and fair funding is essential to training programs' long-term viability. The training funds' comparatively low score indicates that better financial planning and resource optimization are required.

The grand mean of 3.24 (Agree) indicates that the Philippine Coast Guard's training program is generally effective, with extreme points in trainer expertise, well-aligned policies, and scheduled training periods. However, topics like training facilities and budget allocation need to be given careful consideration to guarantee that every element of the program satisfies the highest requirements. Bridging these gaps will improve the training program's overall quality and effectiveness.

3.4 Differences of Performance When Grouped According to the Demographic Profile

The Human Resource Development (HRD) agenda of the Philippine Coast Guard is evaluated based on various demographic variables, including years of service, gender, rank, institution, and career path (see Table 10). The findings indicate that gender plays a significant role in environmental awareness, crisis management, and communication abilities, aligning with previous research by Ardahan and Tuncer (2020) and Fisher et al. (2019). These studies suggest that biases in professional training, gendered roles, and unequal opportunities contribute to performance discrepancies. The results reinforce the need for targeted initiatives to close the gender gap in training and skill development.

On the other hand, the non-significant effects of career path, years of service, rank, and institution suggest that standardized training programs may effectively minimize performance disparities across these variables. This finding supports Walker et al. (2021), who emphasize that well-structured training programs can ensure consistent outcomes regardless of position or tenure. Additionally, research by Wright and Delaney (2020) indicates that gender disparities in environmental consciousness may stem from varying levels of participation in operational or advocacy activities, which are often shaped by institutional culture. These insights further substantiate the need for gender-sensitive training and professional development approaches.

Moreover, Harris et al. (2018) found that technical knowledge areas show reduced variability due to standardized curricula, consistent with this study's observation that there are no significant differences in maritime law enforcement awareness. Given the substantial influence of gender on performance in specific areas, a review of current training programs is necessary. Gender-sensitive strategies, such as confidence-building activities, simulation-based learning, and mentorship programs, could help bridge these gaps.

Table 10. ANOVA F- and T-Test results for the differences in performance when grouped according to the demographic profile

Performance	Profile	ANOVA/ T-test	P-value	Decision	Conclusion
Communication Skills	Gender	2.72	.007	Reject H ₀	Significant
	Rank	1.60	.145	Failed to Reject H ₀	Not Significant
	Institution	3.82	.140	Failed to Reject H ₀	Not Significant
	Years of Service	1.05	.377	Failed to Reject H ₀	Not Significant
	Career taken	2.50	.059	Failed to Reject H ₀	Not Significant
Emergency Response Protocol	Gender	2.65	.008	Reject H ₀	Significant
	Rank	0.70	.643	Failed to Reject H ₀	Not Significant
	Institution	3.37	.358	Failed to Reject H ₀	Not Significant
	Years of Service	0.62	.647	Failed to Reject H ₀	Not Significant
	Career taken	1.72	.161	Failed to Reject H ₀	Not Significant
Maritime Law Enforcement Awareness	Gender	1.89	.060	Failed to Reject H ₀	Not Significant
	Rank	0.77	.590	Failed to Reject H ₀	Not Significant
	Institution	2.81	.479	Failed to Reject H ₀	Not Significant
	Years of Service	0.56	.685	Failed to Reject H ₀	Not Significant
	Career taken	1.53	.206	Failed to Reject H ₀	Not Significant
Crisis Management Adaptability	Gender	2.48	.014	Reject H ₀	Significant
	Rank	0.55	.767	Failed to Reject H ₀	Not Significant
	Institution	4.22	.086	Failed to Reject H ₀	Not Significant
	Years of Service	0.65	.627	Failed to Reject H ₀	Not Significant
	Career taken	1.51	.210	Failed to Reject H ₀	Not Significant
Marine Environmental Protection Awareness	Gender	2.77	.006	Reject H ₀	Significant
	Rank	0.55	.769	Failed to Reject H ₀	Not Significant
	Institution	4.24	.061	Failed to Reject H ₀	Not Significant
	Years of Service	0.89	.467	Failed to Reject H ₀	Not Significant
	Career taken	1.34	.260	Failed to Reject H ₀	Not Significant

The non-significant impact of career paths and institutions further suggests that standardized training frameworks can establish uniform knowledge bases. This underscores the importance of maintaining and strengthening consistency across training institutions. To ensure equal preparedness among all personnel, efforts should focus on areas where performance gaps persist, particularly crisis management and environmental protection knowledge.

From a policy perspective, inclusivity should be a priority in human resource development. This entails providing equal opportunities for professional growth and implementing gender-responsive training programs. Gender disparities in specific performance areas highlight the need for initiatives that promote equity in training, evaluation, and position assignments within public administration organizations. Additionally, addressing gender-related challenges in the maritime industry can offer valuable insights for other sectors, such as environmental management and disaster response.

This study contributes new perspectives on the demographic factors influencing the performance of Philippine Coast Guard personnel, emphasizing the role of gender in key performance indicators. It also highlights the effectiveness of standardized training in mitigating disparities related to tenure, rank, and career pathways. However, the study does not explore the underlying causes of gender differences, such as institutional, psychological, or cultural factors. Further research is needed to assess the impact of institutional policies and training practices on these disparities and examine the long-term effects of demographic characteristics on leadership opportunities and career advancement.

3.5 Differences in Performance of Training Program When Grouped According to the Demographic Profile

Table 11 examines notable variations in the Philippine Coast Guard Training Program based on demographic variables, including gender, position, institution, years of service, and career path. The findings highlight key aspects of the training program and their implications.

Table 11. ANOVA F- and T-Test results for the differences of performance of training program when grouped according to the demographic profile

Training Program	Profile	ANOVA/ T-test	P-value	Decision	Conclusion
Training Facilities	Gender	5.89	.016	Reject H ₀	Significant
	Rank	2.22	.052	Failed to Reject H ₀	Not Significant
	Institution	6.43	<.001	Reject H ₀	Significant
	Years of Service	2.38	.052	Failed to Reject H ₀	Not Significant
	Career taken	4.82	.003	Reject H ₀	Significant
Training Course Expertise	Gender	6.86	.009	Reject H ₀	Significant
	Rank	1.20	.304	Failed to Reject H ₀	Not Significant
	Institution	3.14	.153	Failed to Reject H ₀	Not Significant
	Years of Service	1.50	.201	Failed to Reject H ₀	Not Significant
	Career taken	3.37	.019	Reject H ₀	Significant
Training Funds/ Budget Allocation	Gender	0.11	.732	Failed to Reject H ₀	Not Significant
	Rank	1.52	.170	Failed to Reject H ₀	Not Significant
	Institution	3.87	.264	Failed to Reject H ₀	Not Significant
	Years of Service	1.51	.199	Failed to Reject H ₀	Not Significant
	Career taken	2.90	.055	Failed to Reject H ₀	Not Significant
Training Period	Gender	11.5	<.001	Reject H ₀	Significant
	Rank	1.57	.153	Failed to Reject H ₀	Not Significant
	Institution	4.57	.070	Failed to Reject H ₀	Not Significant
	Years of Service	2.01	.093	Failed to Reject H ₀	Not Significant
	Career taken	3.87	.010	Reject H ₀	Significant
Training Policies	Gender	13.3	<.001	Reject H ₀	Significant
	Rank	0.96	.451	Failed to Reject H ₀	Not Significant
	Institution	4.77	.151	Failed to Reject H ₀	Not Significant
	Years of Service	1.19	.315	Failed to Reject H ₀	Not Significant
	Career taken	2.24	.083	Failed to Reject H ₀	Not Significant

Gender differences play a significant role, aligning with Kochan et al. (2020), who found that male and female personnel perceive institutional resources differently due to their varied roles and operational experiences. Institutional disparities in training facilities are consistent with Smith & Brown (2019), who suggest that resource allocation and infrastructure vary significantly across organizations. Additionally, gender disparities in training expertise reflect the findings of Merrill et al. (2018), emphasizing the unequal access to specialized training options. The influence of career paths on training experiences is further supported by Taylor (2021), who highlights the necessity of customized training to meet role-specific demands.

Funding consistency across demographic profiles supports the findings of Walker et al. (2020), who stressed the stability of budget allocations in public-sector training programs. While this suggests fairness in budget planning, it may also obscure inefficiencies or unmet training needs. Gender disparities in training period perceptions align with Hartman & Williams (2019), who indicate that male and female personnel often prefer training duration and intensity due to learning demands or personal obligations. Furthermore, gender-based differences in perceptions of training policies support Liu et al. (2020), who argue that institutional rules may unintentionally favor one gender due to historical biases or cultural norms.

To address these disparities, institutions should evaluate and improve training facilities and course offerings, particularly concerning gender and career paths. Upgrading resources and ensuring equitable distribution can enhance training outcomes. Training curricula should also consider gender-based differences in demands and expertise, such as offering flexible training schedules or addressing hidden biases in course materials to improve engagement and performance. Additionally, career-focused training programs can ensure that personnel in specialized positions acquire the necessary knowledge and skills. Conducting gender audits of training policies may help identify and mitigate hidden biases, ensuring that training policies are inclusive and meet the needs of diverse demographics.

The consistency in perceptions of budget allocation underscores the importance of equitable resource distribution. However, it is equally critical to ensure that available resources are sufficient to meet both institutional and gender-specific demands. The Philippine Coast Guard's training programs could serve as a model for other public organizations. Addressing inequalities in training policies and infrastructure could be extended to broader public administration contexts.

This study provides empirical evidence of how demographic characteristics, particularly gender and career path, influence perceptions of training programs in a maritime setting. It highlights the need to address inequalities in training periods, policies, course expertise, and facilities. However, the study does not examine institutional or cultural biases, significantly contributing to gender-based disparities. Additionally, it gives limited attention to the relationship between demographic characteristics and other factors, such as geographic location and socioeconomic background. The long-term impact of perceived training differences on personnel performance and retention remains unexplored.

3.6 Issues and Challenges Encountered

From the careful and genuine analysis of the narratives, the resulting themes are reflected in the respondents' experiences with the issues and challenges encountered in the implementation of the Philippine Coast Guard Training Program. This shows two themes: (1) lack of funds and (2) educational resources and facilities.

Lack of Funds

"Lack of funds to initiate Training Programs"

"Lack of budget to perform and conduct the training programs"

"Securing significant resources and funding for infrastructure, equipment, and personnel..."

The capacity of educational institutions to provide high-quality instruction and help students acquire critical skills is severely hampered by a lack of financing for training programs. Lack of funding results in insufficient training opportunities, which can hurt learning outcomes and the general development of students. According to research from the Philippine Institute for Development Studies, poor learning results are directly correlated with low education financing. The study highlights the need for more funding to improve educational quality by showing that students in the Philippines are performing poorly in critical learning competencies due to the country's relatively low investment in education and training (Philippine Institute for Development Studies, 2023). The authors stress that merely expanding resources is insufficient; funds must also be managed and allocated effectively to maximize their impact on student learning. Budgetary limitations and insufficient funding frameworks hamper the creation of creative training programs and research projects, claims ResearchGate (2023). A major obstacle to attaining high-quality education and enhancing student outcomes is a lack of funds for training initiatives.

Lack of Educational Resources and Facilities

"Lack of advanced equipment and facilities"

"Budget for training is not on time, and training supplies are unavailable."

"Lack of facilities, barracks, area of schoolings, equipment, and materials"

"Lack of quality billeting and training facilities..."

"...inadequate equipment, limited training facilities, and the need to continuously update training materials to keep pace with evolving maritime threats and technologies. Additionally, ensuring the quality and standardization of training across different locations."

Similar themes referring to the lack of educational resources and facilities were also found in most of the qualitative data on the issues and challenges encountered in implementing the Philippine Coast Guard Training Program. The quality of education that pupils receive is severely compromised by a lack of facilities and educational resources, which hurts learning and development. Schools cannot provide the resources and settings required for efficient teaching and learning because of a lack of funds and poor infrastructure. Inadequate school facilities have been shown to restrict educational programs significantly and have a detrimental effect on student achievement. According to Research Publish (2020), students in under-resourced schools frequently perform below expectations on standardized tests because they have difficulty accessing necessary resources, including classrooms, libraries, and labs. In addition to impeding academic success, this lack of access lowers students' motivation and involvement in their education and classes. A major obstacle to receiving high-quality education is the absence of facilities and educational resources. To guarantee that every student has access to the resources

they require for practical learning experiences, these shortcomings must be addressed with more financing and infrastructure investment.

3.7 Recommendations

Afterward, the analysis of the possible recommendations from the study revealed that (1) increased budget allocation and (2) efficient resource management must be utilized. This illustrates that both actions would amplify the management and improvement of implementing the Philippine Coast Guard Training Program. This can be observed in the statements of the respondents highlighted below.

Increased Budget Allocation

"Allocate funds for the procurement of training equipment and materials."

"Budget allocation for the improvement of training facilities within the organization."

"...to have appropriate funding and well-established classroom or school facilities."

Efficient Resources Management

"There should be proper and timely budget allocation..."

"There should be complete training materials and educational resources."

"...to refine the training content to ensure its alignment to the needs of the organizational and program goals, and improve the accessibility and flexibility of delivery of the lessons..."

"...allotting funds for improving personnel training to meet the organizational goals and objectives better..."

Similar themes referring to increased budget allocation and efficient resource management were also found in most of the qualitative data on the possible recommendations that may be made in the implementation of the Philippine Coast Guard Training Program. Increased budget allocations and efficient resource management are critical for enhancing the quality of education and ensuring that educational institutions can meet their objectives effectively. Adequate funding enables schools to invest in necessary resources, while effective management ensures that these resources are utilized optimally to maximize educational outcomes. According to a study published in the Journal of Education Administration, effective resource management involves the careful distribution of financial resources but also requires ongoing monitoring and evaluation to ensure that resources contribute positively to educational goals (Muliati et al., 2022). This practice enhances operational efficiency and fosters an environment conducive to learning and innovation (Amber Student, 2023). By utilizing data, educational institutions can identify areas needing improvement and allocate resources accordingly, ensuring that budget increases translate into tangible student benefits. According to the Center for American Progress (2020), effective resource management promotes equity in education. The Center for American Progress highlights that proper distribution of resources helps bridge gaps between different socio-economic groups, ensuring that all students have access to quality education regardless of their background.

On the other hand, increasing budget allocations coupled with efficient resource management is essential for improving educational quality. By strategically planning and utilizing resources, educational institutions can enhance learning outcomes, promote equity, and foster an environment where students thrive. Addressing these aspects is crucial for developing a robust educational system capable of meeting the diverse needs of its student population.

4.0 Conclusion

According to the study, which looked at the Philippine Coast Guard's training programs and human resource development agenda, most respondents were men with six to ten years of service, mainly in the Petty Officer Third Class rank. They frequently took specialized courses like CGFETTDI, MSLES, OSRATC, and EMRATC. Emergency response procedure was rated as the most important component of the human resource development program, followed by maritime law enforcement knowledge, marine environmental protection, communication skills, and crisis management adaptability. Additionally, the training program received high marks for competence, training duration, policies, facilities, and budgetary allocation. While rank, institution, and years of service had no discernible effects on most factors, gender disparities were substantial in areas such as emergency

response, communication skills, and training facilities. After issues including inadequate facilities and instructional materials were noted, suggestions for more funding and improved resource management were made. According to the study, training programs are essential for improving employees' abilities and work efficacy. In order to boost management and efficiency, an action plan was put up to improve implementation, with a particular emphasis on developing training programs and human resource development efforts.

5.0 Contributions of Authors

This study has a single author. The writer is a graduating student of the DPA program. The student composed and revised the study. The adviser also played a vital role in improving the research by offering advice and insightful comments, especially on ethical issues and concerns about the conduct of the study and following recommended guidelines and formalities.

6.0 Funding

The researcher did not receive any funds or grants from the organization or agency.

7.0 Conflict of Interests

This study does not have any conflicts of interest because the author is just interested in comprehending the participants' opinions and replies.

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9.0 References

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Perceived Social Support and Grit as Predictors of General Self-efficacy among Undergraduate Students

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Abstract. Perceived social support is pivotal in fostering students' motivation and resilience. Student's social ties with their friends, family, and significant others are crucial as they receive support. Moreover, social support enhances belief in one's ability to achieve goals and manage difficulties. This belief is crucial for motivation and academic performance, influencing how students tackle tasks and respond to setbacks. Grit is defined as perseverance and passion for long-term goals. It focuses on sustained effort, enabling individuals to remain motivated despite ongoing challenges. Despite the growing body of literature on perceived social support, grit, and self-efficacy, there is a dearth of studies examining these factors within the local context, where cultural and societal conditions may influence these associations. This research quantitatively explored the prediction between perceived social support, grit, and general self-efficacy among undergraduate students ($n=342$) in a state university in Pampanga, Philippines. The sample size was determined through the Raosoft application, and the respondents were selected through a stratified proportionate sampling technique. JAMOVI application was used to run the analysis. The findings revealed a significant and weak positive relationship ($p < 0.001$, $R=0.41$) between perceived social support and general self-efficacy. Furthermore, grit and general self-efficacy have no significant relationship ($p < 0.76$, $R=0.2$) among undergraduate students. However, the subdomains of grit revealed that consistency of interest had a positive but weak association with general self-efficacy ($p < 0.001$, $R=0.37$). In contrast, the second subdomain, perseverance of effort, showed a negative and weak relationship with general self-efficacy ($p < 0.001$, $R=-0.44$). Furthermore, the regression analysis revealed that perceived social support, perseverance of effort, and consistency of interest are significant predictors of general self-efficacy, with each variable explaining 16%, 20%, and 14% of the variance, respectively. These findings suggest that maintaining perceived social support and consistency of interest can enhance academic performance and boost students' self-efficacy. Perseverance efforts, which lead to poor outcomes, can negate the self-efficacy of undergraduate students. This can serve as a basis for interventions and school counseling programs that enrich students' general self-efficacy, fostering well-being and academic success.

Keywords: Counseling; General self-efficacy; Grit; Perceived social support; Undergraduate students.

1.0 Introduction

Obtaining support from others is extremely valuable for motivation. Recognition, validation, and satisfaction are reinforcers for students after achieving their goals. Undergraduate students have a wide range of life goals, and general self-efficacy is a key factor in their engagement and persistence in their studies. General self-efficacy is a key factor in persistently pursuing academic goals. Li et al. (2023) noted that it represents a student's belief in their

abilities and confidence when facing academic challenges. General self-efficacy is a drive that allows students to achieve academic goals, regardless of the predicaments that hinder students from accomplishing a particular goal. In addition, general self-efficacy is also associated with a positive lifestyle, which helps achieve academic goals. As asserted by Guo (2018), positive attitudes toward oneself are more prevalent among those who are more passionate and persistent in achieving academic goals, which strongly correlates with an assessment of life quality. General self-efficacy is a strong indicator of achieving academic goals.

Research indicates that lack of self-efficacy is a significant issue among undergraduate students. Hauzel et al. (2024) found that 70% of undergraduate students report low motivation. Another study revealed that 72% of students felt low engagement during online lectures, negatively impacting their learning experience. Most students indicated difficulty staying engaged with their peers and instructors (Hollister et al., 2022). These highlight the need for interventions to help students maintain enough levels of self-efficacy. In recent years, the number of undergraduate students has declined, resulting in fewer college graduates. Reysen et al. (2019) state fewer than 35% of students complete their degrees within five years of enrolling. For private enrollment, this percentage rises to just over 50%. Evidently, for most undergraduate students, the concept of a “four-year degree” is more elusive than ever. With undergraduates having a hard time completing a four-year degree in college, it is essential to investigate factors that may predict the general self-efficacy of the undergraduates, which can be positively associated with academic engagement and persistence (Hodge et al., 2018). This research informs the public regarding the importance of general self-efficacy, especially in academics.

Perceived social support and grit are present in an individual’s life and can help students achieve academic goals. Perceived social support is how individuals view friends, family, and significant others as a source of help during difficult times (Grey et al., 2020). This also pertains to how much support an individual receives and perceives (Harandi et al., 2017). Social ties are important for a person to achieve a healthy lifestyle with support from friends and family. Drageset (2021) mentioned that social support promotes health by enhancing a person's capacity for stress management, overall health, and quality of life. Research has also demonstrated that perceived social support serves as a protective factor against mental health challenges such as anxiety and depression, which can otherwise hinder academic persistence and success (Parungao, 2024). A recent study conducted among undergraduate working students verified that general self-efficacy and perceived social support had significant moderate positive correlations (Inigo et al., 2022). Meanwhile, grit positively influences students with academic performances aiming for high grades or outcomes in certain activities. Grit is a trait that allows a person to achieve a long-term goal consistently. In the view of Christopoulou et al. (2018), two aspects are the foundation of grit: Perseverance of Effort and Consistency of Interest. A study on grit exhibits that grit levels are higher in kids who are outstanding grade achievers than those who achieved lower grades (Elnaem et al., 2023). However, others argue that grits contribute little to academic performance (Hodge et al., 2017). This research recognizes students' perceived social support and grit as potential predictors of general self-efficacy. This study is focused on understanding students' levels of self-efficacy while considering the predictive roles of social support and grit.

Although specific research investigations have been conducted to determine the predictors of general self-efficacy among students, there is a lack of research on this topic in the local context, leaving inadequate data on how factors like grit and perceived social support distinctively influence Filipino undergraduate students' general self-efficacy. The researchers identified the following research questions: What is the demographic profile of respondents? What are the levels of perceived social support, grit, and general self-efficacy? Is there a significant relationship between perceived social support, grit, and general self-efficacy? Does perceived social support and grit predict general self-efficacy among undergraduate students? Understanding how perceived social support and grit influence general self-efficacy plays a vital role in promoting undergraduate students' academic success and mental health. By understanding the predictors of self-efficacy, school stakeholders could cultivate steps that boost students' development. This study can be used to develop counseling programs that support students' general self-efficacy and guide various professionals in creating strategies that foster academic success.

2.0 Methodology

2.1 Research Design

This study implemented a Quantitative method, measuring the indicators of perceived social support, grit, and general self-efficacy. Specifically, this research used the Predictive Correlational design. Correlational designs

often visually depict the strength and direction of relationships between variables (Nesselroade & Grimm, 2018). In behavioral sciences, exploring the relationship between variables to predict the outcome is shaped through predictive correlation (Smith et al., 2022). This design, in turn, can identify the degree and direction of the association between perceived social support, grit, and general self-efficacy among undergraduate students. Furthermore, it can examine whether perceived social and grit are significant predictors of general self-efficacy. In this investigation, perceived social support and grit are the predictor variables, while general self-efficacy is the outcome variable.

2.2 Research Locale

The study was conducted in a state university in Pampanga, Philippines. This location was chosen because it has enough undergraduate students, making it well-suited for this research.

2.3 Research Participants

The researchers recruited undergraduate students from a state university in Pampanga, Philippines. A sample size 342 was determined using Raosoft software while observing the following parameters: a 5% margin of error and a 95% confidence level. In this case, there is a 95 percent probability that the actual value is within $\pm 5\%$ of the measured value. Moreover, a stratified proportionate sampling technique was employed to ensure that different subgroups within the population were represented in proportion to their size—allowing for more accurate and reliable results. The researchers utilized undergraduate students' college programs as the strata for this research undertaking. Specifically, 170 psychology students, 120 social work students, 28 human services students, and 24 sociology students gathered in this study, completing the needed 342 respondents.

2.4 Research Instrument

The researchers utilized three open-access survey questionnaires for this investigation. Additionally, these scales were converted into Google Forms after permission was granted by the developers. The first scale is the Multidimensional Scale of Perceived Social Support (MSPSS) developed by (Zimet et al., 1998). It is a widely used tool for assessing perceived social support from three sources: family, friends, and significant others. The scale comprises 12 items, with 4 items for each subscale, and rated on a 7-point Likert scale from "1 - Very Strongly Disagree" to "7 - Very Strongly Agree." Sun and Guo (2024) examined its psychometric properties wherein the scale showed high internal consistency with .91 (family), .87 (friends), and .85 (significant others) values for each subscale and ($\alpha=.88$) for the overall reliability estimate. The scores for each item were summed to get a total score, and to get the mean score, the test user needed to divide the total scores by 12. In this approach, a mean score ranging from 1 to 2.9 is considered low support, 3.5 is considered moderate support, and a score from 5.1 to 7 is considered high support.

The second scale used is the Short Grit Scale (SGS) developed by Duckworth and Quinn (2009), which measures perseverance of effort and consistency of interest. The scale is comprised of 8 items rated on a 5-point Likert scale. Items 2, 4, 7, and 8 have a point Likert scale ranging from "5 - very much like me" to "1 - not like me at all." On the other hand, items 1, 3, 5, and 6 have a point Likert scale ranging from "1 very much like me" to "5 - not like me at all." The scores for each item were summed and divided by 8. The SGS has demonstrated strong psychometric properties in many studies, including high internal consistency (0.73 to 0.83).

The third scale utilized is the General Self-Efficacy Scale (GSE) developed by Schwarzer and Jerusalem (1992), which assesses the strength of an individual's belief in his or her ability to respond to challenging situations and to deal with any associated obstacles. The scale comprises 10 items and is rated on a 4-point Likert scale ranging from "1 - Not at all true" to "4 - Exactly true". The scores for each item were summed up to get a total score that ranged from 10 to 40. The sample items are "I can always manage to solve difficult problems if I try hard enough" and "I can usually handle whatever comes my way." Higher scores indicate a stronger sense of self-efficacy. In comparison, lower scores indicate that the individual may feel less capable of managing complex tasks and overcoming obstacles. The GSE demonstrated good psychometric properties ($\alpha > 0.86$) across various populations.

2.5 Data Gathering Procedure

The researchers commenced the research process by establishing validated and approved instruments, specifically the General Self-Efficacy Scale, the Multidimensional Scale of Perceived Social Support, and the Short Grit Scale,

comprising 30 items utilized in the study. Second, the researchers sought permission from the college dean and specific program chairpersons in the selected state university to proceed with the data-gathering process. The researchers also provided the administration with a letter requesting information about the population size of each program. Third, once the dean and program chairpersons had approved permission, the researchers computed the study's sample size using the Raosoft application, yielding 342 respondents. Fourth, the researchers utilized the proportionate stratified sampling formula to compute the number of respondents, ensuring that the strata (programs) of the undergraduate students were adequately represented within the study's sample size. After using the sampling method, the researchers approached the subjects and disseminated the questionnaire through Google Forms. While disseminating the Google Forms, the researchers provided instructions to voluntarily participating students and reassured them that identities and responses were kept private and confidential. The researchers also addressed the respondents' questions or concerns online and in person. Once the respondents answered the questionnaire, the researchers collected the datasets through a spreadsheet.

Lastly, the datasets were cleaned, coded, and analyzed using software. This study used descriptive, correlational, and regression analyses to address the problem statements. Researchers used JAMOV 2.4.14. throughout the data analysis to affirm accurate and reliable results. The software enables the evaluation of potential outcomes of the dependent variable, general self-efficacy, from the two indicated predictors: perceived social support and grit. It analyzed the relationship between perceived social support, grit, and general self-efficacy. The data analysis followed the following steps: First, raw scores were exported through Microsoft Excel to summarize the data gathered, and then datasets were cleaned and coded before transferring to JAMOV software. Second, the statistical application was used to identify the demographic profile of the respondents through frequency and percentages. Third, the means and standard deviations of perceived social support, grit, and general self-efficacy among undergraduate students were also computed to identify the levels of these variables. Fourth, Pearson's correlation was used for correlational analysis to determine the significant relationship between the independent and dependent variables. Lastly, multiple linear regression analysis was conducted to determine the coefficient of determination (R^2) and beta coefficient (B) to understand if general self-efficacy can be accurately predicted by perceived social support and grit. This enabled the researchers to determine how much percentage of perceived social support and grit predict general self-efficacy among undergraduate students.

2.6 Ethical Considerations

In conducting this study, the researchers prioritized the rights and well-being of the respondents by complying with the ethical standards. Prioritizing ethical norms entails gaining the respondents' informed consent to ensure an understanding of the study's objectives, participants' rights, and minimal risks. Voluntary participation was stressed to reduce the pressure or obligation of students to participate. The researchers adhered to the Data Privacy Act of 2012 to guarantee the confidentiality of all information obtained. The decision to make student names optional further emphasized the anonymity principle. All participants were made aware of this choice, which enabled them to choose how they wished to be recognized in the study. These identities will not be utilized in public reports or analyses to protect the participants' privacy. Furthermore, to guarantee that participants encounter no harm or discomfort throughout the completion of the survey questions, the researchers adhered to non-maleficence. Due credit was given to the study's participants for their contribution to completing this research and adding knowledge in Counseling and Human Services. Once finished, the researchers pledged to share the findings with interested participants.

3.0 Results and Discussion

3.1 Demographic Profile of Students in terms of Programs and Sex Assigned at Birth

Table 1 shows that undergraduate students in Psychology have the most respondents ($f=170$, $\%=49.7$), followed by the students in Social Work ($f=120$, $\%=35.1$). The respondents in Human Services have a frequency of 28, with 8.2%, and the remaining respondents in Sociology have a frequency of 24, comprising 7% of the total sample size. Additionally, the undergraduate student's assigned sex at birth was disclosed. Males have a frequency of 113, with 33%, followed by females with a frequency of 229, with 67%, making a total of 342 respondents. This data is aligned with the stratified proportionate sampling used in this study, making the results generalizable among undergraduate students. Probabilistic sampling techniques, such as stratified random sampling, are recommended because they can yield more accurate and dependable findings despite limited assumptions, according to Basti and Madadzadeh (2021).

Table 1. *Demographic profile of the undergraduate students*

Undergraduate Programs	Frequency	Percentage (%)
Human Services	28	8.20%
Psychology	170	49.7%
Social Work	120	35.1%
Sociology	24	7.00%
Sex Assigned at Birth		
Male	113	33.0%
Female	229	67.0%

3.2 Levels of Perceived Social Support among Undergraduate Students

Table 2 shows the levels of perceived social support among undergraduate students. Statement 5, "I have a special person who is a real source of comfort to me." shows a mean of 5.88 and a standard deviation of 1.41, indicating "Very Strongly Agree." Statement eight, "I can talk about my problems with my family." shows a mean of 4.31 and a standard deviation of 1.81, indicating "Mildly Agree." Statement 9, "I have friends with whom I can share my joys and sorrows." has a mean of 5.66 and a standard deviation of 1.33, indicating "Strongly Agree." The overall weighted mean is 5.55 with a standard deviation of 1.09, indicating that the undergraduate students' responses can be interpreted as "Strongly Agree" regarding their perceived social support.

Table 2. *Levels of perceived social support among undergraduate students*

Indicators	Mean	SD	Interpretation
1. There is a special person who is around when I am in need.	5.82	1.34	Very Strongly Agree
2. There is a special person with whom I can share joys and sorrows.	5.85	1.34	Very Strongly Agree
3. My family really tries to help me.	5.35	1.58	Strongly Agree
4. I get the emotional help & support I need from my family.	5.78	1.38	Very Strongly Agree
5. I have a special person who is a real source of comfort to me.	5.88	1.41	Very Strongly Agree
6. My friends really try to help me.	5.53	1.16	Strongly Agree
7. I can count on my friends when things go wrong.	5.61	1.18	Strongly Agree
8. I can talk about my problems with my family.	4.31	1.81	Mildly Agree
9. I have friends with whom I can share my joys and sorrows.	5.66	1.33	Strongly Agree
10. There is a special person in my life who cares about my feelings.	5.83	1.41	Very Strongly Agree
11. My family is willing to help me make decisions.	5.68	1.52	Very Strongly Agree
12. I can talk about my problems with my friend	5.42	1.48	Mildly Agree
Overall Weighted Mean	5.55	1.09	Strongly Agree

However, some statements on this scale, such as "I can talk about my problems with my family" and "I can talk about my problems with my friends," have the lowest mean score among undergraduate students. These questions have something to do with the personal life of a particular person emotionally. As Morgan et al. (2017) suggested, it was primarily characterized by providing good treatment and enough understanding from peers or family members to have a specific person talk about their problem. Moreover, the findings indicate that undergraduate students generally have strong perceived social support from family and friends, particularly regarding emotional help and comfort. This finding was consistent with Aziz et al. (2024), who discovered that family support was the most important source of perceived social support, followed by friends. This support is essential for stress management and psychological well-being. However, there may be areas where communication and support systems might be further improved, particularly in addressing personal issues and decision-making among undergraduate students. This aligns with the conclusions of Ponikwer et al. (2022), who discovered that students are more inclined to seek assistance for academic concerns rather than personal ones, frequently favoring family and friends over university support services.

3.3 Levels of Grit among Undergraduate Students

Table 3 shows the Grit levels of undergraduate students for each indicator. Statement 4, "I am a hard worker," garnered the highest mean of 2.67 and a standard deviation of 1.00, indicating "somewhat like me." Statement 8, "I am diligent," garnered the lowest mean score of 2.11 and a standard deviation of 0.80, indicating that "mostly like me." The dimension for consistency of interest ($m=2.44$, $SD=0.69$) and the dimension for perseverance of effort ($m=1.95$, $SD=0.56$) both have a verbal interpretation of "mostly like me." The overall weighted mean is 2.75 with a standard deviation of 0.42, indicating that "somewhat like me" is the equivalent of undergraduate students' responses regarding grit. The findings proved that comparatively high grit levels in "perseverance of effort" and "diligence" indicate that students already have strong traits in these domains. Similar findings were established

by Burke et al. (2022), who discovered that graduate students exhibited high grit levels, with perseverance scores surpassing consistency of interest. Counselors and other stakeholders can acknowledge and reinforce these strengths by providing opportunities for students to cultivate these traits further to achieve better academic outcomes.

Table 3. *Levels of grit among undergraduate students*

Indicators	Mean	SD	Interpretation
1. New ideas and projects sometimes distract me from previous one.	2.89	1.10	Somewhat like me
2. Setbacks don't discourage me.	2.67	1.00	Somewhat like me
3. I have been obsessed with a certain idea or project for a short time but later lost interest.	2.91	1.11	Somewhat like me
4. I am a hardworker.	2.67	1.00	Mostly like me
5. I often set a goal but later choose to pursue a different one.	3.03	1.08	Somewhat like me
6. I have difficulty maintaining my focus on project that take more than a few months to complete.	3.37	1.29	Not like me at all
7. I finish whatever I begin.	2.31	0.95	Mostly like me
8. I am diligent	2.11	0.80	Mostly like me
Consistency of Interest	2.44	0.69	Mostly like me
Perseverance of Effort	1.95	0.56	Mostly like me
Overall Weighted Mean	2.75	0.42	Somewhat like me

Similarly, in a longitudinal study by Nishikawa et al. (2022), higher perseverance was associated with better baseline academic performance and increased long-term academic improvement. While students exhibit strong perseverance and diligence, the dimension of "consistency of interest" indicates the potential to develop this aspect of grit further. This supports the study of Herdian (2022) that while perseverance of effort generally remains high among students, consistency of interest appears to be a more variable factor. In online learning environments, undergraduate students demonstrated higher perseverance of effort compared to consistency of interest during the pandemic. Educational institutions could design programs to help students find and maintain a consistent interest or passion for their studies or extracurricular pursuits. Career counseling, mentorship programs, or activities focused on exploring and committing to long-term academic or career goals could help students cultivate consistent interests, enhancing their overall grit. Educational engagement, self-regulated learning, and psychological well-being positively correlate with harmonious passion (Sverdlik et al., 2021). A consistent drive also safeguards against psychological distress and academic procrastination (Peixoto et al., 2021).

3.4 Levels of General Self-efficacy among Undergraduate Students

Table 4 shows the levels of General self-efficacy among undergraduate students. Most of the statements are "moderately true" among the respondents. For instance, the first statement, "I can always manage to solve difficult problems if I try hard enough," has a mean of 3.36 and a standard deviation of 0.66, indicating "moderately true." Statement 2, "If someone opposes me, I can find the means and ways to get what I want," has a mean of 2.79 and a standard deviation of 0.72, indicating "moderately true." On the other hand, statement 6, "When I look at the story of my life, I am pleased with how things have turned out so far," garnered the highest mean of 3.41 and a standard deviation of 0.69, indicating "exactly true." The overall weighted mean is 3.10, with a standard deviation of 0.52. This indicates that "moderately true" is the equivalent response of the undergraduate students regarding their general self-efficacy.

Table 4. *Levels of general self-efficacy among undergraduate students*

Indicators	Mean	SD	Interpretation
1. I can always manage to solve difficult problems if I try hard enough.	3.36	0.66	Moderately true
2. If someone opposes me, I can find the means and ways to get what I want.	2.79	0.72	Moderately true
3. It is easy for me to stick to my aims and accomplish my goals.	3.13	0.72	Moderately true
4. I am confident that I could deal efficiently with unexpected events.	2.92	0.76	Moderately true
5. Thanks to my resourcefulness, I know how to handle unforeseen situations.	3.01	0.73	Moderately true
6. When I look at the story of my life, I am pleased with how things have turned out so far.	3.41	0.69	Exactly true
7. I can solve most problems if I invest the necessary effort.	3.04	0.81	Moderately true
8. When I am confronted with a problem, I can usually find several solutions.	3.03	0.75	Moderately true
9. If I am in trouble, I can usually think of a solution.	3.10	0.75	Moderately true
10. I can usually handle whatever comes my way.	3.17	0.83	Moderately true
Overall Weighted Mean	3.10	0.52	Moderately true

This finding suggests students can overcome challenges and achieve their goals through self-efficacy. It shows that general self-efficacy helps students to perform academically, with the indicators being answered mostly

moderately true. This is aligned with Bouih et al. (2021) who stated that general self-efficacy is a student's belief in their ability to perform actions or learn at certain levels. It can impact how people feel, think, behave, and motivate themselves. It has a significant role in motivating people to do such things, and having determination can lead to good academic performance. Educational institutions could integrate self-efficacy-building strategies into academic support programs. Lin et al. (2022) found positive associations between self-efficacy, self-regulation strategies, and academic achievement. Moreover, Asyanova et al. (2024) suggested that to improve students' self-efficacy and academic outcomes, educational institutions can implement techniques such as developing positive thinking, setting realistic goals, and enhancing self-regulation and time management skills.

3.5 Relationship between Perceived Social Support and General Self-efficacy

Table 5 shows a p-value of <0.001, meaning a significant relationship exists between perceived social support and general self-efficacy among undergraduate students. Meanwhile, the magnitude of the relationship is weak ($R=0.41$), indicating a slight tendency for both variables to increase or decrease together.

Table 5. Relationship between perceived social support and general self-efficacy

Variables	R-value	p-value	Decision	Remarks
Perceived Social Support	0.41	<0.001	Reject Ho	Significant
General Self-efficacy				

Findings revealed that the individuals perceived to have higher social support are likely to have higher levels of general self-efficacy. This supports the study of Grey et al. (2020), who found that perceived social support can be beneficial because it buffers against stress and challenges and allows individuals to believe in their ability to manage challenging tasks. This perceived social support can lead to higher self-efficacy. According to El-Sayed et al. (2024), social support can allow people to acquire skills and gain mastery experiences, which may enhance self-efficacy.

3.6 Regression Analysis Between Perceived Social Support and General Self-efficacy

Table 6 shows the prediction of perceived social support on general self-efficacy. The regression coefficient for perceived social support is 0.19. The standard error is 0.02, and the t-value for the predictor is 8.16. Furthermore, the ANOVA for the regression model yields an F-value of 66.5 with a probability value of <0.001, suggesting that perceived social support explains a significant variance in general self-efficacy among undergraduate students. The coefficient of determination obtained ($R^2=0.16$) indicates that perceived social support can predict 16% of the variance in general self-efficacy.

Table 6. Regression estimate between perceived social support and general self-efficacy

Predictor	Estimate	SE	t-value	p-value	Remarks
Intercept	2.02	0.13	15.00	<0.001	Significant
Perceived Social Support Level	0.19	0.02	8.16	<0.001	Significant

Note. Criterion = General Self-efficacy, $R^2 = 0.16$, Adjusted $R^2 = 0.16$, F-value = 66.5

The findings highlight the relevance of social networks such as family, friends, and teachers in improving students' confidence to confront challenges and achieve goals. This highlights the necessity of fostering supportive education environments to boost students' belief in their abilities. Encouragement from family, friends, and teachers can help establish and sustain self-efficacy, leading to increased engagement and performance in various tasks and activities. This substantiates recent research that emphasizes the vital role of self-efficacy in students' academic performance and well-being. Social support from teachers and peers significantly predicts student engagement, well-being, and self-efficacy (Song, 2024). Educational environments greatly influence self-efficacy development, with more open and supportive practices fostering higher levels of self-efficacy (Lin & Chekal, 2024). Moreover, fostering a supportive social environment for individuals may enhance their belief in their abilities, improving their overall well-being and performance in various tasks. Moussa (2023) revealed that self-efficacy, defined as people's judgments of their capabilities, plays a crucial role in academic achievement and behavior among students. Research has shown a strong positive correlation between students' general self-efficacy and academic performance. Furthermore, in the review of Tripathi and Singh (2024), self-efficacy significantly impacts task approach, goal striving, and accomplishment in academic domains among students in higher education.

3.7 Relationship between Grit and General Self-efficacy

Table 7 shows the relationship between grit and general self-efficacy. Moreover, the subdomains of grit, which are perseverance of effort and consistency of interest, have also been correlated with general self-efficacy. The first column shows that grit garnered a p-value of 0.76, meaning there is no significant relationship between grit and general self-efficacy among undergraduate students. On the other hand, a p-value of <0.001 was obtained from both subdomains. The magnitude and direction of the relationship between perseverance of effort and general self-efficacy were negative and weak ($R=-0.44$). This indicates that as perseverance of effort increases, general self-efficacy tends to decrease, and vice versa. Furthermore, the magnitude and direction of the relationship between consistency of interest and general self-efficacy is positive and weak ($R=0.37$). This indicates a slight tendency for consistency of interest and general self-efficacy to increase together, although the relationship between them is not strong.

Table 7. *Relationship between grit and general self-efficacy*

Variables	r-value	p-value	Decision	Remarks
Grit	0.02	0.76	Fail to Reject H_0	Not Significant
Perseverance of Effort	-0.44	<0.001	Reject H_0	Significant
Consistency of Interest	0.37	<0.001	Reject H_0	Significant

Guo et al. (2019) argued that grit must be examined at the subdomain level because combining its components could obscure their distinct contributions. According to Credé et al. (2017), the perseverance of effort reported that persistence does not always lead to positive results. The negative correlation between perseverance of effort and general self-efficacy could be that students who persistently exert effort in the face of challenges may feel frustrated or discouraged if their efforts do not lead to external success, which can decrease their sense of self-efficacy. As suggested by Rossi et al. (2020), general self-efficacy positively correlates with intrinsic motivation and negatively correlates with extrinsic motivation among adolescents. Some persist through challenges, termed "movers," while others give up, called "stoppers." Understanding these persistent behaviors and emotional responses among undergraduate students can help educators support students' long-term persistence (Wert et al., 2021). Conversely, it can be suggested that undergraduate students who maintain consistent interests over time are more likely to build expertise and confidence in those areas, contributing to higher general self-efficacy. Clark and Malecki (2019) claimed that consistency of interest can improve belief in one's abilities through mastery experiences and self-regulation. Students with high stability of interests demonstrate greater satisfaction with their educational choices and a stronger sense of control over their lives (Shilova, 2023).

3.8 Regression Estimates of Perseverance of Effort

Table 8 shows the regression analysis of perseverance of effort and general self-efficacy. The beta coefficient for perseverance of effort is -0.41. The standard error is 0.05, and the t-value is -9.11. The ANOVA for the regression model yields an F-value of 82.9 with a probability value of <0.001. The coefficient of determination ($R^2=0.20$) indicates that 20% of the variance in general self-efficacy can be predicted by perseverance of effort.

Table 8. *Regression estimates of perseverance of effort*

Predictor	Estimate	SE	t-value	p-value	Remarks
Intercept	3.90	0.09	42.41	<0.001	Significant
Perseverance of Effort	-0.41	0.05	-9.11	<0.001	Significant

Note. Criterion = General Self-efficacy, $R^2 = 0.20$, Adjusted $R^2 = 0.19$, F-value = 82.9

Furthermore, these findings may seem surprising because persistence is often crucial for success. However, it is possible that continuous effort without recognition or positive outcomes leads to frustration and decreased self-confidence. Unacknowledged effort can be exhausting, and research supports this view, showing that the absence of positive feedback can lead to burnout and reduced self-efficacy (Datu & Valdez, 2017). Moreover, these results emphasize that educators and academic systems must do more than encourage hard work. Positive reinforcement, acknowledgment of achievements, and validation of effort are vital for maintaining and amplifying students' self-efficacy. Providing timely feedback and celebrating small successes can remind students that their efforts are valued. This approach helps prevent the adverse effects of continuous, unrewarded effort and fosters motivation and confidence. This is similar to Macalisang and Bonghawan's (2024) findings, which indicate that teachers' learning reinforcement strategies elevate students' self-efficacy and academic performance. Moreover, automated

encouragement messages before exams can also increase students' self-efficacy. Integrating encouragement interventions into teaching practices can contribute to a more engaging school climate and better academic results (Keller & Szakál, 2021).

3.9 Regression Estimates of Consistency of Interest

Table 9 shows the regression analysis of the interest and general self-efficacy consistency. The beta coefficient is 0.28, while the standard error is 0.04. The t-value for the predictor is 7.44, and the F-value is 55.40 with a probability value of <0.001, suggesting that consistency of interest as a subdomain of grit can predict a significant variance in general self-efficacy among undergraduate students. The coefficient of determination ($R^2=0.14$) indicates that consistency of interest accounts for 14% of the variance in general self-efficacy.

Table 9. *Regression estimates of consistency of interest*

Predictor	Estimate	SE	t-value	p-value	Remarks
Intercept	2.41	0.10	25.0	<0.001	Significant
Consistency of Interest	0.28	0.04	7.44	<0.001	Significant

Note. Criterion = General Self-efficacy, $R^2 = 0.14$, Adjusted $R^2 = 0.138$, F-value = 55.40

This corroborates the findings of Credé et al. (2017), who discovered that sustained interests enhance self-efficacy by bolstering confidence in surmounting problems. Furthermore, Lee and Sohn (2017) explained that individuals with a high degree of consistency are more proficient in self-regulation, which is closely linked to increased self-efficacy. Therefore, cultivating consistent interests would enhance an individual's self-efficacy. Empowering students to identify and nurture consistent interests may enhance their self-efficacy and support their ability to achieve personal and academic goals. Consistency of interest significantly predicts exam attempts and study progress in online higher education (Neroni et al., 2022). Self-directed learning intervals that allow students to pursue their interests have increased interest and self-efficacy over time (Schweder & Raufelder, 2022). Individual interest plays a significant role in developing advanced self-efficacy skills, even predicting it more than proficiency in some cases (Kim, 2022).

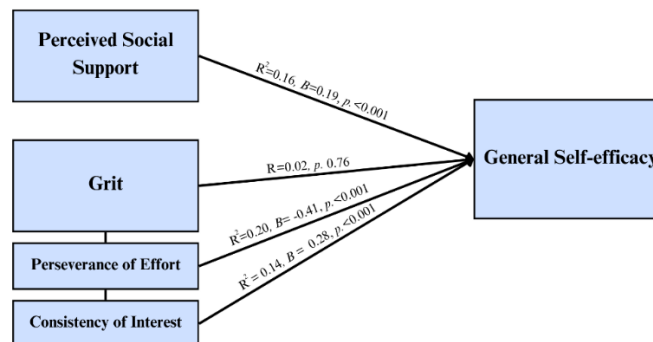


Figure 1. The multiple linear regression analysis

Figure 1 presents the multiple regression analysis between undergraduate students' perceived social support (x_1), grit (x_2), and general self-efficacy (y). This highlights the critical role of perceived social support and grit in explaining students' self-efficacy. Findings revealed that perceived social support predicts general self-efficacy. Social networks are essential in fostering students' belief in their abilities to overcome challenges (Grey et al., 2020) and gain mastery experience (El-Sayed et al., 2024). Research confirms that a supportive educational environment boosts students' self-efficacy, leading to better academic performance and well-being (Moussa, 2023; Song, 2024; Lin & Chekal, 2024). Additionally, it shows that general grit does not predict general self-efficacy. Therefore, subdomains were analyzed as suggested by (Guo et al., 2019). The perseverance of effort highlights a significant negative correlation with general self-efficacy. Although persistence is important, it can negatively affect self-efficacy (Credé et al., 2017) when not paired with recognition or positive outcomes, potentially leading to frustration and burnout (Datu & Valdez, 2017). Lastly, it shows that consistency of interest positively predicts general self-efficacy among undergraduate students. Promoting consistent interests and self-directed learning can further enrich self-efficacy, as students with better self-regulation (Lee & Sohn, 2017) and stable interests

(Schweder & Raufelder, 2022) tend to demonstrate greater satisfaction and achievement (Shilova, 2023; Neroni et al., 2022).

4.0 Conclusion

The researchers observed that general self-efficacy among undergraduate students is predicted by perceived social support and the subdomain of grit, namely the consistency of interest. However, a subdomain of grit, particularly perseverance of effort, negatively predicts general self-efficacy. Whereas grit itself does not predict general self-efficacy among undergraduate students. This study suggests that encouraging undergraduate students to maintain their perceived social support and consistency of interest can improve their academic engagement. Perceived social support is crucial for undergraduate students' well-being, as support from friends, family, and others helps improve their academic performance. It promotes health by improving students' ability to manage stress, boosting their overall well-being, and enhancing their quality of life. Perceived social support enables undergraduate students to strengthen their self-efficacy and maintain well-being in their academic pursuits. Furthermore, consistency of interest allows undergraduate students to achieve their long-term goals by maintaining their interest despite setbacks, obstacles, and failures. Consistency is crucial for achieving mastery and success, as it drives individuals to engage in deliberate practice and persevere through challenges over time. It is the determination to keep pushing forward despite the difficulties encountered in school. These findings significantly impact the lives and academic engagement of undergraduate students.

To increase their efficacy and enhance their academic success, the researchers recommend that undergraduate students embrace the support from their social networks, including family, friends, and significant others, and stay consistent in their academic interests. Additionally, the researchers recommend that school counselors initiate and develop programs that help strengthen undergraduate students' overall sense of self-efficacy, like social support and prolonged interest-building activities. Moreover, school stakeholders should recognize and provide healthy feedback on students' efforts to promote positive academic commitment. The results of this study can also help the human services field to guide future research and assist those with poor self-efficacy by leveraging perceived social support and promoting consistency of interest. Future researchers are encouraged to replicate this study across various educational levels, including elementary, secondary, and graduate learners. Furthermore, future studies may integrate qualitative research methods with quantitative analyses to enhance comprehension of the subjective experiences and mechanisms underlying these correlations. Emerging research may focus on exploring variables that influence the perseverance of efforts to gain a more comprehensive understanding of its dynamics. Thus, by taking a more holistic approach, researchers can increase their understanding of the factors influencing general self-efficacy among undergraduate students, laying the groundwork for developing interventions to improve educational outcomes.

5.0 Contributions of Authors

All the authors declare equal contributions to each section. The authors reviewed and approved the final work.

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7.0 Conflict of Interests

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Emotional Exhaustion and Job Demands-Resources as Correlates of Library Personnel's Work Performance in Higher Education Institutions

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Abstract. This study examines the relationship between emotional exhaustion, job resources, and work performance among library personnel in higher education institutions. Addressing the research gap on how these factors interact, the study aims to determine whether emotional exhaustion and job resources significantly influence work performance. Employing a descriptive-correlational research design, data were collected through census sampling, covering 207 library personnel across the Caraga Region. Validated survey instruments measured emotional exhaustion, job demands, job resources, and work performance. Statistical analyses, including Mean and Pearson's correlation, assessed relationships among the variables. Findings revealed that emotional exhaustion was moderately present but did not significantly impact work performance. Job demands and resources were moderately manifested, while work performance remained consistently high across task, contextual, and adaptive domains. Although job demands and resources significantly contributed to emotional exhaustion, they did not directly influence work performance. Therefore, it is recommended that higher education institutions focus on enhancing job resources and implementing strategies to manage emotional exhaustion and support library personnel effectively.

Keywords: Emotional exhaustion; Higher education; Job demands-resources; Library personnel and work performance.

1.0 Introduction

The rapid transformation of higher education institutions (HEIs) has significantly altered the roles and responsibilities of library personnel. Traditionally seen as custodians of printed resources, library staff now navigate digital databases, manage online research tools, and provide specialized academic support. These evolving job demands and expectations for continuous service and technological adaptation can lead to emotional exhaustion—chronic fatigue, reduced motivation, and psychological strain (Maslach & Leiter, 2016). Emotional exhaustion has been widely recognized as a key component of burnout, which may negatively impact an employee's effectiveness and overall work performance. Given the critical role of library personnel in supporting academic excellence, understanding how emotional exhaustion interacts with job-related factors and performance is essential.

The Job Demands-Resources (JD-R) model (Bakker & Demerouti, 2007) provides a valuable framework for examining the balance between workplace stressors and support mechanisms. The model suggests that high job

demands—such as workload, time pressure, and emotional labor—can lead to exhaustion. Job resources—including autonomy, social support, and professional development—serve as protective factors that enhance motivation and performance. Several studies have explored this framework in various professional settings, demonstrating that job resources can buffer the adverse effects of job demands (Tari & Schaufeli, 2015). However, research on the JD-R model within academic libraries remains scarce, particularly in examining how emotional exhaustion affects work performance in higher education settings.

Prior studies have primarily focused on faculty members and corporate employees, often overlooking non-teaching personnel such as librarians and support staff (Demerouti et al., 2001). While existing research has established a link between emotional exhaustion and decreased work performance, findings remain inconsistent. Some scholars argue that substantial job resources can counteract exhaustion's negative impact, while others suggest that persistent emotional strain inevitably reduces work efficiency (Bakker et al., 2014). These conflicting perspectives underscore the need for a more focused examination of library personnel, whose work environment is uniquely shaped by digital transformation and evolving academic demands.

Despite their integral role in higher education, library personnel often receive limited institutional attention regarding workplace stress and performance outcomes. With increasing expectations to provide digital literacy training, manage research repositories, and deliver high-quality services, understanding how job demands and resources influence emotional exhaustion and work performance is crucial. Addressing this gap can help institutions design targeted interventions that promote staff well-being and operational efficiency.

This study investigates the relationship between emotional exhaustion, job demands, and work performance among library personnel in HEIs. By analyzing whether emotional exhaustion significantly affects work performance and assessing the role of job demands and resources in this dynamic, the study seeks to contribute to the growing literature on workplace well-being in academic settings. The findings will provide valuable insights for higher education administrators and policymakers in developing strategies to enhance job resources, mitigate emotional exhaustion, and sustain high performance among library personnel.

2.0 Methodology

2.1 Research Design

This study employed a descriptive-correlational research design, which is appropriate for examining relationships between variables without manipulating them (Creswell, 2021). This design was selected to analyze how emotional exhaustion and job resources relate to work performance among HEI library personnel. Descriptive research allows for a detailed and systematic analysis of a specific population, accurately representing the phenomenon under investigation (Kim et al., 2017). The correlational analysis further enables the identification of significant associations between variables, offering insights into potential patterns and trends (Zakhidov, 2024). By utilizing this approach, the study effectively captures how emotional exhaustion and job resources influence work performance, providing a foundation for future research and institutional interventions.

2.2 Research Participants

This study targeted all library personnel working in higher education institutions (HEIs) across the Caraga Region, with a total population of 500 individuals. Using the Raosoft sample size calculator with a 5% margin of error, 95% confidence level, and 50% response distribution, the required sample size was determined to be 207 participants. A census sampling procedure was employed to ensure a representative sample. Library personnel outside the Caraga Region or not directly engaged in library functions were excluded, while no restrictions were placed on age, gender, or ethnicity to promote inclusivity. To uphold ethical standards, strict confidentiality measures were implemented, with personal identifiers removed and data securely stored for research purposes only, ensuring participants' anonymity and minimizing potential conflicts with their professional roles.

2.3 Research Instrument

The study modified and adapted existing survey questionnaires from various researchers to assess Emotional Exhaustion, Job Resources, and Work Performance. The Emotional Exhaustion scale, derived from the Maslach Burnout Inventory (Rutledge et al., 2005), consists of eight items measured on a five-point Likert scale, with a reliability score of 0.945 Cronbach's Alpha. The Job Demands-Resources questionnaire, adapted from Demerouti

et al. (2001), includes 14 items divided into job demands (7 items) and job resources (7 items), with a reliability score of 0.858 Cronbach's Alpha. The Individual Work Performance Questionnaire, based on Koopmans et al. (2014), comprises 31 items assessing task performance (10 items), contextual performance (11 items), and adaptive performance (10 items), with a reliability score of 0.949 Cronbach's Alpha. The survey utilized a five-point Likert scale ranging from 5 (always manifested/observed) to 1 (rarely manifested/observed). Expert validation and pilot testing were conducted to ensure the questionnaire's reliability and applicability to the study's respondents.

2.4 Data Gathering Procedure

All library personnel working in various libraries in the CARAGA region were included as members of the respondents for this study. However, all library personnel not from the Caraga region and who did not work in the library were excluded. There are no discriminating limitations on the age, race, or gender preferences of its participants. The researcher pledged to maintain the tightest confidentiality on any information used in the study that would clash with or jeopardize their other interests or line of work. The information gathered was kept private from the wider public. If not, the material would still be used, but names and other personally identifiable information were removed. Paper records were eventually destroyed through methods such as burning or cross-shredding that made them irreconcilable.

Respondents were free to leave the survey at any time, did not have to respond to any questions, and chose not to divulge personal information when prompted. The respondent's convenience is given priority because the refusal was voluntary, did not result in a loss of benefits, and would not end the respondent-researcher connection. The researcher thanked the participants and ensured their well-being throughout the study. The researcher did her best to choose examples that fit and enhanced the final result with her knowledge and experience. This study offers a fresh perspective on how linked elements were interpreted in connection to their digital readability.

2.5 Data Analysis

Various statistical tools were employed in this study to ensure a comprehensive and precise analysis of the research questions. The Average Weighted Mean was utilized to assess the levels of emotional exhaustion, job resources, and work performance among library personnel in higher educational institutions, providing a precise measure of central tendency. To determine the strength and direction of relationships among the variables, the Pearson Product-Moment Correlation Coefficient (r) was applied, identifying significant associations between emotional exhaustion, job resources, and work performance. Furthermore, Multiple Regression Analysis was conducted to evaluate the combined influence of emotional exhaustion and job resources on work performance, offering insights into their predictive power. These statistical techniques enabled a robust and data-driven interpretation, ensuring that the findings accurately captured the dynamics between the independent and dependent variables.

2.6 Ethical Considerations

The study was conducted only after obtaining the required compliance certificate (UMERC-2024-231) issued by the University of Mindanao Ethics Review Committee (UMERC). This strategy was adopted to ensure that the output's credibility depended on the researcher's ability to develop a coherent argument while neutrally representing data. The process of verification by the Committee ensured the research's authenticity, accuracy, and fairness, along with responsible and accountable authorship. Regarding truthfulness, fraudulent claims, especially related to authorship, were excluded altogether. It meant distinguishing between errors or inaccuracies and not misstatements of intention. The authors further showed their credibility when they tried to minimize bias while interpreting and presenting factual data to the reader. The findings from the study were meant to be kept confidential; the researcher ensured the proper anonymization of all participants. The researcher further adhered to recommendations and guidelines availed by UMERC during the entire research process.

3.0 Results and Discussion

3.1. Perceived Emotional Exhaustion of Library Personnel in HEI

Table 1 presents the data regarding the emotional exhaustion of Library Personnel in HEI

Table 1. *Level of emotional exhaustion of library personnel in HEI*

Indicators	Mean	SD	Descriptive Level
I feel emotionally drained from my work as library personnel.	3.02	1.01	Moderate
I feel used up at the end of the workday in the library.	3.26	1.03	Moderate
I feel fatigued when I get up in the morning.	3.07	1.01	Moderate
I feel pressured when I have to face another day of the job in the library.	2.71	1.01	Moderate
I feel burned out from my work in the library.	3.00	1.20	Moderate
I feel frustrated by my job as library personnel.	2.88	1.29	Moderate
I feel I'm working too hard on my job as library personnel	3.08	1.17	Moderate
Working with co-employees directly puts too much stress on me in the library.	2.78	1.22	Moderate
Overall	2.98	1.12	Moderate

The analysis of Table 1 indicates that the emotional exhaustion of library personnel in higher education institutions (HEIs) is moderate, with an overall mean score of 2.98 (SD = 1.121). The highest mean score was recorded for the statement "I feel used up at the end of the workday in the library" (3.26), while the lowest was for "I feel pressured when I have to face another day of the job in the library" (2.71). This suggests that emotional exhaustion is seldom manifested among library personnel. The moderate levels can be attributed to available job resources such as professional development opportunities, colleague support, and flexible work arrangements, which help minimize emotional exhaustion. Supporting this, previous studies by Smith et al. (2022) and Rutkowski and Saunders (2018) found that while emotional exhaustion is common, effective coping mechanisms and supportive working conditions help keep it manageable. Similarly, Taris et al. (2015) argued that emotional exhaustion is reduced when staff has professional autonomy and supportive relationships, highlighting that library personnel are less likely to experience severe burnout when they feel competent and supported.

3.2. Perceived Job Demands-Resources of Library Personnel

Table 2 depicts the motivation level of Job Demands-Resources of Library Personnel.

Table 2. *Level of job resources of library personnel*

Indicators	Mean	SD	Descriptive Level
Job Demands	3.31	0.64	Moderate
Job Resources	2.77	0.73	Moderate
Overall	3.04	0.57	Moderate

Table 2 presents the job demands and resource levels among library personnel in higher educational institutions, showing an overall mean score of 3.04 (SD = 0.575), indicating a moderate level. Job demands had the highest mean score of 3.31 (SD = 0.646), suggesting moderate and seldom manifested. In contrast, job resources had a slightly lower mean score of 2.77 (SD = 0.733), indicating that resources are seldom utilized. This finding is consistent with Neuber et al. (2022), who emphasized the importance of job resources such as flexible work schedules, advanced training, and supportive leadership in helping librarians manage job demands. Likewise, Olivar (2021) found that while library staff experience moderate job demands, such as administrative tasks and user interactions, these rarely lead to significant stress or burnout. This supports the JD-R model's view that manageable demands can be handled when adequate resources are available. Prajogo (2019) also noted that although workloads can sometimes be heavy, supportive supervisors and collaborative environments help mitigate negative impacts. However, Pulakos et al. (2000) reported that although professional development and social support exist, these resources are not always fully utilized, reducing their potential benefits. This supports the JD-R model's assumption that resource provision and appropriate usage can buffer job demands and alleviate potential adverse effects.

3.3. Work Performance among Library Personnel

Table 3 illustrates the work performance levels of librarians.

Table 3. *Level of work performance among library personnel*

Indicators	Mean	SD	Descriptive Level
Task Performance	4.29	0.48	Very High
Contextual Performance	4.46	0.45	Very High
Adaptive Performance	4.37	0.44	Very High
Overall	4.38	0.39	Very High

Table 3 presents the work performance of library personnel in higher educational institutions, with an overall mean score of 4.38 (SD = 0.399), indicating consistently high performance across all areas. Task performance (mean = 4.29), contextual performance (mean = 4.46), and adaptive performance (mean = 4.37) all exhibit very high levels of execution, suggesting that library personnel excel in their roles, adapt well to changes, and contribute positively to the organizational environment. This aligns with Saidi et al. (2019), who noted that high task performance is a hallmark of library staff, attributed to professional training and clear role understanding. Furthermore, the findings support Shamsi et al. (2021), who emphasized that library staff often engage in behaviors beyond formal job requirements, promoting a collaborative and supportive work atmosphere. As observed by Shoman et al. (2022), the strong adaptability of library personnel also resonates with the study's results, particularly in the context of technology-driven changes in library services. These findings highlight the importance of continuous professional development and organizational support in maintaining high performance. However, while the results demonstrate high work performance, future research could explore how external factors, such as institutional policies or technological advancements, influence these outcomes. Additionally, investigating the relationship between emotional exhaustion and work performance may provide deeper insights into the factors that sustain or hinder library personnel's effectiveness.

3.4. Correlation Analysis of the Variables

Table 4 presents the results concerning the relationship between motivation, leadership styles, and the work performance of librarians in the Caraga Region.

Table 4. *Correlation analysis of the variables*

Pair	Variables	Correlation Coefficient	Interpretation	p-value	Decision on Ho
IV and DV	Emotional Exhaustion and Work Performance	-0.005	Negligible Correlation	0.946	Do not Reject
IV and DV	Job Demands-Resources and Work Performance	-0.083	Negligible Correlation	0.233	Do not Reject

Table 4 presents the correlation analysis of emotional exhaustion, job resources, and work performance among library personnel in higher educational institutions. The correlation between emotional exhaustion and work performance was -0.005 ($p = 0.946$), while the correlation between job demands and resources and work performance was -0.083 ($p = 0.233$). Both correlations were deemed statistically insignificant at 0.05, indicating that neither emotional exhaustion nor job resources significantly affect work performance. This suggests that despite job demands or emotional strain, library personnel's work performance remains unaffected, potentially due to intrinsic motivation or professional commitment, as noted by Amer et al. (2022). The findings align with Herzberg's two-factor theory (1966), which distinguishes between satisfaction and dissatisfaction, suggesting that these factors do not directly impact performance. The results from this study emphasize that library personnel demonstrate resilience, not allowing environmental or emotional factors to hinder their work performance. This calls attention to personal motivation, professional dedication, and supportive work environments to maintain high performance despite job-related stressors. Future research could explore other variables or moderating factors influencing the relationship between emotional exhaustion, job resources, and work performance in different settings.

4.0 Conclusion

The findings of this study reveal that emotional exhaustion among library personnel in higher educational institutions is only occasionally manifested, suggesting that staff are generally able to manage their emotional well-being despite occasional feelings of strain. This moderate emotional exhaustion reflects a balanced work

environment where library personnel can cope with job demands without experiencing significant emotional depletion. Job demands, such as workload and mental strain, were also found to have a manageable impact on library staff. These demands do not frequently lead to burnout, likely due to the moderate availability of job resources, such as communication channels, autonomy, and appropriate compensation. However, enhancing these resources could better support library staff in effectively managing these demands.

Regarding work performance, library personnel consistently demonstrated high task, contextual, and adaptive performance levels, reflecting their strong commitment and capabilities. Staff members excelled in planning their work, collaborating with colleagues, and handling tasks with minimal supervision. Moreover, library personnel frequently exceeded their job requirements by assisting colleagues and contributing to a positive work environment. Their adaptability, crucial in a dynamic field like library and information science, enabled them to manage uncertainties and provide innovative solutions to emerging challenges effectively. Despite this, the analysis showed very weak negative correlations between emotional exhaustion, job resources, and work performance, suggesting that emotional exhaustion and job demands do not significantly impact the work performance of library personnel. These results point to the resilience of library staff in maintaining performance despite emotional strain and job demands facilitated by their coping mechanisms and job resources.

The study's findings align with key theoretical frameworks, including the Theory of Burnout, JD-R Theory, and the Theory of Performance. These frameworks suggest that while emotional exhaustion may be present, its impact on work performance is buffered by sufficient resources or personal coping strategies. Therefore, when adequate resources are available, library personnel's work performance is not directly influenced by emotional exhaustion or job demands.

These findings propose several recommendations for Philippine Higher Educational Institutions (PHEIs) to enhance library personnel's well-being and performance. First, mental health support should be prioritized by offering regular wellness programs, stress management workshops, and counseling services. This would help alleviate feelings of emotional exhaustion and improve overall job satisfaction. Improving job resources is also essential, mainly by providing modern tools, reliable technology, and continuous professional development opportunities to help staff meet the evolving demands of library users.

In addition, to support task performance, PHEIs should establish clear performance metrics, provide constructive feedback, and recognize accomplishments. Clear goal-setting and performance reviews will guide library staff toward continuous improvement. Institutions should promote a supportive work culture by offering flexible schedules, wellness resources, and peer support sessions to reduce emotional exhaustion. Addressing gaps in job resources through feedback will empower library staff to perform effectively, while regular training and updated technology will help them stay prepared for evolving challenges.

Future research could explore causal relationships between emotional exhaustion, job resources, and work performance. Additionally, studies could test interventions to reduce burnout and enhance resource utilization or expand the research to other regions and sectors to compare findings across different job contexts. By refining the understanding of these dynamics, future studies can offer valuable insights into optimizing the work environment for library personnel and other professionals in similar settings.

5.0 Contributions of Authors

Both authors contributed equally to this study. Their responsibilities encompassed writing, editing, data analysis, and questionnaire preparation. Both authors played a key role in refining the study framework. Author 1 initially drafted the manuscript, while Author 2 focused on revisions and editing. Together, they collaboratively finalized and approved the manuscript for publication.

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7.0 Conflict of Interests

The authors declare no conflicts of interest, financial or non-financial, that could have influenced the conduct or outcomes of this research.

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Impact of the 'Barkada Kontra Droga Program' on Student Awareness of Illegal Drugs

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Abstract. This study explored the effects of the BKD program in enhancing the level of awareness of senior high school students from Cambaog National High School (CNHS) about the ill effects of prohibited drugs through symposiums, school-based contests, and culminating activities. Participants were 60 students from the senior high school department of Cambaog National High School and 10 representatives from the Department of Education (DepEd), Local Government Units (LGU), Bustos Municipal Police Station (MPS), and Bustos Local Youth Development Office (LYDO). Before the program's implementation, student participants were given a pretest to assess their baseline knowledge about illegal drugs ($M=2.72$, $SD=1.41$, $N=60$). After the program's implementation, the student-respondents were asked to take a posttest and conduct culminating activities to determine the new skill sets or knowledge that transpired after the program's implementation. Results suggested that the BKD program aided in improving the student-respondent's knowledge about the ill effects of prohibited drugs as evidenced by enhanced posttest scores ($M=3.96$, $SD=0.81$, $N=60$) and very high culminating activity ratings given by the representatives from the DepEd, LGU, Bustos PNP, and Bustos LYDO ($M=3.67$, $SD=0.68$, $N=10$).

Keywords: BKD program; Prohibited drugs; Drug education and awareness.

1.0 Introduction

Teachers play a crucial role in drug education by not only imparting knowledge about the risks and consequences of substance abuse but also by integrating productive activities into the curriculum that promote healthy decision-making and personal growth. Through different wholesome activities such as sports, art-based contests, youth-to-youth visits, and the production and distribution of health education materials such as posters, brochures, slogans, videos, and jingles, teachers create an engaging environment that encourages students to reflect on their choices, develop critical thinking skills, and understand the importance of maintaining a healthy lifestyle.

On the other hand, the problem of illegal drug use among the youth has been a longstanding social issue affecting the country. According to the 2021 Young Adult Fertility and Sexuality Study (YAFS5) conducted by the University of the Philippines Population Institute (UPPI), it was identified that drinking, smoking, and using illegal drugs are the common vices prominent among the youth of today. Since the early 1970s, the prevalence of youth using illegal substances, including shabu, marijuana, inhalants (rugby, paint, and gasoline), ecstasy, and cocaine, has become a significant and serious social concern in the nation. As a result, drug education has been incorporated into the Department of Education's curriculum through the Republic Act No. 6425, also known as the "Drugs Act," which mandated that all public and private schools must integrate the adverse effects of dangerous drugs, including their legal, social, and economic ramifications, into their programs. This was supported by Republic Act No. 7624 of 1992, which required integrating drug abuse prevention and control in the

intermediate and secondary curricula. Both promulgations in Republic Acts No. 6425 and 7624 became the legal bases of the implementation of drug education, prevention, and awareness activities in the educational system, including the Department of Education (DepEd) and the Commission on Higher Education (CHED).

Furthermore, adamant in protecting learners from the adverse effects of dangerous drugs, the DepEd in coordination with Dangerous Drugs Board (DDB) implemented various school-based drug prevention programs such as the National Drug Education Program (NDEP), Preventive Drug Education Program (PDEP) Curriculum Model, Drug Abuse Resistance Education (DARE) Program, Kids Against Drugs Program, Nationwide Caravan of Youth Against Drugs, and Barkada Kontra Droga (BKD) (DDB, 2018). The BKD was conceptualized in 2004 as a response to the call of the Philippine government to conduct nationwide drug clearing operations as an all-out war campaign against drug abuse and illicit trafficking and was institutionalized on November 13, 2007, by the Dangerous Drugs Board Regulation No. 5, s. of 2007.

This study evaluated how the BKD program affected the students' awareness level from Cambaog National High School (CNHS) about the classifications, effects, violations, punishments, and alternative activities to discourage the use and re-use of illegal substances. A pretest-posttest approach was utilized to quantify the respondents' awareness level before and after the program's implementation. Additionally, a culminating activity allowed the respondents to demonstrate what they had learned after the BKD program. Aside from the student respondents, the effects of the BKD program on the students were also evaluated by the representatives from DepEd, LGU, Bustos PNP, and Bustos LYDO. As the BKD coordinator of the Municipality of Bustos, the researcher saw the importance of evaluating the program's effects on the respondents' knowledge, attitudes, and behaviors and whether the program has successfully shifted their perceptions toward drug use. This study also identified the gaps or areas of weakness of the program that need to be refined to make it more effective at promoting proper drug education among the youth.

2.0 Methodology

2.1 Research Design

The study utilized a mixed-methods research design to determine the BKD program's effectiveness in improving the student respondents' awareness of the ill effects of prohibited drugs. According to Jorge (2021), mixed-methods research integrates the elements and benefits of quantitative and qualitative research to answer all the research questions posed in this study.

2.2 Research Locale

The study was conducted at Cambaog National High School, Bustos District, and the Schools Division of Bulacan. This study's research area is a rural community school located along the General Alejo Santos Highway, Cambaog, Bustos, Bulacan, Philippines. It is a comprehensive K to 12 public national high school that caters to over a thousand students from Grades 7 to 12 as of the school year 2022 – 2023.

2.3 Research Participants

The study included 60 senior high school students from CNHS. There were 30 respondents from Grade 11, comprised of five (5) learners from each of the six (6) strands – ABM, GAS, HUMSS, STEM, TVL-HE, and TVL-ICT. There were also 30 respondents from Grade 12, consisting of five (5) learners from each of the six (6) strands – ABM, GAS, HUMSS, STEM, TVL-HE, and TVL-ICT enrolled during the School Year 2022 - 2023. Furthermore, the study also involved two (2) representatives from the DepEd, two (2) representatives from the Sangguniang Barangay, two (2) representatives from the Sangguniang Kabataan, two (2) representatives from the Bustos Municipal Police Station (MPS), and two (2) representatives from the Bustos Local Youth Development Office (LYDO) to obtain their perceptions about the efficacy of the school's BKD program.

2.4 Research Instrument

For the quantitative part of the study, a researcher-made multiple-choice pretest and posttest was utilized. The questionnaire was composed of four (4) parts: classifications of illegal drugs, effects of illegal drugs, violations and penalties governing the commission of acts related to illegal drugs, and diversional activities to prevent the use and re-use of illegal drugs. The questionnaire was validated by representatives from the DepEd, local government units (LGU), Bustos MPS, and Bustos LYDO. It was pilot-tested to assess the consistency, validity,

and reliability of the indicators contained in the instrument. Additionally, the researcher used a posttest-only assessment as a culminating activity to demonstrate what the respondents learned from the program. The researcher made a scoring rubric for the student-respondent-designed projects, presentations, performances, or products. The representatives from the DepEd, LGU, Bustos MPS, and Bustos LYDO likewise validated it.

Qualitative data was obtained from the informants through an interview. A researcher-made questionnaire comprised of two (2) open-ended questions was used to permit the 60 student informants to assert their overall experience with the BKD program. Meanwhile, three (3) open-ended questions were utilized to obtain the perception of the representatives from DepEd, LGU, Bustos MPS, and Bustos LYDO about the benefits, suggestions, and improvements they wanted to see regarding the school's BKD program.

2.5 Data Gathering Procedure

This study used specific steps to collect data. A permission letter was crafted by the researcher and addressed to Bulacan's Schools Division Superintendent (SDS) through the Senior Education Program Specialist (SEPS) for Research regarding the conduct of the study. Thereafter, the purpose of the study was explained further to the School Head of Cambaog National High School, and a formal letter was also given asking for permission to conduct this study. Consent and assent letters were obtained. Likewise, an explanation was given, and consent letters were obtained from the representatives of DepEd, LGU, Bustos MPS, and Bustos LYDO, who also functioned as participants in the study. The classic paper-pencil survey method was utilized in this study. The questionnaires were distributed to the respondents, and the necessary explanation and appropriate instructions were imparted to them, including the purpose of the study, to get their attention and encourage them to cooperate fully in answering the questionnaire. Lastly, the researcher assured the respondents that all of their responses would be kept strictly confidential and that the study's findings would only be used for academic and educational purposes.

2.6 Ethical Considerations

This research study followed ethical guidelines. Since the primary respondents were students, proper communication with their parents and class advisers was observed. Consent letters were obtained from the respondents' parents or guardians, and assent letters were also secured from the student-respondents. Voluntary participation, confidentiality, and safety were likewise observed throughout this study.

3.0 Results and Discussion

Tables 1 to 4 compare the level of awareness of senior high student-respondents regarding classifications, effects, violations and penalties, and diversional activities related to illegal drugs before and after implementing the BKD program.

Table 1. *Difference between diagnostic test results and post-test results in terms of illegal drugs classification*

Pretest Results			Posttest Results			t	df	P
Mean	SD	N	Mean	SD	N			
2.37	1.40	60	3.95	0.85	60	-11.38	59	0.000

The results ($M = 2.37$, $SD = 1.40$, $N = 60$) suggest that the respondents' test scores were low before implementing the BKD program. The results ($M = 3.95$, $SD = 0.85$, $N = 60$) suggest that the respondents' test scores were high after implementing the BKD program. As presented in the table, it was found that there is a significant difference between the two tests: $t(59) = -11.38$, $p < 0.001$.

Table 2. *Difference between diagnostic test results and post-test results in terms of harmful effects of illegal drugs*

Pretest Results			Posttest Results			t	df	P
Mean	SD	N	Mean	SD	N			
1.90	1.19	60	3.63	0.92	60	-11.85	59	0.000

The results ($M = 1.90$, $SD = 1.19$, $N = 60$) suggest that the respondents' test scores were low before implementing the BKD program. The results ($M = 3.63$, $SD = 0.92$, $N = 60$) suggest that the respondents' test scores were moderate after implementing the BKD program. As shown in the table, it was found that there is a significant difference between the two tests: $t(59) = -11.85$, $p < 0.001$.

Table 3. *Difference between diagnostic test results and post-test results in terms of laws and penalties governing the commission of acts related to illegal drugs*

Pretest Results			Posttest Results			t	df	P
Mean	SD	N	Mean	SD	N			
2.63	0.97	60	3.63	0.85	60	-6.27	59	0.000

The results ($M = 2.63$, $SD = 0.97$, $N = 60$) suggest that the respondents' test scores were low before implementing the BKD program. The results ($M = 3.63$, $SD = 0.85$, $N = 60$) suggest that the respondents' test scores were moderate after implementing the BKD program. As depicted in the table, it was found that there is a significant difference between the two tests: $t(59) = -6.27$, $p < 0.001$.

Table 4. *Difference between diagnostic test results and post-test results in terms of diversional activities to prevent the use or reuse of illegal drugs*

Pretest Results			Posttest Results			t	df	P
Mean	SD	N	Mean	SD	N			
3.97	1.35	60	4.62	0.61	60	-5.38	59	0.000

The results ($M = 3.97$, $SD = 1.35$, $N = 60$) suggest that the respondents' test scores were high before implementing the BKD program. The results ($M = 4.62$, $SD = 0.61$, $N = 60$) suggest that the respondents' test scores were high after implementing the BKD program. As showcased in the table, it was found that there is a significant difference between the two tests: $t(59) = -5.38$, $p < 0.001$.

The study's findings are consistent with those of Rozubi et al. (2023), which displayed that knowledge and awareness as measures of the efficacy of drug prevention programs among school-age children have high percentages, with percentage values of 78.0% and 93.4%, respectively. This is further supported by the study of Miranda and Balsamo (2019), which showed that the BKD program was able to disseminate awareness among the students about the risks and dangers of taking cigarettes, alcohol, and other kinds of illegal drugs.

For the qualitative component of the study, the respondents were asked to expound on their overall experience with the BKD program. The key themes that emerged following data analysis were awareness of the classification of illegal drugs, understanding the harmful effects of illegal drugs, familiarity with the laws governing the commission of acts related to illegal drugs, and recognition of diversional activities to prevent the use and/or re-use of illegal drugs. All the themes are interconnected; from analyzing the data, it emerged that the BKD program improves the overall knowledge and awareness of the student respondents about illegal drugs.

Table 5. *Themes and emerging codes of the respondent's learning experience with the BKD Program*

Themes	Emerging Codes
Awareness of the Classification of Illegal Drugs	Different types of illegal drugs are commonly abused in the Philippines, such as marijuana, cocaine, heroin, and ecstasy. Drugs can be labeled as illegal, prohibited, legal, and prescribed
Understanding the Harmful Effects of Illegal Drugs	Illegal drugs can affect the physical, emotional, social, and mental well-being of individuals Illegal drug use negatively affects not only the individuals but also the family, school, and community at large. Drug users are not limited to adults but are now becoming prominent among the youth
Familiarity with the Laws Governing the Commission of Acts Related to Illegal Drugs	Violation of Republic Act No. 6425 and 9165 leads to monetary penalty and years of imprisonment The confirmatory test is conducted for suspected illegal drug users before the penalty Several agencies such as PDEA, DDB, and the national government at extensive work collaboratively to implement programs against illegal drugs
Recognition of Diversional Activities to Prevent Use and/or Re-use of Illegal Drugs	Engaging in productive activities such as exercise, meditation, dancing, singing, and sports can prevent illegal drug use The correct information about illegal drugs is crucial to the prevention of use and abuse Peer pressure is the leading cause of illegal drug use BKD School-based activities enhanced my knowledge about illegal drugs and my skills and love for art Self-control and will is the most important factor in drug prevention

In the study of Hiblawan et al. (2019), it was determined that the conduct of symposiums on issues regarding drug use, seminars/orientation on the effects of drug use, and religious activities such as crusades and youth camps are the significant activities that significantly boosted their knowledge and brought a satisfying learning

experience from the program. Other activities considered to be significant by the respondents are workshop on actual situation regarding the prevention of drug use, outreach programs and fellowships, and boy scout/girl scout clubs.

For the culminating part of the study, the external validators were asked to rate the activity, performance, and output demonstrated by the student respondents after implementing the BKD program (see Table 6). Performance-based activities in drug education refer to engaging students in hands-on, interactive, and often creative methods such as role-playing, skits, simulations, and other physical activities that encourage active participation. A well-crafted drug education program incorporates interactive learning and participatory rather than passive teaching approaches. This provides opportunities for learners to interact with one another through group work and collaborative learning and facilitates opportunities for discussion and reflection (Mentor as cited in Darcy, 2020). However, according to the study conducted by Reyes (2020), physical activities to promote drug awareness and education only contribute to the learners' holistic development to a moderate extent. This suggests that schools and instructors still need to strengthen and enhance training and activities related to drug awareness and education for students.

Table 6. Mean and standard deviation interpretation for respondents' culminating activity scores

Component	Inventory Score			
	N	M	SD	Interpretation
Focus and Content	10	3.70	0.67	Very High
Rigor and Relevance	10	3.80	0.63	Very High
Presentation	10	3.60	0.70	Very High
Originality and Artistry	10	3.50	0.71	Very High
Aesthetics	10	3.70	0.67	Very High
Impact	10	3.70	0.67	Very High

Tables 7 to 9 address the perceptions of the representatives from DepEd, LGU, Bustos PNP, and Bustos LYDO about the benefits and improvements they would like to see regarding the schools' BKD program, as well as their comments and suggestions to further strengthen the program's implementation.

Table 7. Themes and emerging codes of the representatives' perceived benefits of the BKD program

Themes	Emerging Codes
Drug Awareness	Awareness regarding illegal drugs, such as the types, side effects, and laws related to the commission of crimes related to it Students become aware of the different substance abuse and its effects on the person BKD program allowed the students to have fun while learning more about illegal drugs and their effects The BKD program enlightened our learners on the danger and disastrous effects of drug abuse Through specific school activities such as symposiums, the conduct of research, and culminating activities, learners were able to grasp preventive education and the essence of a drug-free lifestyle
Student Participation	Awareness of the ways to take part in the government's campaign against illegal drugs To develop a new generation of young leaders with a strong sense of civic responsibility and commitment.
Coping Strategies	BKD program assists students in making healthy and safe choices, identifying risky situations, and developing strategies to prepare them for challenging situations BKD program focuses on prevention strategies, equipping students with life skills and serving as positive models by empowering students to say no to drugs Empower the individual to be the catalyst within his peer group in advocating a healthy and drug-free lifestyle Direct students to purposeful and meaningful activities
Support Group	CNHS learners found a new family, a peer group that provides support, promotes awareness, and leads them away from drug abuse and other related concerns

The key themes that emerged following data analysis were enhanced drug awareness, the reiteration of students' roles in drug abuse prevention, the provision of coping strategies to resist drug use, and the establishment of support groups toward a drug-free community. Participants will vastly benefit from a drug education program if it addresses the development of personal and social skills, improvement of decision-making skills, and advancement of resistance skills to aid them in navigating and managing adolescence-induced conflicts and pressures. Additionally, the participants will likely benefit from the program if it puts high value on developing positive relationships among them and relevant stakeholders such as parents, guardians, teachers, youth workers, and community representatives (Darcy, 2020).

Table 8. *Themes and emerging codes of the representatives' recommended improvement for the BKD program*

Themes	Emerging Codes
Community Engagement	It would be better if the whole community were involved where different youth organizations engage in various activities that aim to spread awareness about drugs Collaboration with parents and guardians by involving them or by engaging their families in the program BKD program would be more improved if the community, LGU officials, and other stakeholders were more involved in the conduct of school programs and activities relative to drug awareness campaigns and advocacy The presence and visibility of stakeholders would strengthen school-community partnership in achieving the program goals and objectives
Enhanced School Engagement	Schools must engage students in BKD programs to help them make healthy and safe choices Involve junior high school students. Encourage students to join the program
Need and Priority Assessment	Always plan the activities to be done. Adapt to the needs of the school and its respondents - who are the students Be open to brainstorming, comments, and suggestions Focus on the high-risk groups
Inter and/or Multidisciplinary Integration	It should have an assessment from the teacher and student
Testimony from Drug Users	Following the Data Privacy Act, integrate some real cases of substance abuse victims - how he/she became a victim, its effects on his/her life, and how he/she overcame it

The key themes that emerged following data analysis were enhancing community engagement, strengthening school engagement, conducting need and priority assessment, utilizing inter and/or multidisciplinary integration to learning areas, and utilizing true stories or testimony from drug users.

Table 9. *Themes and emerging codes of the representatives' suggestions to enhance the implementation of the BKD program*

Themes	Emerging Codes
Community Involvement	BKD program should strive to include the whole community and seek active participation from youth organizations
Added Activities	Add more activities under the program, such as drawing contests, singing contests, creative writing contests, etc. Implement other activities they have not tried implementing before, such as sports To have more programs and encourage the students to join the program
Students Behavior	Improve the discipline of the students
Program Sustainability	Create opportunities for program alumni to stay connected because alumni can serve as mentors, share their experiences, and inspire current students to make positive choices The BKD program should be implemented yearly

The key themes that emerged following data analysis were community involvement, added activities, student behavior, and program sustainability. All the themes are interconnected. From analyzing the data, it emerged that the BKD program was beneficial to the student clients. However, improvements must still be made to further enhance the implementation of the program to reach the target outcome of providing optimal drug education and awareness among the students.

4.0 Conclusion

The results indicated that the level of awareness of the senior high school students about illegal drugs before the implementation of the BKD program was Moderate, as evidenced by an overall mean of 2.72 in their pretest scores. After the implementation of the BKD program, a posttest was administered, and it was revealed that the level of awareness of the student respondents improved to 3.96, which was verbally interpreted as high. When compared, there is a significant difference between the pretest and post-test scores of the student respondents, as evidenced by a p-value of <0.001. It denoted a vast improvement in the student's level of awareness after completing the BKD program. In addition, The degree of awareness of the senior high school students about illegal drugs through the demonstrated performance/activity/output was Very High, as evidenced by an overall mean of 3.67 in their culminating activity scores. Lastly, enhanced drug awareness, the reiteration of students' roles in drug abuse prevention, the provision of coping strategies to resist drug use, and the establishment of support groups toward a drug-free community were the common themes perceived by the representative from DepEd, LGU, Bustos MPPS, and Bustos LYDO to be the benefits derived by the students from the BKD program.

5.0 Contributions of Author

The author conceptualized the research idea, designed the methodology, collected data, performed the statistical analysis, Led the data analysis and interpretation of results, and made all the revisions to the manuscript.

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7.0 Conflict of Interests

The author declares no conflicts of interest about the publication of this paper.

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Food Safety Knowledge, Attitudes, and Practices of School Canteen Food Handlers in the District of Maria, Siquijor, Philippines

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Abstract. Food safety is a vital public health concern impacting communities around the globe. It encompasses the management of various biological, chemical, and physical hazards that can compromise food safety and lead to adverse health outcomes. Undoubtedly, ensuring food safety in school canteens is crucial, as it directly influences the health and well-being of students. This study explored the knowledge, attitudes, and practices of the 43 school canteen food vendors regarding food safety in the District of Maria, Siquijor. The researcher used a descriptive-correlational research method and a validated questionnaire to collect data. The statistical tools used in the study were weighted mean, multiple regression analysis, and Spearman rank correlation Coefficient. This motivated the researcher to study the knowledge, attitudes, and practices of food handlers in school cafeterias, as they are essential in ensuring the preparation and serving of safe food to students, teachers, and other patrons. The results revealed that the school canteen vendors' knowledge and practices in food handling and safety in terms of food packaging, food preparation, and food service process is "very high." Furthermore, the data indicated that the school canteen vendors have a favorable attitude toward food packaging, food preparation, and food service norms. Additionally, the findings revealed a significant relationship between the vendors' knowledge and their attitudes regarding food packaging, preparation, and service processes. The study also found a significant relationship between the school canteen vendors' knowledge and their practices, as well as between attitudes and practices in food preparation. The findings further discovered that school canteen vendors' profiles and KAP on food handling and safety are unrelated. Although the study revealed high levels of reported knowledge, favorable attitudes, and substantial compliance with food safety practices, the actual behaviors of food handlers observed may not align with the DepEd guidelines. This discrepancy indicates that the respondents might have overestimated their adherence to the established policies, highlighting the need for continuous training and supervision by teachers responsible for school canteens.

Keywords: Food packaging; Food preparation; Food safety; Food service; School canteen vendors.

1.0 Introduction

Food safety is a critical public health issue affecting populations worldwide. Ensuring food safety for consumption requires a complex interaction of processes, regulations, and technologies designed to prevent food contamination and food poisoning. Food safety also includes the management of various biological, chemical, and physical

hazards that can contaminate the food and cause adverse health effects. In the Philippines, there is little information stating that canteen or food providers follow specific rules about the safety of food within school canteens, which is of prime importance since it directly affects the health and well-being of students. In this regard, DepEd Order No. 8, s. (2007), also called the “Revised Implementing Guidelines on the Operation and Management of School Canteens in Public Elementary and Secondary Schools,” has strictly implemented food safety standards that stringently require school canteens to have access to potable water, hygienic practices, hand washing facilities, clean and safe food storage, and a pest-free environment. Included in the guidelines are also detailed procedures for running and overseeing school canteens, with an emphasis on maintaining standards of cleanliness, responsibility, and food safety.

Additionally, it is a prime requirement that canteens secure several permits and clearances from municipal offices and health authorities in the area. These permits must be displayed as valid for the duration of the school year. Also, food safety standards are emphasized, including having access to drinkable water, keeping areas clean, and using hygienic procedures while handling food. Employees must follow hygiene regulations and strictly wear appropriate clothing and identification. By following these rules, school canteens will be held to high standards of operation, hygiene, and accountability, protecting the health and safety of staff and children.

Additionally, a healthy campus is highly dependent on the support and engagement of school administrators in implementing food safety policies and training for school canteen employees. Each school staff member must ensure that food is available in all cafeterias and that handlers know and know the importance of food safety. They must also practice proper food handling to prevent food poisoning caused by certain bacteria or other harmful foodborne pathogens. While previous research assessed knowledge, attitudes, and practices of food handlers in schools, such as those studies conducted by da Vitória et al. (2021), Ahmed et al. (2021), and Al-Kandar et al. (2019), these studies only investigated the relationship between knowledge, attitudes, and practices of food handlers. These investigations did not correlate school canteen vendors’ knowledge of food safety with a) their attitude towards food safety and b) their practices in food safety. They also failed to establish the connection between the vendors’ attitude and their practices and the level of their knowledge of food safety standards and their profile. There is a necessity for enhanced monitoring and surveillance systems in school cafeterias to guarantee adherence to food safety standards, as the existing measures are frequently inadequate. This prompted the researcher to study food handlers’ knowledge, attitudes, and practices in school cafeterias. They play a key role in preparing and serving safe food to students, teachers, and other customers. Schools are mandated by law to follow food safety regulations, guaranteeing food is prepared, stored, and served safely. Adhering to these regulations is crucial for ensuring accountability and protecting the health of both students and staff.

2.0 Methodology

2.1 Research Design

This is a descriptive-correlational method of research. The study is descriptive because it describes the food handlers’ knowledge, attitudes, and practices on food safety. It is also correlational because the food handlers’ profile was correlated to their understanding, attitude, and practices (KAP).

2.2 Research Locale

The study was conducted in six (6) public elementary schools in Maria District, one (1) public secondary school, and one (1) integrated school. The public elementary schools included in the study are the following: Bogo Elementary School, situated in Bogo, Maria, Siquijor; Candaping Elementary School in Candaping B, Maria, Siquijor; Cantaroc B Elementary School located in Barangay Cantaroc B, Maria, Siquijor; Logucan Elementary School in Barangay Logucan, Maria, Siquijor; Lico-an Elementary School in Barangay Lico-an, Maria, Siquijor; Pisong A Elementary School located in Barangay Pisong A, Maria, Siquijor; and Minalulan Elementary School in Barangay Minalulan, Maria Siquijor.

Two public secondary schools in the same municipality were also involved in the study: Maria Integrated School (formerly Maria Central School), an integrated school located in Poblacion Norte, Maria, Siquijor, and Candaping National High School, the only national high school located in Barangay Candaping B, Maria, Siquijor.

2.3 Research Participants

The respondents of this study were the 43 school canteen vendors of the selected schools in the Maria District of Siquijor. Non-teaching or teaching personnel are not part of this study. The respondents were selected using the systematic sampling technique, which involved reaching out to every school on the list, as well as all of the canteen vendors who were able to respond to the questionnaire. Out of the 48 total population, only 43 answered and returned the questionnaire.

2.4 Research Instrument

The questionnaire consists of four parts. The first part includes the disclosure statement, while the second, third, and fourth parts assess the respondents' knowledge, attitudes, and practices related to food safety. Three experts in the field inspected the questionnaire to ensure content validity and check if the items aligned with the study's specified problems. A dry run was also conducted to ensure the items' reliability and verify that the respondents understood the questions.

2.5 Data Gathering Procedure

The researcher ensured all recommendations and corrections from the panel members were incorporated into the study. After the design hearing, the researcher incorporated all the panel's suggestions and recommendations. Approval from the dean of the Foundation University Graduate School was then obtained. After that, a letter requesting permission to conduct the study was delivered to the Schools Division superintendent of the Division of Siquijor. The signed and approved request was given to the principals of the enumerated schools. The researcher explained to the respondents the goal and significance of the study during distribution. Following the respondents' completion of the questionnaires, the forms were collected. The results were tallied using MS Excel and Megastat software and then analyzed and interpreted.

2.6 Data Analysis Procedure

The researcher employed several data analysis tools, including percentages, to illustrate the relationship of a part to a whole. This was mainly utilized in presenting the school canteen food handlers' knowledge, attitudes, and practices (KAP). Throughout the analysis, the researcher used the results gathered from the respondents to describe the KAP of the school canteen food handlers.

2.7 Ethical Considerations

The researcher stringently followed the ethical protocols stipulated by the Ethics Committee of the Foundation University Research Office and obtained ethical approval from the committee prior to conducting the study. Throughout the study, the researcher observed all the necessary ethical considerations to ensure that the dignity and well-being of the school canteen vendors were protected at all times. The research data collected from the study was treated with the utmost confidentiality. The researcher also gave participants the option to remain anonymous or choose to be identified.

3.0 Results and Discussion

3.1 Knowledge of School Canteen Vendors about Food Handling Practices

In terms of Food Packaging

Table 1 presents that the level of school canteen vendors' knowledge of food handling practices regarding food packaging is "Very High," as evidenced by its composite mean of 4.81. The results implied that the vendors consider their customers' welfare by ensuring that the food served to their clients is adequately packaged and free from contaminants such as bacteria and other microorganisms. According to Putri et al. (2018), knowledge of food handling practices is crucial for ensuring food safety, preventing foodborne illnesses, and maintaining food quality on how one understands the food packaging process.

As reflected in the table, the vendors strongly agree that they possess "very high" knowledge of packaging food and use gloves to handle raw foods to reduce the risk of food contamination ($\bar{wx} = 4.86$). The study's findings are congruent with those obtained by Akabanda et al. (2017), which revealed that knowledge of food safety procedures, such as wearing gloves during food preparation, prevents the risk of foodborne diseases.

Table 1. *Level of Knowledge of School Canteen Vendors about Food Handling Practices in terms of Food Packaging (n = 43)*

<i>In packaging food...</i>	w$\bar{x}$	VD	LoK
1. I use gloves for raw foods to reduce the risk of food contamination.	4.86	SA	VH
2. I use clean, undamaged, food-safe packaging containers.	4.81	SA	VH
3. I properly sealed the food in airtight containers to keep the food free from contaminants.	4.81	SA	VH
4. I use paper cups and biodegradable boxes in packaging food	4.81	SA	VH
5. I consider using a food-safe inner liner if there's a risk of chemicals leaching into food.	4.77	SA	VH
Composite	4.81	SA	VH

Note: 4.21 – 5.00 (Very High, VH), 3.41 – 4.20 (High, H), 2.61 – 3.40 (Moderate, M), 1.81 – 2.60 (Low, L), 1.00 – 1.80 (Very Low, VL)

Furthermore, the data also show that the extent of the vendors' knowledge of food packaging is "very high" (VH), particularly in the following indicators: a) use of undamaged food containers (4.77); b) sealing food in airtight containers (4.81); c) use of paper cups and biodegradable boxes in packaging food (4.81); and d) use of inner liners in food packaging (4.81). These results are signified by the weighted means ranging from 4.77 to 4.81, which is "very high" since the vendors practiced and knew about proper food packaging in their respective schools.

Food handlers in schools play a crucial role in safeguarding students' and customers' safety by adhering to proper food packaging standards. Plastics, glass, and fiber should not be used to package food items for reasons of student safety, product quality, and environmental effects. Deng et al. (2022) stated that using plastics, glass, and fiber in packaging is crucial due to its negative environmental effects, impact on product quality, and consumer safety.

In terms of Food Preparation

Table 2 shows that the school canteen vendors' knowledge about food handling practices in terms of food preparation is "very high," as seen in its composite weighted mean of 4.86. It is evident from the data that the school canteen vendors exhibit very high knowledge of the following: a) making sure that raw and cooked food must not be directly in contact to avoid contamination; b) food must be cooked within the recommended internal temperature; c) all kitchen utensils must be cleaned; d) cooking food ingredients following the required cooking time; and e) serving the food hot. These indicators received weighted means ranging from 4.84 to 4.88. This finding suggests that food handlers can guarantee their food is safe and free from hazardous germs and pathogens that might cause foodborne diseases. It also means that the vendors adhere to the recommended internal cooking temperatures. Zairinayati (2022) emphasized that food handlers should promptly refrigerate or freeze perishable items and use insulated containers for hot food transportation to maintain safe temperatures.

Table 2. *Level of Knowledge of School Canteen Vendors about Food Handling Practices in terms of Food Preparation (n = 43)*

<i>In preparing the food...</i>	w$\bar{x}$	VD	LoK
1. I ensure that direct contact between raw and cooked food is avoided.	4.88	SA	VH
2. I cook the food to the recommended minimum internal temperature needed.	4.86	SA	VH
3. I follow the required time in cooking different ingredients.	4.84	SA	VH
4. I know it is not necessary to serve the food hot.	4.84	SA	VH
5. I see to it that all kitchen surfaces are meticulously cleaned.	4.86	SA	VH
Composite	4.86	SA	VH

The table also shows that the school canteen vendors' knowledge is "very high," especially in terms of following the required time for cooking different ingredients ($w\bar{x} = 4.86$). This finding implies that the vendors were instructed on food safety procedures, including how crucial it is to cook products for the right length to eradicate dangerous bacteria and pathogens. Furthermore, organizational rules stress the value of food safety in canteen operations or regulatory requirements to guarantee adherence to food safety regulations.

In terms of the Food Service Process

Table 3 shows that the school canteen vendors' knowledge of food handling regarding the food service process is "very high," with a composite weighted mean of 4.76. Food handlers have "very high" knowledge of the food service process, especially in considering safe containers for the students ($w\bar{x} = 4.81$). The results suggest that the school canteen vendors completely recognize that their customers' safety is their utmost priority. Thus, they have to observe proper food service processes.

Food handlers should be highly regarded for adhering to operating procedures for food handling and personal hygiene because both practices play a significant role in maintaining food safety. The result parallels the study of

Putri et al. (2018), which emphasized that school canteen vendors must prioritize following standard operating procedures for personal hygiene and for holding food, along with proper gloves usage when serving food.

Table 3. *Level of Knowledge of School Canteen Vendors about Food Handling Practices in terms of Food Service Process (n = 43)*

<i>In the food serving process...</i>	w$\bar{x}$	VD	LoK
1. I consider containers that are safe and can give health protection to the students.	4.81	SA	VH
2. I follow standard operating procedures for personal hygiene and food holding, as well as proper glove use when serving food.	4.79	SA	VH
3. I use clean, sanitized utensils and cutting boards when preparing food.	4.77	SA	VH
4. I wash, rinse, and sanitize can openers and tops of cans before opening.	4.74	SA	VH
5. I consider containers that are safe and can give health protection to the students.	4.72	SA	VH
6. I make sure that I wash my hands before and after serving the food to our customers.	4.70	SA	VH
Composite	4.76	SA	VH

3.2 Attitude of School Canteen Vendors concerning Food Handling Practices

In terms of Food Packaging

Table 4 shows that the school canteen vendors' attitude towards food handling regarding food packaging is "very positive" with a composite weighted mean of ($w\bar{x} = 4.69$). The results show that the school canteen vendors consider secure and tamper-proof containers to prevent food contamination and ensure that the packaging has good visual appeal, as evidenced by its composite weighted mean of 4.70. This finding implies that the vendors showed very positive attitudes toward these indicators. Likewise, Liu et al. (2021) asserted that tamper-evident packaging prevents food tampering, ensures the same condition as packed, and prevents contamination, thus lessening the chances of food spoilage.

Table 4. *Level of Attitude of School Canteen Vendors about Food Handling Practices in terms of Food Packaging (n = 43)*

<i>In packaging food...</i>	w$\bar{x}$	VD	LoA
1. I use secure and tamper-proof packaging to prevent contamination and ensure that the food reaches the students in the same condition as when it was packed.	4.70	SA	VP
2. I pay attention to the visual appeal of the packaging, making it inviting and appetizing for students.	4.70	SA	VP
3. To ensure safety, I protect the food against harmful bacteria and molds by using food-safe packaging materials.	4.67	SA	VP
4. I ensure that packaging helps retain the freshness of food items or keeps them warm to maintain the quality of the meals.	4.67	SA	VP
5. I consistently use gloves and tongs to handle nonpacked food.	4.65	SA	VP
Composite	4.69	SA	VP

Note: 4.21 – 5.00 (Very Positive, VP), 3.41 – 4.20 (Positive, P), 2.61 – 3.40 (Moderate, M), 1.81 – 2.60 (Negative, N), 1.00 – 1.80 (Very Negative, VN)

Additionally, the food handlers also display very positive attitudes towards the remaining indicators as they always make sure to use food-safe packaging materials to ensure food safety, maintain the quality of the meals by properly packaging them to warrant freshness of the food items, and consistently use gloves and tongs in handling nonpacked foods. Indeed, school canteen vendors must use gloves while handling unpackaged food to ensure food safety and cleanliness. Using gloves and tongs can safeguard students' health by preventing cross-contamination and the growth of bacteria and molds. As Sudarshan et al. (2018) emphasized, food handlers must use gloves and observe proper hand washing during food preparation to guarantee safe food packaging practices.

In terms of Food Preparation

Table 5 reflects that the level of school canteen vendors' attitude towards food handling in terms of food preparation is "very positive," with a composite weighted mean of 4.73. Mainly, food handlers have been "very positive" in prioritizing using fresh and high-quality ingredients so that students can consume highly nutritious food. They can guarantee that the meals they provide students are nourishing but also tasty and enticing by concentrating on using fresh ingredients. Forde and Graaf (2022) emphasized that school canteen vendors can improve the overall taste and appeal of their meals while also adding more nutritional value by using fresh and high-quality ingredients. They also posited that school canteen vendors may ensure that students eat a balanced and healthy diet while improving the overall taste and appeal of meals.

Table 5. *Level of Attitude of School Canteen Vendors about Food Handling Practices in terms of Food Preparation (n = 43)*

<i>In preparing the food...</i>	w$\bar{x}$	VD	LoA
1. I prioritize the use of fresh, high-quality ingredients, which contribute to the nutritional value of the meals and also enhance their overall taste and appeal.	4.74	SA	VP
2. I ensure that I use tongs, spatula, and tissue in handling food	4.74	SA	VP
3. I consider the food demands needed for the students to support nutritional balance.	4.72	SA	VP
4. I consider different dietary preferences and restrictions when planning the menu, which provides students with choices and helps ensure they receive the nutrients they need.	4.72	SA	VP
5. I use separate utensils, chopping boards, and other equipment for raw and ready-to-eat foods to avoid cross-contamination	4.70	SA	VP
Composite	4.73	SA	VP

The data further reveal that school canteen vendors hold “very positive” attitudes to the following indicators: a) they use tongs, spatula, and napkins when handling food; b) students’ nutritional balance in preparing food is taken into account; c) ensure that students can receive the required nutrients they need by considering different dietary preferences; and d) cross-contamination is prevented by using separate utensils for raw and ready-to-eat food. All these have weighted means ranging from 4.70 to 4.74. This finding signifies that school canteen vendors demonstrate very positive attitudes in terms of the way they prepare the food as they highly look into their customers’ well-being and consider their dietary needs and preferences when creating the menu.

Shukri et al. (2022) concluded that food handlers' attitudes impact food safety, food quality, and how they handle and prepare food. They added that the positive attitude of canteen food handlers guided them to strong adherence to cleanliness practices, appropriate food handling procedures, and attention to food safety protocols during the preparation phase. On the other hand, Hema et al. (2022) also emphasized that school canteen vendors should promote healthier eating habits among students and offer affordable, nutritious food options in school canteens. Therefore, the vendors need to be aware of the foods being prepared in school to ensure students’ safety and ensure they can eat healthy and nutritious foods.

In terms of the Food Service Process

Table 6 discloses that the school canteen vendors’ attitude towards food handling regarding the food service process is “very positive,” as reflected in its composite weighted mean of 4.78. Mainly, food handlers have a “very positive” attitude towards ensuring that the food in stock is good to serve from morning to afternoon and always wear aprons to prevent food contaminants from getting into the food, with a composite weighted mean of 4.79. The results indicate that the food vendors are optimistic about ensuring food is stored correctly to prevent spoilage and foodborne illnesses.

Table 6. *Level of Attitude of School Canteen Vendors about Food Handling Practices in terms of Food Service Process (n = 43)*

<i>In the food serving process...</i>	w$\bar{x}$	VD	LoA
1. I always ensure that the food in the canteen is good to serve from morning to afternoon.	4.79	SA	VP
2. I always use apron before serving food to help prevent contaminants from getting into the food.	4.79	SA	VP
3. I always consider updating the menu in real-time from Mondays to Fridays.	4.77	SA	VP
4. I always place cooked food in a clean dish for serving.	4.77	SA	VP
5. I always use separate, clean serving spoons for each kind of food.	4.74	SA	VP
Composite	4.78	SA	VP

Shukri et al. (2022) emphasize that food handlers' attitudes significantly influence food safety, affecting proper handling, preparation, storage, and refrigeration processes and requiring careful consideration in serving food in the canteen. Hussein (2016) also stressed that food handlers’ positive attitudes will lead to a sustainable, healthy food safety culture with responsible team members who will consider proper food service protocols.

3.3 Practices of School Canteen Vendors Concerning Food Handling Norms

In terms of Food Packaging

Table 7 elucidates that the extent of school canteen vendors’ practice of food handling norms in terms of food packaging is “very high,” as shown in the composite weighted mean of 4.93. Explicitly, school canteen vendors practice to a “very high” extent the following indicators: a) using approved packaging materials that seal the food package; b) sealing packages securely to prevent contamination; and c) ensuring that all the needed materials are set before the start of food packaging. These findings are signified by the weighted means ranging from 4.93 to

4.95. The results suggest that the school canteen vendors follow proper packaging procedures to maintain the food quality they serve.

Table 7. Extent of Practices of School Canteen Vendors about Food Handling Norms in terms of Food Packaging (n = 43)

<i>In packaging food...</i>	w$\bar{x}$	VD	EoP
1. I use approved packaging materials that will securely seal the food package	4.95	A	VH
2. I seal packages securely to prevent contamination and tampering.	4.95	A	VH
3. I ensure that all my needs are addressed before packing to avoid exposing the food to microbes.	4.93	A	VH
4. I ensure that handwashing is done using a detergent or disinfectant before handling food items.	4.91	A	VH
5. I clean all surfaces and utensils used for packaging are clean and sanitized.	4.88	A	VH
Composite	4.93	A	VH

Note: 4.21 – 5.00 (Very High, VH), 3.41 – 4.20 (High, H), 2.61 – 3.40 (Moderate, M), 1.81 – 2.60 (Low, L), 1.00 – 1.80 (Very Low, VL)

Indeed, Letuka et al. (2021) stated that food preparation and packaging are significant factors in preventing food from becoming contaminated and safeguarding consumers' safety. School canteen vendors should select packaging materials certified for food use to guarantee food safety and quality. As emphasized by Cheng et al. (2022), food packaging provides real-time information on product details, safety, and quality while guiding consumers to ensure safe and quality food. Food can be kept secured and fresh for consumption by properly sealing packaging, thus preventing contamination.

Moreover, the data further show that the school canteen vendors practice proper hand washing before handling food items and cleaning and sanitizing the surfaces and utensils used when packaging the food. This agrees with the findings of Suryani et al. (2019) that the school canteen vendors must regularly clean work surfaces and utensils before packing to prevent cross-contamination and ensure proper food packaging through frequent handwashing with soap and water. Maintaining food safety and stopping the spread of dangerous germs requires proper handwashing using a detergent or disinfectant before handling food. Ali et al. (2022) argued that keeping hands clean, washing food, and cleaning and rinsing kitchen equipment are all part of basic personal hygiene when handling food.

In terms of Food Preparation

Table 8 shows that the extent of school canteen vendors' practice in terms of food preparation is "very high," as displayed in its composite weighted mean of 4.87. It can be observed from the results that indicators 1, 2, and 3, which depict the school canteen vendors' practice of no smoking, sneezing, or nose-poking when preparing food, making sure that their aprons are washed, and always keeping an eye on any signs of food spoilage or contamination of perishable items, respectively, got the highest mean of 4.88.

Table 8. Extent of Practices of School Canteen Vendors concerning Food Handling Norms in terms of Food Preparation (n = 43)

<i>In preparing the food...</i>	w$\bar{x}$	VD	EoP
1. I do not smoke, sneeze, or poke my nose to avoid contaminating the food I am preparing.	4.88	A	VH
2. I always make sure that my apron is washed and clean.	4.88	A	VH
3. I checked for any signs of spoilage or contamination on perishable items.	4.88	A	VH
4. I washed my hands thoroughly with soap and water before handling food.	4.84	A	VH
5. To prevent cross-contamination, I regularly clean and sanitize cutting boards, knives, and other utensils.	4.84	A	VH
Composite	4.87	A	VH

During food preparation, food handlers are forbidden to smoke, sneeze, or poke their noses. Preventing contamination of food when it is being processed is crucial for ensuring food safety. Ncube et al. (2020) mentioned that if food vendors smoke, sneeze, and poke their noses, the health of the customers will be at stake since these actions can introduce dangerous germs and pollutants into the food. Food handlers must follow stringent hygiene measures to guarantee the safety and quality of the food served to consumers.

Meanwhile, food handlers should inspect perishable goods for any indications of contamination or spoiling to guarantee food safety and avoid foodborne illnesses. This practice includes detecting odd smells, colors, or textures and looking for any indications of pollutants like molds. The findings of Zairinayati (2022) indicate that perishable goods must be promptly frozen or refrigerated by food handlers to prevent food spoilage. Food

handlers can reduce the chance of cross-contamination and guarantee the safety of the food prepared in the kitchen by adhering to safe cleaning and sanitization procedures.

In terms of the Food Service Process

Table 9 shows that the extent of school canteen vendors' practice in the food service process is "very high," as shown in its composite weighted mean of 4.87. Explicitly, the school canteen vendors try to avoid touching their faces or other body parts when serving customers, as indicated in its weighted mean of 4.91. When handling food, the vendors should not have any contact with any other part of their bodies. They should wear an apron or use a napkin to wipe off their hands to practice good hygiene and stop the spread of pollutants. The same finding is found in the study of Husain et al. (2018) when they pointed out that school canteen vendors should avoid touching their faces and use napkins or aprons to maintain hygiene and prevent cross-contamination, thus ensuring student safety.

Table 9. *Extent of Practices of School Canteen Vendors concerning Food Handling Norms in terms of Food Service Process (n = 43)*

<i>In the food serving process...</i>	w$\bar{x}$	VD	EoP
1. I try to avoid touching my face or other body parts when serving food to customers	4.91	A	VH
2. I should not go too close to other customers, especially when serving food, to avoid microbial exposure to the food I am serving.	4.88	A	VH
3. I should wash my hands and other utensils not already used to avoid food contamination.	4.87	A	VH
4. I should use a serving spoon properly and wash it after.	4.86	A	VH
5. I should wear personal protective attire when selling the food in the canteen.	4.84	A	VH
Composite	4.87	A	VH

To prevent food contamination, food handlers should wash their hands and any utensils that are not in use. According to Deepika et al. (2023), food handlers should follow reasonable hygiene procedures and make sure that the area where the food is prepared is clean. Other kitchen utensils are also sanitized to avoid contamination and food-borne illnesses. On the other hand, wearing appropriate clothing keeps the food safe and clean during preparation and serving and shields it from possible pollutants.

3.4 Relationship between Variables

Table 10 presents the data for identifying the relationship between variables. Using Spearman Rank-Order Correlation, the data show a significant relationship between the canteen vendors' knowledge and their attitude regarding food packaging, food preparation, and food service process (all p values < $\alpha = 0.015$). This finding means that the canteen vendors with better knowledge of the food safety norms tend to display a positive attitude towards the same areas.

Table 10. *Relationship between Variables (n = 43)*

Variables	r_s	p-value	Decision	Remark
Knowledge and Attitude				
Food Packaging	0.393	0.009	Reject H ₀₁	Significant
Food Preparation	0.429	0.004	Reject H ₀₁	Significant
Food Service Process	0.370	0.015	Reject H ₀₁	Significant
Knowledge and Practices				
Food Packaging	0.285	0.064	Accept H ₀₁	Not significant
Food Preparation	0.552	<.001	Reject H ₀₁	Significant
Food Service Process	0.265	0.086	Accept H ₀₁	Not significant
Attitude and Practices				
Food Packaging	0.073	0.641	Accept H ₀₁	Not significant
Food Preparation	0.339	0.026	Reject H ₀₁	Significant
Food Service Process	0.011	0.946	Accept H ₀₁	Not significant

Note: Level of significance = 0.05

This implies that the vendors are more likely to adopt a more favorable attitude toward implementing these policies if they have a greater awareness of food safety concepts, such as appropriate food packaging, preparation, and service processes. Vendors who possess in-depth knowledge of food safety may feel more empowered and confident to follow best practices, which could result in a more positive outlook on food safety procedures. Their views regarding food safety may be further reinforced by compliments and good comments from patrons or oversight agencies, mainly if they are acknowledged or commended for adhering to correct food handling

procedures. In connection with this, Shukri et al. (2022) concluded that food handlers' attitudes impact food safety, food quality, and how they prepare and handle food.

The table also reflects that the canteen vendors' knowledge and practices in terms of food preparation are significantly related ($p < .001$). This signifies that the higher the level of expertise of the canteen vendors regarding food preparation, the better their practices in the same area. The results connote that the vendors are more likely to apply food preparation safety procedures scrupulously in their day-to-day operations if they have a solid comprehension of them. For example, a vendor can better prepare food safely and hygienically if they know the proper cooking temperatures, hygiene standards, and cross-contamination avoidance techniques. A thorough understanding of food preparation safety may inspire vendors to be accountable and dedicated to maintaining high food safety standards in their canteen operations. This practice may result in diligent attempts to follow procedures and norms, like cleaning hands frequently, sanitizing surfaces and utensils, and storing ingredients appropriately. Furthermore, suppliers that have a thorough awareness of the safety of food preparation might be more proactive in identifying and putting best practices into effect to guarantee the quality and safety of the food they offer. In connection with this, Letuka et al. (2021) stated that proper food preparation significantly prevents food contamination.

Moreover, the table shows that the canteen vendors' attitudes and practices regarding food preparation are significantly related ($p = 0.026$). This connotes that canteen vendors with a positive attitude toward food preparation tend to display a higher level of practice in the same area. This further denotes that vendors with a favorable outlook on food preparation safety are likelier to think it is essential to follow and prioritize the proper procedures. This optimistic outlook may result from knowledge, experience, or personal convictions about food safety being important in preserving public health. Vendors committed to upholding food safety regulations could be more inclined to adopt stringent hygiene protocols, like routine hand washing, equipment sanitization, and appropriate cooking methods. The school canteen vendors possess positive attitudes toward food preparations and put these attitudes into practice by consistently and thoroughly implementing safe practices to ensure food safety.

Meanwhile, other variables, such as the canteen vendors' knowledge and their practices in terms of food packaging ($p = 0.064$) and the food service process ($p = 0.086$), do not display a significant correlation. This explains that vendors are aware of food safety regulations about packaging and servicing procedures, but they might encounter difficulties or limitations when implementing these policies. For example, vendors might not have access to the right tools or supplies for packaging, making it more difficult to uphold food safety regulations. Furthermore, vendors could find it challenging to follow food service process rules because of inadequate training on correct practices. In addition, irregularities in applying food safety procedures regarding packing and service processes may also be due to insufficient supervision of school personnel.

Lastly, no relationship is also found between the canteen vendors' attitudes and their practices in terms of food packaging ($p = 0.641$) and the food service process ($p = 0.946$). This implies that the vendors' opinions toward food safety do not always coincide with activities or behaviors that they engage in daily. For instance, a vendor may have good intentions about food safety in theory, but they may encounter obstacles or limitations when putting these intentions into practice in their canteen operations. A lack of management support, time restraints, or resource limitations could cause these difficulties. Vendors may also consider different aspects of food safety depending on those they think are more important or urgent, which can cause a discrepancy between their beliefs and actions. Furthermore, regardless of their views regarding food safety, other factors, such as consumer demands, may also impact vendors' actions and methods in the food packaging and service processes. In connection with this, according to Soares et al. (2016), results indicate that there can be wide variations in the expertise and attitude of school canteen vendors regarding food management.

3.5 Relationship between Profile and Level of Knowledge, Attitude, and Practices

Table 11 presents the data for identifying the relationship between the profile of the canteen vendors and their level of knowledge, attitude, and practices. As reflected, all p-values are more significant than the significance level (0.05). This finding will not allow the rejection of the null hypothesis. In other words, the data are insufficient to conclude that a significant relationship exists between the variables. This may imply that the profile variables

cannot account for the level of the canteen vendors' knowledge, attitude, and practices on food safety norms. This shows that the canteen vendors' knowledge, attitudes, and actions regarding food safety standards are influenced by factors other than their profile, such as their educational background, age, marital status, and years in business. The result is in opposition to the findings of Hossen et al. (2020) that the vendors' profile, such as level of education and income, are correlated with their knowledge, attitude, and practice on food safety, except for vending experience, which shows a negative relationship in terms of the vendors' Knowledge, Attitude, and Practices (KAP).

Table 11. Relationship between the Profile of the Canteen Vendors and Their Level of Knowledge, Attitude, and Practices (n = 43)

Variables	r_s	p-value	Decision	Remark
Knowledge				
Age	0.040	0.796	Accept H_{o2}	Not significant
Educational Attainment	0.088	0.575	Accept H_{o2}	Not significant
Number of Years in Buss.	0.006	0.971	Accept H_{o2}	Not significant
Marital Status	$r_{pbi} = 0.067$	0.657	Accept H_{o2}	Not significant
Attitude				
Age	0.029	0.853	Accept H_{o2}	Not significant
Educational Attainment	0.179	0.250	Accept H_{o2}	Not significant
Number of Years in Buss.	0.186	0.232	Accept H_{o2}	Not significant
Marital Status	$r_{pbi} = 0.120$	0.443	Accept H_{o2}	Not significant
Practices				
Age	0.073	0.641	Accept H_{o2}	Not significant
Educational Attainment	0.124	0.427	Accept H_{o2}	Not significant
Number of Years in Buss.	0.097	0.537	Accept H_{o2}	Not significant
Marital Status	$r_{pbi} = 0.093$	0.554	Accept H_{o2}	Not significant

Spearman Rank-Order Correlation (r_s) and Point-Biserial Correlation at 0.05 level of significance

The vendors' KAP on food safety is negatively correlated with their vending experience, which means that the longer a vendor has been in operation, the less probable it is that he or she follows proper procedures for food safety. Therefore, considering a wider variety of characteristics and contextual circumstances beyond their profile alone is necessary to thoroughly understand food safety behaviors among canteen vendors (Nkosi & Tabit, 2021).

4.0 Conclusion

Prioritizing food safety in schools is essential for safeguarding student health and fostering a safe learning environment. Enhanced training for food handlers, strict adherence to regulations, and active engagement from school administrators are critical components in achieving effective food safety management in school canteens. In food safety, Knowledge, Attitude, and Practices (KAP) of school canteen food handlers are seen as essential contributory factors in minimizing the gaps in children's health and nutritional status; the issue of whether these are possibly put into practice remains dim. Despite high levels of reported knowledge, positive attitudes, and firm adherence to food safety practices based on the disclosed results in the study, the actual practices of food handlers observed might not be conscious of the DepEd guidelines. This difference suggests that the respondents might have overrated their adherence to the implemented guidelines, stressing the importance of ongoing training and monitoring by teachers in charge of the school canteens. It is worth emphasizing that food safety KAP encompasses food preparation, packaging, and service processing. The Department of Trade and Industry and the Department of Education play a significant role in ensuring that food safety standards are strictly observed and providing resources for better implementation of food safety practices in school canteens. This partnership can facilitate more effective training programs, regular inspections, and robust accountability measures to bridge the gap between knowledge and practice and between attitude and practice to ultimately enhance food safety standards.

5.0 Contributions of Authors

The authors confirm their equal contribution to every part of this research. All authors reviewed and approved the final version of this paper.

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7.0 Conflict of Interests

This study has no conflict of interest of any sort.

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A Systemic Functional Grammar Analysis of Pecola Breedlove's Language as a Tragic Female Protagonist in Toni Morrison's *The Bluest Eye*

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Abstract. This study employed Systemic Functional Grammar (SFG) to analyze Pecola Breedlove's language as a tragic female protagonist in Toni Morrison's *The Bluest Eye*. While Morrison's work has been extensively analyzed through feminist and postcolonial lenses, limited research has explored how Pecola's language functions as a site of her oppression and marginalization. Specifically, the study aimed to examine Pecola's spoken dialogue by analyzing the process types within the ideational metafunction, mood structure, and pronoun usage within the interpersonal metafunction. Additionally, the study explored how her language reflects her identity as a tragic female protagonist. The results indicated a prevalence of mental and material processes, interrogative and imperative mood structures, and exclusive pronouns in Pecola's language. These linguistic choices depicted her as an emotionally and psychologically burdened character who lacks agency, emphasizing her vulnerability, desperation, and alienation. Together, these features contributed to the development of her tragic characterization. Through the exposure of how language encodes powerlessness, this study offered a fresh linguistic perspective on Pecola's tragic characterization and deepened feminist readings of *The Bluest Eye*. Future research can build on these findings by applying SFG to other marginalized characters in Morrison's works or across different literary genres, deepening the understanding of how grammatical structures shape meaning and representation in literature.

Keywords: Language; Pecola Breedlove; Systemic Functional Grammar; Toni Morrison; Tragic Protagonist.

1.0 Introduction

Published in 1970, Toni Morrison's *The Bluest Eye* delves into the themes of identity, beauty, race, and trauma. At its core is Pecola Breedlove, a tragic protagonist whose profound suffering, relentless societal oppression, and ultimate descent into madness encapsulate the essence of tragedy. Her journey mirrors the classic elements of a tragic narrative, including unfavorable circumstances, overpowering external forces, and an inevitable, devastating downfall, making her story deeply poignant and heartrending (Srivastava, 2023).

Despite extensive analysis of Pecola's victimization and marginalization by critics, there has been minimal focus on how her use of language serves as an indicator of her oppression and mental decline. Existing studies on *The Bluest Eye* primarily focus on Morrison's thematic concerns, narrative style, and characterization. For instance, a study by Al Mamun and Siddika (2020) examined Morrison's unique narrative techniques, highlighting her use of retrospective storytelling, multiple narrators, and manipulation of time and space. These methods significantly

influence the novel's plot construction and character development. Similarly, Kumar (2023) analyzed the distinct storytelling elements in *The Bluest Eye*, focusing on their impact on plot progression and characterization. The study emphasized Morrison's juxtaposition of characters from different racial and social backgrounds and her use of 'polyphonic' and 'multi-voiced' narratives to convey complex themes. These studies underscore Morrison's innovative narrative style and role in exploring complex themes and character dynamics in *The Bluest Eye*.

Given Morrison's careful attention to voice and discourse, an analysis of Pecola's spoken language offers critical insights into how her identity is shaped through linguistic structures. Systemic Functional Grammar (SFG) provides a particularly valuable framework for this examination, as it allows for an exploration of how Pecola's speech encodes power relations, agency (or lack thereof), and psychological trauma. By revealing how language encodes powerlessness, this research provides a novel linguistic analysis of Pecola's tragic portrayal and enhances feminist interpretations of *The Bluest Eye*.

Systemic Functional Grammar (SFG), introduced by linguist Michael Halliday, underscores the significant relationship between language and its social functions. It emphasizes how language is utilized to demonstrate realities, establish relationships, and achieve specific purposes in different contexts. It also views language as a system of choices speakers employ to convey meaning. Therefore, in this framework, language is argued as a tool for constructing meaning (Halliday & Matthiessen, 2014). In his book, David Banks (2019) expounds that SFG conceptualizes meaning through three key standards or metafunctions: ideational, interpersonal, and textual. The ideational metafunction concerns itself with three important aspects: the actions, events, and states that occur in the world, the participants or entities involved in these processes, and the circumstances under which they transpire. On the other hand, while interpersonal metafunction focuses on the relationship established between the speaker and his receiver or between the speaker and his message, textual metafunction emphasizes the importance of looking into how the message is structured and organized.

In analyzing literary texts, SFG can be utilized to explore how authors' linguistic choices serve specific functions within the text, achieving literary effects. This approach provides essential insights into how characters are established, themes are developed, and overall literary experience is molded (Bloor & Bloor, 2004; Gee, 2014). For instance, Rehan (2018) analyzed and compared two literary works—*Love* by D. H. Lawrence and *A Short History of Love* by Lawrence Stone—using Functional Grammar (FG) to highlight its effectiveness as a tool for literary analysis. Similarly, Bibi et al. (2023) applied the same framework to examine Kate Chopin's *The Storm*, focusing on identifying process types and circumstances within the text. Meanwhile, Ezz-Eddin (2024) investigated Virginia Woolf's *The Mark on the Wall*, analyzing the transitivity processes employed and their role in conveying ideologies, experiences, inner emotions, perspectives, and attitudes toward English society.

Notwithstanding its potential, the application of SFG in literary analysis remains relatively uncommon, as observed by Pasaribu, Sinambela, and Manik (2020), particularly in the study of Toni Morrison's works. Addressing this gap, the present study applies SFG to analyze the language of Pecola Breedlove in Toni Morrison's *The Bluest Eye*. This paper explores how her linguistic choices, as seen in her spoken dialogue in the novel, reflect her identity as a tragic female protagonist.

2.0 Methodology

2.1 Research Design

This study employed discourse analysis, guided by Systemic Functional Grammar (SFG) as conceptualized by Halliday and Matthiessen (2014), to examine how language constructs and reflects social and psychological realities. Discourse analysis facilitates the exploration of linguistic patterns and their relationship to social power, identity, and meaning (Fairclough, 2013). Specifically, this study focused on Pecola Breedlove's spoken dialogue in *The Bluest Eye* by Toni Morrison to uncover the linguistic and social mechanisms shaping her tragic characterization. By applying SFG, this research examined how ideational and interpersonal metafunctions of language contribute to Pecola's portrayal and the broader thematic concerns of the novel.

2.2 Data Collection

Data for this study were drawn from *The Bluest Eye* by Toni Morrison. Only Pecola's spoken dialogue was included, particularly in key scenes that reveal her thoughts, emotions, and interactions with others. These scenes

were identified based on their thematic significance, focusing on trauma or social rejection moments. For example, dialogue during Pecola's interactions with her family and community members, as well as her internal monologues, were selected to capture the nuances of her character. Textual excerpts were extracted and organized chronologically to ensure systematic analysis. Examples included Pecola's dialogue in scenes that depict her yearning for blue eyes and her exchanges with other characters during moments of rejection. These excerpts were transcribed verbatim, ensuring fidelity to the original text, and coded for linguistic features relevant to SFG analysis.

2.3 Data Analysis

The analysis followed a structured approach based on SFG principles to address the research questions systematically.

Ideational Metafunction Analysis

Pecola's language was analyzed through the lens of the ideational metafunction, focusing on the types of processes (material, mental, relational, etc.) she employs. For example, her frequent use of mental processes (e.g., "I wish," "I want") reflects her internalized desires and longing for transformation. This step also examined how her choice of verbs, participants, and circumstances contributes to representing her inner world and external conflicts.

Interpersonal Metafunction Analysis

The interpersonal metafunction was explored to characterize Pecola's language, examining mood structures (e.g., declarative, interrogative) and pronoun usage. For instance, her first-person pronouns and modal verbs were analyzed to uncover her sense of identity, agency, and connection with others. Patterns such as hesitant or fragmented speech were noted, reflecting her emotional turmoil and marginalization.

Interpretation of Findings

Findings from the ideational and interpersonal analyses were synthesized to interpret how Pecola's linguistic patterns reflect her tragic characterization. Key areas of focus included her frequent use of relational and mental processes, which signal internalized trauma, and her limited use of imperatives, indicating diminished agency. The cultural and contextual significance of Pecola's language was also explored, emphasizing how systemic oppression and personal despair are embedded in her speech patterns.

2.4 Methodological Rigor

Established methodologies in SFG, such as Halliday's (1994) framework for analyzing metafunctions, were employed. Modifications included adapting SFG procedures to literary discourse by emphasizing thematic relevance and character development within the narrative context. Detailed coding schemas and criteria for scene selection were documented to ensure replicability.

2.5 Ethical Considerations

While this study analyzed literary texts and did not involve human subjects, ethical considerations were addressed by maintaining fidelity to the source material and respecting *The Bluest Eye's* cultural and historical context. Institutional review board approval was deemed unnecessary for this type of analysis.

2.6 Supporting literature

Prior research on SFG and discourse analysis supported the methodological choices. Studies by Martin and Rose (2007) on appraisal theory and Eggins (2004) on SFG applications provided foundational insights. Additionally, works by Morrison scholars, such as Kubitschek (1998), informed the interpretative framework, ensuring alignment with established literary critiques of *The Bluest Eye*.

3.0 Results and Discussions

3.1 Pecola Breedlove's Language through the Lens of SFG

Using the SFG framework, two metafunctional analyses—ideational and interpersonal—were conducted to explore Pecola Breedlove's language. These analyses focused on the types of processes, mood structures, and pronoun usage evident in her spoken dialogue.

Pecola's Types of Processes

Ideational metafunction is one of the three metafunctions proposed by Halliday in his SFG. This metafunction focuses on using language to represent ideas, experiences, and the world in general. Its key components include processes, which refer to the types of actions or states represented in language. These processes can be categorized into material, mental, relational, verbal, behavioral, and causative (Banks, 2019).

An analysis of Pecola's spoken dialogue reveals that her language predominantly reflects mental processes. These mental processes, which pertain to sense, are vital for revealing her character's internal world, expressed through verbs associated with emotion (liking, loving, hating), cognition (thinking, knowing, noticing), and perception (seeing, hearing, tasting) (Gallardo, 2006). This is exemplified in the following lines:

"Am I going to die?"

Senser: "I" (Pecola, the one asking the question)

Mental Process: "going to die" (the mental process involved in this context is the fear or contemplation of death)

Phenomenon: "die" (the event or state being considered by Pecola)

How do you get somebody to love you?

Senser: "You" (referring to Frieda, the person Pecola is addressing)

Mental Process: "get" (the act of trying to obtain or achieve love)

Phenomenon: "somebody to love you" (the desired outcome or state that Pecola is inquiring about)

"And I thought maybe you could help me."

Senser: "I" (referring to Pecola, the speaker expressing her thoughts and desires)

Mental Process: "thought" (the act of considering or reflecting on the possibility of receiving help)

Phenomenon: "Maybe you could help me" (the proposition or idea that Pecola hopes Mr. Soaphead Church will assist her)

It is important to note that all mental processes involve two key participants: the Senser, a conscious being engaged in feeling, thinking, or perceiving, and the Phenomenon, the object or entity that is felt, thought about, or perceived by the Senser (Iwamoto, 2007). This framework is evident in Pecola's dialogue, where her words vividly convey her emotional and psychological struggles.

In the first line, Pecola expresses her fear and anxiety about mortality, revealing a deep contemplation of death and a profound sense of vulnerability. In the second, she seeks guidance on attaining love, highlighting her struggle to form meaningful emotional connections. The third line captures her yearning for assistance, underscoring her hopelessness and desperation for support. Therefore, by employing mental processes in Pecola's dialogue, Toni Morrison portrays the protagonist's inner complexities and conflicts, offering a poignant glimpse into her fragile emotional state.

The same is true in the study of Bibi et al. (2023). In *The Storm* by Kate Chopin, the portrayal of mental processes is essential in exposing the characters' internal thoughts, feelings, and interpretations of their situations. This psychological examination offers readers more insight into the characters' drives, longings, and inner struggles. By engaging the audience in the characters' subjective experiences, Chopin amplifies the story's emotional and psychological intricacy, enabling a more profound understanding of their lived experiences. This approach not only cultivates empathy but also emphasizes the complex ways in which internal thought processes influence external behaviors and interpersonal dynamics within the narrative.

In addition to mental processes, Pecola's language also exhibits material processes. Unlike mental processes, which pertain to sensing, material processes express concrete actions or events involving tangible entities. Hence, there is always an Actor (one who does something) in this process. Further, depending on the material process (if it is extended to something or someone), the clause may also contain a Goal (one to whom the process is 'directed') and/or a Beneficiary, which may be a Recipient (one that goods are given to), or a Client (one that services are done for) (Gallardo, 2006).

Notably, Pecola's most significant lines in the novel reflect material processes. In these material processes, Pecola is not the Actor but the Beneficiary, serving as the recipient of the action carried out by the Actors. This is illustrated in the following lines:

"Please, God," she whispered into the palm of her hand. "Please make me disappear."

Actor: The implied subject is God here, as Pecola speaks to God and requests action. Although she is the one making the request, the actual action of making her disappear is something she is asking God to do.

"Can you do it for me? ... I said, can you make me look different?"

"My eyes. I want them blue."

"Please... Please make me beautiful."

Actor: The person Pecola addresses, Mr. Soaphead Church (the one she is asking to help her), who appears to offer Pecola a solution to her deep emotional and psychological pain of being rejected and alienated.

An analysis through the lens of the ideational metafunction reveals that Pecola's language embodies a blend of mental and material processes, reflecting her inner emotional world and her interactions with external forces.

Pecola's Mood and Pronoun Usage

Within the framework of SFG, the interpersonal metafunction plays a crucial role in analyzing how language is used to facilitate social interactions, establish relationships, and express attitudes and emotions. In literature, this metafunction offers a valuable understanding of how authors and characters employ language to communicate, negotiate meaning, and engage with one another (McCrocklin & Slater, 2017).

Fundamental aspects of the interpersonal metafunction analysis are mood and pronoun usage. Mood, comprising the three primary types – declarative, interrogative, and imperative – reveals characters' attitudes, intentions, and interactions within literary texts. By analyzing mood, readers gain deeper insights into characters' motivations and how they engage with others, enhancing the overall narrative interpretation.

Pronoun usage, meanwhile, serves as a powerful tool for exploring the nuances of character interactions, social relationships, and narrative voice. It provides a lens through which the dynamics of power, solidarity, and identity can be examined, offering a richer understanding of the complexities in literary discourse (McCrocklin & Slater, 2017).

Pecola often employs the interrogative mood in terms of mood structure, as seen in her questions like *"Can you make me look different?"* and *"Why am I not beautiful?"*. She also frequently uses the imperative mood in her desperate pleas, such as *"Please make me beautiful"* and *"Please make me disappear."* Notably, Pecola's spoken dialogue demonstrates a marked absence of the declarative mood, underscoring her lack of agency and inability to assert herself confidently within the narrative.

Furthermore, in terms of pronoun usage, Pecola predominantly relies on first-person pronouns, mainly *"I"* and *"my,"* which are exclusive and reflect her deeply personal and individual experience. She rarely uses inclusive pronouns such as *"we"* or *"our,"* which profoundly reflects the disconnected character that Toni Morrison portrays in the novel.

From the perspective of SFG, Pecola Breedlove's language in *The Bluest Eye* is characterized by frequent use of mental and material processes, interrogative and imperative moods, and exclusive pronouns. Importantly, these linguistic features offer profound insights into her identity as a tragic female protagonist, a theme explored further in the next section.

3.2 Pecola's Language as a Reflection of Her Tragic Female Protagonist Role

Toni Morrison's *The Bluest Eye* is a masterful exploration of race, identity, and societal rejection, with Pecola Breedlove at its emotional core. Through meticulously analyzing Pecola's language, framed within SFG, Morrison reveals the layers of her protagonist's inner turmoil and external disempowerment. The ideational and interpersonal metafunctions of Pecola's dialogue not only illuminate her psychological struggles but also

underscore the systemic forces that render her powerless. By analyzing her speech's mental and material processes and her use of moods and pronouns, Morrison crafts a deeply tragic portrait of a girl yearning for validation in a world that denies her agency and belonging.

The ideational metafunction in Pecola's dialogue offers a profound lens through which Toni Morrison portrays the protagonist's inner struggles and emotional depth, emphasizing her tragic female role. Using mental processes, Morrison vividly captures Pecola's fear, longing, and desperation, which are windows into her conflicted psyche. Studies in systemic functional linguistics (SFL) highlight how mental processes often represent an individual's sensing and experiencing, revealing their inner world (Halliday & Matthiessen, 2014). Pecola's language exemplifies this, embodying her constant negotiation between longing for societal validation and the harsh realities of rejection. This aligns with systemic linguistic research suggesting that characters with a predominance of mental processes are often portrayed as emotionally and psychologically burdened (Eggins, 2004).

Additionally, Pecola's material processes — actions done to her rather than by her — emphasize her role as a passive recipient. She is constantly depicted as the Beneficiary in narratives where others act upon or for her. This is consistent with the findings by Thompson (2014), which argue that material processes in literature often signify power dynamics, highlighting characters who lack agency. Morrison uses these processes to illustrate Pecola's inability to control her fate, reinforcing her vulnerability. Pecola's longing for transformation, epitomized by her wish for blue eyes, becomes a poignant symbol of her yearning for agency in a society that consistently denies it.

Pecola Breedlove's language further underscores her emotional and psychological state through the lens of interpersonal metafunction. The frequent use of interrogative and imperative moods reflects her vulnerability and desperation. Research on mood structures in literary dialogue demonstrates that interrogatives often signal a search for affirmation or belonging, especially in marginalized characters (Martin & Rose, 2007). Pecola's reliance on questions reveals her deep-seated insecurities and her plea for recognition in a society that marginalizes her. Imperatives, by contrast, convey her futile attempts to assert some control, reflecting her entrapment in a cycle of helplessness.

Moreover, the absence of a declarative mood in Pecola's dialogue signals her inability to assert her identity or claim her narrative. Empirical studies on language and power (Fairclough, 2013) support the notion that characters who lack declarative agency are often portrayed as powerless, reinforcing Pecola's tragic disempowerment. Finally, Pecola's repeated use of exclusive first-person pronouns (e.g., "I" and "me") isolates her linguistically, mirroring her social and familial alienation. This aligns with linguistic research emphasizing that characters who overuse self-referential language often reflect heightened isolation or marginalization (Toolan, 1998). Toni Morrison's linguistic choices in *The Bluest Eye* reflect Pecola's internal struggles, marginalization, and disempowerment. By foregrounding her mental and material processes and interpersonal language, Morrison crafts Pecola as a tragically vulnerable figure whose identity and agency are systematically undermined. These choices resonate with broader linguistic findings on power, identity, and representation, offering readers a profound understanding of Pecola's character and tragic narrative arc.

4.0 Conclusion

A discourse analysis within the framework of SFG reveals that Pecola Breedlove in Toni Morrison's *The Bluest Eye* uses language characterized by the prevalence of mental and material processes, interrogative and imperative mood structures, and exclusive pronouns. These linguistic choices reveal her inner struggles, emotional depth, and psychological state, offering fundamental insights into her identity as a tragic female protagonist.

More specifically, Pecola's use of mental processes portrays her as emotionally and psychologically burdened, while her reliance on material processes underscores her lack of agency. Similarly, her frequent use of interrogative and imperative mood structures highlights her vulnerability and desperation, while her preference for exclusive pronouns reflects her profound sense of alienation. Collectively, these linguistic features contribute to the construction of her tragic characterization.

Indeed, employing SFG in literary analysis is vital for uncovering diverse aspects of the characters' identities. It effectively highlights how linguistic choices reflect their experiences, emotions, and societal roles, facilitating a deeper understanding of the literary text.

Moreover, within the broader context of teaching and learning grammar and literature, this study highlights the transformative potential of SFG in bridging both fields. It provides valuable insights into how linguistic structures shape and convey meaning in literary texts. The interdisciplinary nature of SFG helps bridge the gap between grammar and literature, enabling students to engage with texts more holistically. This approach cultivates a deeper understanding of how language creates meaning, equips students with critical tools for analytical interpretation, and encourages them to explore the interplay between structural elements and artistic expression. Ultimately, this comprehensive approach enriches the learning experience and prepares students for more advanced academic pursuits and creative endeavors.

To expand the application of SFG in literary analysis, it is recommended that this framework be applied to studying other characters in *The Bluest Eye* or across Toni Morrison's body of works. Such analyses can explore how linguistic choices reflect overarching themes such as race, gender, and identity, offering more profound insights into the complex interplay between language and societal constructs. Future studies could also broaden the scope of SFG by applying it to various literary genres, including poetry, drama, and non-fiction, to explore how different genres utilize grammatical structures for thematic expression and stylistic purposes. This broader application would enhance the understanding of how SFG functions across diverse forms of literature, further illuminating how grammar shapes meaning.

Finally, to fully leverage SFG's educational potential in bridging grammar and literature, it is recommended that educators actively incorporate SFG into both grammar instruction and literary analysis in the classroom. This integrated approach will help students recognize the connections between linguistic structures and their crucial role in shaping meaning within literary texts, fostering a deeper understanding of how language functions both as a tool for communication and as a medium for artistic expression.

5.0 Contributions of Authors

CAW – project administration, conceptualization, and research design; literature review and data collection, analysis and interpretation, writing and drafting, reviewing and editing; CO – literature review and data collection, analysis and interpretation, writing and drafting, visualization; MWR – reviewing and editing; JMS – reviewing and editing.

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All authors of this research declare that there is no conflict of interest about the publication of this paper.

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Water Security Challenges in Households in Tuba, Benguet, Philippines

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Abstract. Water is a basic need and right of people. Yet there are water security issues, even in the Philippines. These are linked to global and national security and overall well-being. This study, therefore, describes the domestic water security issues of the households of the Twin Peaks National High School, Tuba, Benguet catchment areas, as represented in 2023 by the school's students and personnel who reside in the locale. A sample of them voluntarily answered the researcher-prepared online survey questionnaire; 226 response sets were valid. Where appropriate, the researchers checked the Cronbach alpha to be acceptable. They summarized the responses in percentage and mean. As reported by the respondents, their households' non-drinking waters are, from the most to least frequent source, via hosepipes from springs, streams, and waterfalls; private deep wells; commercial water delivery trucks; and rainwater harvesting. Most households experienced domestic water shortages and interruptions, mitigated by sufficient water storage containers and buying their drinking water. The households experienced problems with their non-drinking domestic water quality at the second highest level of "often"; 40% found their water supply generally unacceptable (odor, color, flavor, and dirt particles). Around 15% of them find their domestic water supply costly. Thirty-eight percent of them "often" or "very often" experienced the four adverse effects of the issues on their domestic waters' properties. However, the households practice ecologically responsible water-related behaviors only at the second least ideal level of "sometimes true." The findings add to the data-based information that domestic water security issues negatively affect households and individuals like those in the school's catchment areas. They and everyone need to practice ecologically responsible behaviors to help arrest the said issues. The local government units also need to take appropriate actions.

Keywords: Domestic water security issues; Water supply; Benguet; Philippines.

1.0 Introduction

Water is a fundamental human right and a critical resource for health, development, and security. Despite global efforts to ensure water access, billions of people still face water insecurity, including those in the Philippines (ADB, 2020; UN-Water, 2023). While the country has abundant water sources, access to clean and sufficient domestic water remains challenging, particularly in rural and urban communities with inadequate water infrastructure (WHO, 2021; Mendoza et al., 2020). This issue is evident in the Baguio-Benguet area, where water shortages, supply inconsistencies, and quality concerns continue to affect households (Mason, 2013).

Water security is part of the national security agenda (The President of the Philippines, 2023). However, studies highlight persistent issues, particularly in areas reliant on groundwater and alternative water sources. Households in Baguio City and Benguet, including those in Tuba, face difficulty securing reliable and safe water for daily needs (Mendoza et al., 2020; Malteser International, 2019). Some households lack direct access to water utilities, while others experience rationed or intermittent supply. Families often depend on springs, creeks, and rainwater in rural areas, raising concerns about sustainability and health risks (ICLEI, 2017).

Existing research explores water security at national and urban levels but lacks localized studies on domestic water issues in specific communities like Tuba and Benguet. The Twin Peaks National High School (TPNHS) catchment area, home to several barangays along Kennon Road, lacks a substantive local water utility system. This is despite the fact that other parts of the municipality of Tuba, Benguet are a water source for Baguio City. This gap in literature leaves a critical need for data-driven insights into the domestic water security challenges households face in these areas.

This study aims to describe the domestic water security issues of households in the TPNHS catchment area in Tuba, Benguet, during 2023. By examining household experiences, the study provides valuable insights into water access, availability, quality, and coping strategies. The findings can support local governments, policymakers, and water providers in designing sustainable solutions to improve regional domestic water security. Additionally, this research contributes to the broader discourse on water security, offering a localized perspective that may inform similar studies in other underserved communities.

2.0 Methodology

2.1 Research Design

This is a quantitative-descriptive, exploratory survey study. It is conducted due to the substantive lack of literature on the water security issues in the TPNHS catchment areas. Moreover, the researchers had limited capability and resources and faced considerable constraints in navigating the locale. The researchers used a survey questionnaire to gather data. They then subjected the data to descriptive statistical analysis to arrive at descriptions of the population's DWSI.

2.2 Research Locale

The study essentially covers the TPNHS catchment areas, namely, five of the barangays of Tuba in the province of Benguet. As shown in Table 1, the barangays are along or near Kennon Road, an around 34-kilometer-long road whose lowland end is at the municipality of Rosario, La Union, while its highland end is at Baguio City.

2.3 Research Participants

The research covers the DWSI of the households in the TPNHS catchment areas (see Table 1). The households are represented by the TPNHS students and personnel who reside in the locale. The school's teachers, administrators, and supervisors are teaching personnel; the rest are non-teaching.

Table 1. *The Population of the TPNHS Catchment Areas in Tuba, Benguet*

Barangay	Percentage of Tuba's Population (2020)	Population (2020)	Population (2015)	Number of Households 2015 Aug 1
1. Camp One	3.35	1,619	1,773	354
2. Twin Peaks	2.20	1,061	1,184	274
3. Camp 3	16.33	7,890	10,033	2,190
4. Camp 4	14.15	6,836	7,136	1,675
5. Tabaan Sur	2.85	1,375	1,315	323

Source: PhilAtlas, 2024.

As of October 2023, there are around 543 students and personnel. A sample of them participated in the study. The total number of valid respondents is 226, distributed as shown in Table 2. The school's students and personnel who voluntarily answered the online survey questionnaire comprise the sample population. Fifty-one percent (51%) of them are females; the rest are males. The youngest respondent is a 12-year-old student, while the oldest is a 57-year-old teaching personnel. The least number of respondents are from Camp One (7.96%), followed by those from Tabaan Sur (19.47%). The rest, in nearly equal proportions, reside in the three other barangays. The

sample is sufficient in the context of the study that utilizes descriptive statistics. For studies utilizing the mean in statistical analysis, a percentage of the population can be a good enough representative (Israel, 2012).

Table 2. *The Respondents' Profile*

Property	Count	Percentage	Property	Count	Percentage
Occupation:			Residence Barangay:		
Junior high school	67	29.65	Camp One	18	7.96
Senior high school	142	62.83	Twin Peaks	56	24.78
Student (Unspecified level)	3	1.33	Camp 3	51	22.57
Teaching	13	5.75	Camp 4	57	25.22
Utility	1	0.44	Tabaan Sur	44	19.47
Residence Ownership:			Total, n	226	100
Own house	202	89.38			
Renting	24	10.62			

2.4 Research Instrument

The researchers utilized the survey questionnaire they designed based on the references, their experiences, and the recommendations of their research guides, who are experts in research or on the topic. They checked the study, including the questionnaire. The questionnaire's solicitation letter informs the target participants about the study, that participation is voluntary, that answering the questionnaire indicates consent to participate, that the respondent will remain confidential, that the responses will be for research purposes, and how the data will be protected and archived. Part I of the questionnaire properly deals with the respondent's demographic profile. The other parts consist of items that lead to the answers to the study questions.

The alpha coefficients of the final responses are 0.753 for the perceived quality of the domestic water supply, 0.691 for the four items on the effects of the DWSI, and 0.671 for the seven items on the countermeasures taken against the DWSI. These values are considered acceptable. Goforth (2015) states that "although the standards for what makes a "good" coefficient alpha are entirely arbitrary and depend on your theoretical knowledge of the scale in question, many methodologists recommend a minimum coefficient alpha between 0.65 and 0.8 (or higher)."

2.5 Data Gathering Procedure

The research students first had their study topic and site approved by the research professor, concerned department, and adviser. They then contacted the TPNHS school principal for permission to conduct the study. The research professor and panel eventually approved the research proposal. The school principal and teachers selflessly, without remuneration, took charge of the data gathering in the school last October 2023. The respondents answered the online survey questionnaire without remuneration. The researchers coded the raw responses to ensure that the respondents remained confidential. They calculated the frequency counts, percentages, and means of the responses to arrive at the answers to the study questions. They will keep the electronic files of the coded responses for five years for any necessary verification.

2.6 Ethical Considerations

The researchers followed ethical guidelines, as indicated in the preceding sections. It did not harm any participant.

3.0 Results and Discussion

3.1 Experiences in Domestic Water Supply Properties

Domestic Water Source

The respondents' households primarily pipe in their non-drinking water via hosepipes from nearby unprotected/open waterfalls, streams, or protected/improved "ubbog" (or springs). The second most frequent non-drinking domestic water source is the private deep well category, followed by commercial water delivery trucks and rainwater harvesting. Most respondents (57.96%) indicated that their households primarily buy their drinking water from commercial water filtering and refilling stations and stores that sell this resource in typical 5-gallon containers. Water from protected or improved "ubbog," whose waters are known to be potable, is

primarily used by the rest of the households for drinking or intake. A few do some home filtration. For example, they filter the water using a clean cloth when necessary.

Domestic Water Sufficiency

Water shortage is the insufficiency of the water supply. Table 3 shows that most of the study respondents' households experienced piped-in domestic water shortages during the first three quarters of 2023. However, the frequency is generally at the lower levels of 1 to 3 days per week (50.88%). Around 60% of the respondents indicated that their households experienced water shortages every week of each month. The highest relative percentage (36.28%) experienced water shortages at the frequency level of "1 day per week."

Table 3. *Piped-in Domestic Water Shortage and Interruption (n = 226)*

Frequency of Water Shortage and Interruption	Count	Percentage
Frequency of Piped-in Water Shortage		
Never	91	40.27
1 day/week	82	36.28
2 to 3 days/week	33	14.60
4 to 5 days/week	9	3.980
6 to 7days/week	11	4.870
Frequency of Piped-in Water Interruption		
1 week/month	155	68.58
±2 weeks/month	28	12.39
±3 weeks/month	16	7.080
Every week of the month	27	11.95

There is a water supply interruption when the piped-in water supply flow does not come for the scheduled, or at least for the expected, time. Most respondents indicated that they experienced piped-in water interruption for about one week per month. This is the lowest per-month frequency. A respondent noted that water shortages and interruptions are widespread during summer when the water flow weakens. Table 3 thus indicates that most of the respondents experienced piped-in water supply shortages and interruptions, though at the lowest frequency levels. This explains why the respondents summarily indicated that "sometimes" (weighted mean = 2.41) they do not have enough water for hygiene. This set of findings becomes more meaningful with the information in Table 4.

Table 4 shows the schedule and duration of piped-in water flow and the sufficiency of water storage containers in the respondents' households. The ideal schedule for piped-in water flow is "more than 6 hours"; its ideal duration is "6 to 7 days per week." Nevertheless, nearly half (44.69%) of the respondents indicated that their piped-in water flows for one day per week. Only 32.74% of the respondents indicated that their household's piped-in water flows for four to seven days a week.

Table 4. *Piped-in Domestic Water Flow and Storage (n = 226)*

Property of Domestic Water Supplying	Count	Percentage
Schedule of Piped-In Water Flow		
1 day/week	101	44.69
2 to 3 days/week	51	22.57
4 to 5 days/week	19	8.410
6 to 7 days/week	55	24.33
Duration of Piped-In Water Flow		
Less than an hour	93	41.15
1 to 3 Hours	60	26.55
4 to 6 Hours	16	7.080
More than 6 Hours	57	25.22
Water Storage		
Sufficient/Enough	140	61.95
Insufficient/Inadequate	86	38.05

Table 4 also shows the duration of the flow of piped-in water. Many (41.15%) of the respondents indicated that their households' domestic water flows for less than an hour on the water supply days. These findings show that

most of the respondents' households have a problem with the number of days and hours of actual flow of piped-in water supply. A once-a-week schedule of actual water supply flow would not be enough to support the household's water needs for the week.

The households acquired water supply storage containers to compensate for the problem with the piped-in water supply flow schedule and duration. Most (61.95%) respondents indicated that their households' water supply storage containers are sufficient. A respondent wrote that "*we should always be alert if there is a water shortage*"; the respondents' households collect and store water whenever the water comes. Another respondent added that this is true even "*on rainy days..., sometimes no water is coming out from the faucet.*" Some households, therefore, buy additional water supply from water delivery trucks. The finding in Table 3 that 40.27% of the respondents never had a piped-in water supply shortage supports these thoughts based on Table 4.

Domestic Water Cost Level/Affordability

Table 5 shows that a significant percentage (85.40%) of the respondents answered that the cost of their drinking and non-drinking water supplies is affordable. This finding may imply that these respondents' households are financially stable enough or have sufficient financial resources for their basic needs, including domestic water supplies. Table 5 also tells us that 14.60% of the respondents' households may not be financially stable or have sufficient financial resources for their basic needs. The cost of their drinking and non-drinking water supplies is high. These may be the households, also shown in Table 5, who utilize approximately 10% to 15% of their average monthly income for their domestic water supply.

Table 5. *Self-Reported Cost Levels of Water Supply (n = 226)*

Cost Level	Frequency Count	Percentage
How do you find the cost of your piped-in water supply?		
Affordable/Within our means	193	85.40
Costly/Expensive	33	14.60
How do you find the cost of your drinking water supply?		
Affordable/Within our means	193	85.40
Costly/Expensive	33	14.60
Approximate percent of water supply cost based on average monthly income		
1 to 4%	108	47.79
5 to 9%	83	36.72
10 to 15%	35	15.49

Domestic Water Quality

The ideal response to Table 6 items is "always," which signifies that the respondents find their domestic water to be of the most acceptable quality. However, the overall mean of the items is "often true," the second most ideal response. This finding is not suitable because water is a basic human need and is indispensable for survival, health, and overall well-being. Moreover, Table 6 tells us that the quality of the domestic water supply of the respondents' households is not of the most acceptable quality since less than 50% of the respondents answered "always" to each of the five items.

Table 6. *Self-Reported Quality of Domestic Water Supply*

Water Quality Criterion	Frequency Count				Percentage				Weighted Mean	Interpretation
	N	S	O	A	N	S	O	A		
1. How acceptable is the water quality from your local water district/supplier?	28	39	44	108	13	18	20	49	3.06	Often
2. The water does not contain visible dirt particles.	27	54	110	28	12	25	50	13	2.63	Often
3. How acceptable is the quality of the color	30	67	62	60	14	31	28	27	2.69	Often
4. How acceptable is the quality of the odor	59	53	48	59	27	24	22	27	2.49	Sometimes
5. How acceptable is the quality of the flavor	31	48	64	76	14	22	29	35	2.84	Often
Mean	35	52	66	66	16	24	30	30	2.74	Often

Note: n = 219; Seven respondents left some items blank; their responses for this set were, therefore, not considered. Response Levels: N = Never; S = Sometimes; O = Often; A = Always. Cronbach's alpha = 0.753.

The sum of the averages of the “often” and “always” responses tells us that the majority (60%) found their domestic water supply quality to be generally acceptable. However, 40% found their domestic water supply quality to be typically unacceptable, which signifies that their domestic water supplies were polluted.

Table 6 also shows that the least often acceptable water property is odor, followed by visible dirt particles, color, and flavor. A respondent noted that *“on rainy days, water supply is slow with a brownish color...”*. The color indicates the presence of dirt particles that may provide an additional dirty scent to the water. Odorous and dirty domestic water is polluted and can cause diseases (like diarrhea).

The findings in this section are not entirely ideal because water is a basic human need and right (Omarova et al., 2019; UNDESA, n.d.) critical for people's survival and overall well-being. They signify that the TPNHS respondents' households have issues with their domestic water supply's source, sufficiency, affordability, and quality. Those findings are, however, not unique to the TPNHS catchment areas, as discussed in the Introduction section of this paper. It is undeniable that for many people in the world, including the Philippines, sufficient water is not ensured and is increasingly becoming scarce (ADB, 2020; Aquino et al., 2023; Dinka, 2018; Kummur et al., 2016; Lee et al., 2020; Mason, 2013; Omarova et al., 2019; UN-Water, 2023; WHO, 2021). Nevertheless, the findings in this section partly do not support the ADB's AWDO, which categorized the Philippines at the “Engaged” level, the second to the lowest of five levels under the rural household category. The more extensive population and set of variables covered by the AWDO probably explain the difference in the findings of this study from those of the AWDO.

Indeed, even the areas near the TPNHS catchment areas have frequent water shortages and interruptions (Malteser International, 2019; Mendoza et al., 2020). That is why private water suppliers make up a significant portion of the household water supply market in Baguio City (Mendoza et al., 2020). That is also why the city's poor households rely on free water sources, such as springs and rainwaters, despite being uncertain of those waters' quality (ICLEI, 2017). Most TPNHS respondents' households mitigate the water sufficiency problem by having adequate water storage containers. This finding parallels Mendoza et al. (2020), who found that two-thirds of their respondents' families have containers for storing water from planned BWD distributions, rainwater collection, or water deliveries.

The finding that the properties of the domestic water supplies of the TPNHS respondents' households are not entirely ideal has various implications. Domestic water supplies with non-ideal properties imply the causes of the DWSI. Some of the many reasons for water scarcity issues are rapid population growth, economic development, accumulated disaster risk, and climate change (Lee et al., 2020). Other causes are pollution, overconsumption, and water mismanagement (Lai, 2022). In the case of the TPNHS catchment areas, rapid population growth may be excluded as a cause, as supported by Table 1. For the catchment areas, the management of water resources is a more influential cause. The catchment areas have no extensive, localized, improved/protected domestic water supply system.

The finding that the properties of the domestic water supplies of the TPNHS respondents' households are not entirely ideal also hints at human rights. They signify that the respondents' human right to access safe drinking water and adequate sanitation, necessary for achieving all human rights, is not entirely ideal (Omarova et al., 2019; UNDESA, n.d.). They indicate possible health risks. They also point to human security conditions. Human security refers to a person's general well-being. It is interlinked and complementary to national security, which is influenced by water insecurity (Pobre, 2013). Therefore, the findings in this section indirectly imply the country's well-being (Coronel, 2022). They likewise imply the attainment of national security goals in relation to communities like the TPNHS catchment areas. The same findings also suggest their consequences and countermeasures. These may be considered two other DWSI categories.

3.2 Effects of Domestic Water Supply Issues

Items 1 to 4 in Table 7 are negatively stated, so “very rarely true” is the best response, and “very often true” is the worst response. Only 38.16% of the respondents reported that their households “often” or “very often” experienced the said effects during the period. The trend of the responses for items 1 to 4 in Table 7 is somewhat good since “very rarely true” got the highest percentage (32.41%) and “very often true” got the lowest rate (14.38%). Similarly, the “sometimes true” overall result for those items is quite good since it is just a step below the best level. Nevertheless, the result for item 5 is not good since “very often true” is the best response for it. The statistics suggest that 50% of respondents do not consciously conserve water.

Table 7. Self-Reported Effects of Domestic Water Supply Issues

Effect of DWSI	Frequency Count				Percentage				WM	Interpretation
	VRT	ST	OT	VOT	VRT	ST	OT	VOT		
1. Some of our illnesses come from the water we drink.	73	80	48	25	32	36	21	11	2.11	Sometimes
2. I get mad, irritated, and/or easily angry due to our household water issues.	59	77	60	30	26	34	27	13	2.27	Sometimes
3. The water challenge of limited piped-in water supply leads to conflict with our neighbor, with whom we share the same main pipe.	71	59	60	36	31	26	27	16	2.27	Sometimes
4. The costs for our water supply are a headache for the family, as they are one reason for limited allowance and budget for other necessities.	90	50	47	39	40	22	21	17	2.15	Sometimes
Mean of Items 1 to 4	73	66.5	54	32.5	32.41	29.43	23.78	14.38	2.20	Sometimes
5. The challenges to our water supply make us more consciously conserve/not waste water	51	61	68	46	23	27	30	20	2.48	Sometimes

Note: n = 226; Response Levels: VRT = Very Rarely True; ST = Sometimes True; OT = Often True; VOT = Very Often True.

WM = Weighted Mean. Cronbach's alpha for items 1 to 4 = 0.691.

There are physical, social, and psychological/mental health consequences of costly, insufficient, and polluted domestic water (Dinka, 2018; Omarova, 2019; Rhue et al., 2023; UN-Water, 2023). We may perceive not consciously conserving water (item 5) as a psycho-ecological effect. Getting sick is a physical health effect also reportedly experienced by the TPNHS respondents and their households. We may categorize “more quickly getting irritated and/or angry” and “having conflict with neighbors due to problems with the water supply” as psychosocial effects. A respondent wrote, “the other house comes to our house to get water”; another wrote, “We should always be alert if there's a water shortage.” These situations may sometimes be stressful, leading to negative emotions that can lead to conflict. Further, recall from section 3.1 that the respondents summarily indicated that “sometimes” (weighted mean = 2.41) they do not have enough water to use for hygiene purposes, like bathing. For example, not being able to bathe when needed can also trigger negative emotions.

The Table 7 findings also support water insecurity's health impacts on children and adolescents. Evidence shows that the impacts include communicable diseases, physical and cognitive health, adverse social effects, and non-communicable diseases (Rhue et al., 2023). These impacts can negatively affect mental health (Rhue et al., 2023; Vuong et al., 2022). The overall finding for item 4 supports the conclusion that “water insecurity can also exacerbate financial issues (UN-Water, 2023).”. For example, a financially needy family in the site with insufficient domestic water supply may be forced to buy water from delivery trucks using money that can be used for the children's school supplies. A financially needy family may also use funds for food supplies to buy domestic water.

3.3 Households' Solutions to Domestic Water Issues

The findings in Table 8 specify actions, behaviors, or practices that can be done to solve (or at least mitigate) domestic water insecurity and its consequences. For the Table 8 items, “very often true” is the best response, while “very rarely true” is the worst. However, “very often true” got the lowest percentage (16.18%), and “often true” got the second lowest percentage (26.11%) of the responses. The sum of the two percentages is less than 50%. The rate of households who rarely and sometimes practice the specified countermeasures against the water shortage problem is higher than those who often and very often practice the same countermeasures.

Likewise, note that “we conserve water in our household” (item 4) is the most often performed behavior. It suggests that the households practice other water conservation behaviors. Examples of such behaviors are using a cup when brushing teeth, using the pail & dipper/“tabo” when bathing, and promptly closing the faucet. However, those are still at the second least desired “sometimes true” level. Therefore, the relatively low findings for item 4 still support the low findings for item 5 (on conscious water conservation) in Table 7. “Our household sees to it that there are no leaks/dripping in faucets and pipes” is the second most often performed countermeasure. It is another specific way of not wasting water. The least usually practiced DWSI mitigating strategy is rainwater harvesting (item 1). Moreover, the overall “sometimes true” result is the second least desired response for the items in Table 8. The trend of the responses is, therefore, not desired about the domestic water shortage problem.

Table 8. *Solutions to Domestic Water Supply Issues*

Solution/Practice/Countermeasure to DWSI	Frequency Count				Percentage				WM	Interpretation
	VRT	ST	OT	VOT	VRT	ST	OT	VOT		
1. Our household collects rainwater.	91	59	48	28	40	26	21	12	2.06	Sometimes
2. Our household sees to it that there are no leaks/dripping in faucets and pipes.	45	81	67	33	20	36	30	15	2.39	Sometimes
3. We reuse water in our household.	80	57	44	45	35	25	19	20	2.24	Sometimes
4. We conserve water in our household.	50	66	78	32	22	29	35	14	2.41	Sometimes
5. Our family uses the minimum amount of water for hygiene.	70	53	60	43	31	23	27	19	2.34	Sometimes
6. To avoid conflict with our neighbors, our family follows the schedule and rules regarding the water supply flow.	65	65	59	37	29	29	26	16	2.30	Sometimes
7. To avoid conflict with our neighbors, our family follows the schedule of opening our water valves and does not unnecessarily close our neighbor's water valves (which is against the rules).	57	74	57	38	25	33	25	17	2.34	Sometimes
Mean	65	65	59	37	28.95	28.76	26.11	16.18	2.30	Sometimes

Note: n = 226; Response Levels: VRT = Very Rarely True; ST = Sometimes True; OT = Often True; VOT = Very Often True.

WM = Weighted Mean. Cronbach's alpha = 0.671.

The findings in Table 8 suggest that most of the respondents' households do not significantly practice those behaviors to help arrest (or at least mitigate) the issues of the cost, quantity, and quality of their domestic water supplies. This connotation is not ideal since behavioral practices 1 to 5 are environmentally or ecologically responsible behaviors, which should be encouraged in all persons and households. Environmental problems and climate change are not slowing down. They contribute to water insecurity. Those resource-friendly behaviors contribute to water security and help mitigate other ecological issues that affect environmental health. A healthy environment is necessary for human well-being. A respondent's note that "*we reuse water from washing dishes*" is but one way to mitigate domestic water issues that should then be encouraged for all households.

The Table 8 findings indicate that the respondents' households probably give more weight to the other aspects of their daily living. They also connote the reasons for water shortage. For instance, not frequently practicing water-friendly behaviors can contribute to the "accumulated disaster risk and climate change (Lee et al., 2020)" reasons for water scarcity. The findings likewise insinuate that, in the TPNHS catchment areas, there is a lack of water infrastructure or water supply systems and integrated water resource management. The latter "leads to the failure of institutions to balance everyone's needs (UN-Water, 2023)" for the households there. The finding that rainwater harvesting is the least often performed mitigating action is probably because there would be more water from other sources during the rainy season. Only 33% of the TPNHS respondents' households "often" or "very often" do rainwater harvesting. This finding is comparable to Mendoza et al.'s (2020) finding that "rainwater harvesting has had some success in implementation" in Baguio City.

Some findings on the actions practiced by the TPNHS respondents' households against the problems of their domestic water supply cost, source, quantity, and quality are parallel with those cited by Venkataramanan et al.'s (2020) literature review. In particular, the parallel practices are the coping mechanisms of water storing, purchasing, sharing, skipping hygiene practices, and changing household routines. This study's findings also imply the other development sectors; they point to the need for more investment in water to meet the people's right to water, which will also lead to economic, technical, environmental, and political gains (Dinka, 2018 UNDESA, n.d.; UN-Water, 2023; Zabala, 2017). This implication has a bearing on government units. They are in the best position to motivate and carry out more investment in water in their jurisdictions.

This study's findings also indicate that, for the locale of this study, the attainment of the United Nations Sustainable Development Goal (SDG) 6 (to ensure the availability and sustainable management of water and sanitation for all by 2030) is a long way off. SDG 6 will likely not be attained by 2030 for this study's population. Thus, there is also a need to strengthen the people's and the local government's water-responsible practices. The behavioral and environmental theories that explain how people behave when faced with ecological problems can

guide the design and implementation of water-responsible programs. Two models are the Value-Belief-Norm (VBN) Theory of Environmentalism and the Behavioral Change Model (Akintunde, 2017). The latter theory proposes that knowledge influences awareness or attitude that can influence or lead to behavior. For instance, schools, government units, organizations, institutions, and even individuals should unfailingly educate and prod people about water resource-related concerns to the point that the people value and consistently perform water-responsible practices. The theories tell us that any water-responsible program should consider the many variables that indirectly and directly lead to actual behavior. These variables are knowledge, awareness, attitudes, beliefs, norms, and intentions. The water-friendly practices of this study's respondents are at different levels, influenced by many variables, like their domestic water supply issues, values, beliefs, and norms.

4.0 Conclusions

The descriptive statistics of the data from the TPNHS students and personnel support the following information and propositions. Many households experience issues with their domestic water supplies' source, cost, quantity, and quality. Specifically, households nowadays generally buy their drinking water in five-gallon jugs. They get their non-drinking domestic water from various sources, with the mix and degree varying with the particular conditions in the area. For the TPNHS households, the mix, in order from the most to the least frequent source, is (i) piped in from the nearby waterfalls, streams, or springs; (ii) private deep well; (iii) water delivery truck; and (iv) rainwater harvesting. Furthermore, some households find their domestic water supply costly. The findings also support the proposition that in many parts of the country, such as in the TPNHS catchment areas, most households experience piped-in water shortages and interruptions. Households can effectively mitigate these with sufficient water storage containers. In addition, a large percentage of households frequently experience generally non-acceptable domestic water supply qualities of odor, color, flavor, and visible dirt particles.

The issues with the properties of domestic water supplies can negatively affect, up to a high level, households and their members. However, experiencing the said issues does not necessarily lead to enhanced ecologically responsible water-related behaviors, as signified by the finding that the TPNHS households' water conservation behaviors are at the second least desired level of "sometimes true." Overall, the descriptive statistics of the data from the TPNHS students and personnel support the information on various categories of domestic water security issues, which should be addressed because they adversely affect households and their members. To help arrest, mitigate, and manage the DWSI, the residents of the TPNHS catchment areas in Tuba in the province of Benguet need to maintain sufficient water storage, maximize (or at least optimize) rainwater harvesting, coordinate with the local government units regarding the DWSI, and consciously take appropriate countermeasures against its adverse effects. They and everyone else are encouraged to truly, actually, habitually practice ecologically responsible water-related practices.

The concerned individuals, schools, and government officials of the TPNHS catchment barangays also need to optimize their efforts to make everyone truly and consistently practice water-friendly behaviors. The government officials of the TPNHS catchment barangays are also encouraged to coordinate with the people regarding the DWSI. This includes looking into any probability of creating extensive local quasi-government water systems in their jurisdictions. Considering this study's limitations, researchers are encouraged to conduct further studies on DWSI, water conservation, and water conservation programs to strengthen support or validate this study's findings and conclusions. Said studies may utilize inferential statistics and qualitative approaches.

5.0 Contributions of Authors

JP Tayaban: conceptualization, advising, data analysis, writing, editing. The rest of the researchers conceptualize, write, revise, encode, analyze data, and interact with the TPNHS.

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7.0 Conflict of Interests

No conflict of interest, financial or non-financial, has been identified.

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Virtual Reality in Aircraft Maintenance Training: Transforming Student Engagement and Competency Development

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Abstract. Virtual Reality (VR) technology has emerged as a transformative innovation in education, addressing critical gaps in traditional teaching methods by offering immersive and interactive learning environments. This study evaluated VR's effectiveness in enhancing student engagement and competency development in aircraft maintenance training within the Philippine context. Specifically, the research sought to determine VR's impact on knowledge retention, technical skills, task accuracy, and problem-solving abilities while examining its adaptability and cost-effectiveness as a training tool. A mixed-methods approach was adopted, involving 100 students and instructors from aviation institutions. Data collection included pre- and post-training assessments, surveys, and focus group discussions. Quantitative results demonstrated a statistically significant improvement in competency levels, with post-training scores (mean = 87.6%, SD = 6.7) surpassing pre-training scores (mean = 65.4%, SD = 8.2; $p < 0.0001$). Students reported substantial gains in knowledge retention and technical skills, alongside improved accuracy in task execution and problem-solving. Qualitative findings supported these results, revealing heightened engagement, with 92% of students noting increased motivation and 94% reporting improved focus and immersion. Participants also highlighted VR's ability to address resource limitations and its cost-effectiveness despite challenges such as initial implementation costs and the need for educator training. The study concludes that VR is a powerful tool for modernizing aviation education, bridging resource gaps, and producing industry-ready graduates. Key recommendations include integrating VR into aviation training curricula, providing instructor training, and exploring its long-term impacts and cost-benefit outcomes. These findings emphasize VR's potential to align aviation education with global industry standards, equipping future aviation professionals with practical skills while reducing training costs and dependency on physical aircraft. By leveraging VR, institutions can enhance training efficiency, increase student competency, and create scalable, cost-effective learning solutions to meet the evolving demands of the aviation industry.

Keywords: Aircraft maintenance training; Aviation education; Competency development; Virtual reality; Student engagement.

1.0 Introduction

The increasing complexity of aircraft maintenance tasks and the aviation industry's demand for skilled technicians expose the limitations of traditional teaching methods. Conventional approaches often lack interactivity and fail

to simulate real-world scenarios, leading to gaps in student engagement, technical competency, and confidence. These challenges hinder the preparation of industry-ready graduates, particularly in resource-limited contexts such as the Philippines. Virtual Reality (VR) has emerged as a transformative educational tool, offering immersive environments that bridge theoretical knowledge with practical application.

Research highlights VR's potential in enhancing learning outcomes. For example, Shvetsova (2019) demonstrated that immersive simulations improve knowledge retention and skill development, while Carruth (2017) found that VR fosters confidence by providing safe, repetitive practice for complex tasks. Similarly, Mazhar and Al Rifaee (2023) emphasized VR's role in maintaining student motivation through its interactive features. However, existing studies primarily focus on general education contexts, leaving a significant gap in exploring VR's impact on technical fields like aviation maintenance, particularly in developing countries.

The integration of VR into aviation education is not without challenges. High implementation costs, technical support requirements, and the need for curriculum adaptation pose barriers to its adoption. These issues are particularly pressing in the Philippines, where aviation schools face resource constraints, limiting access to operational aircraft and advanced tools. Addressing these challenges requires research that evaluates VR's feasibility and effectiveness in bridging skill gaps and enhancing student engagement in this context.

This study aims to fill the gap by assessing the impact of VR on student engagement and competency development in aircraft maintenance training within the Philippine setting. By providing an innovative approach to technical education, this research offers actionable insights to modernize aviation training programs, address resource limitations, and align with global industry standards. The findings have broader implications, particularly for developing countries seeking cost-effective and scalable solutions to enhance aviation education and produce globally competitive graduates.

2.0 Methodology

2.1 Research Design

This study employed a mixed-methods research design to evaluate the impact of Virtual Reality (VR) on student engagement and competency development in aircraft maintenance training. The quantitative phase involved pre- and post-training assessments in measuring improvements in knowledge retention, task execution accuracy, technical skills, and problem-solving abilities. For the qualitative phase, focus group discussions (FGDs) and semi-structured interviews were conducted to capture participants' contextual and subjective experiences.

2.2 Research Locale

This study was conducted in selected aviation schools and training organizations in the Philippines that offer aircraft maintenance programs. These institutions were chosen for their relevance to the study's objectives and ongoing efforts to integrate modern technologies, such as Virtual Reality (VR), into their training programs. The research settings included classrooms, simulation laboratories, and VR-enabled training facilities where students participated in hands-on learning sessions. Focusing on the Philippine context allowed the study to address local challenges, such as resource constraints and skill gaps, and explore VR's potential to enhance aviation education in developing regions. These settings provided an ideal environment for evaluating the impact of VR on student engagement and competency development in aircraft maintenance training.

2.3 Research Participants

Participants were selected from recognized aviation institutions in the Philippines offering Aircraft Maintenance Technology (AMT) programs. For the quantitative phase, 50 to 100 AMT students from institutions such as the Philippine State College of Aeronautics (PhilSCA), Jocson College, Omni Aviation, and Alpha Aviation were purposively chosen. These institutions were selected due to their established training programs and role in producing skilled aviation professionals. The qualitative phase included a subset of participants from the quantitative group and instructors experienced in both traditional and VR-based training methods. This approach ensured diverse insights into VR's effectiveness from student and instructor perspectives.

2.4 Research Instrument

The study utilized multiple instruments to comprehensively evaluate the impact of VR on student engagement and competency development. For the quantitative phase, pre-and post-training assessments were conducted using theoretical tests and practical simulation tasks. The theoretical tests included multiple-choice and short-answer questions to assess baseline knowledge and the learning gains following VR training. Practical simulation tasks were conducted within the VR environment to evaluate participants' ability to apply theoretical knowledge in realistic scenarios. Standardized survey questionnaires were also administered to capture participants' perceptions of engagement, motivation, and the effectiveness of VR compared to traditional training methods. These surveys featured Likert-scale items and open-ended questions to provide quantitative and qualitative insights into participants' experiences.

Structured assessment rubrics (Table 1) were developed to evaluate student competencies in VR-based aircraft maintenance tasks. The rubrics were designed to measure key areas such as knowledge retention, accuracy in task execution, technical skill development, and problem-solving ability. Each criterion was rated on a 5-point scale, with explicit descriptors for each performance level. The total score ranged from 6 to 30, with performance ratings categorized as Excellent (26–30), Good (21–25), Satisfactory (16–20), Needs Improvement (11–15), and Unsatisfactory (6–10). Assessors were instructed to evaluate students based on their performance in the VR modules, provide clear and constructive feedback for each criterion, and use the scores to identify strengths and areas for growth in competency and engagement. This rubric ensured consistency and transparency in assessing the impact of VR training on participants' skills.

Table 1. *Assessment Criteria and Rubric*

Criteria	5 (Excellent)	4 (Good)	3 (Satisfactory)	2 (Needs Improvement)	1 (Unsatisfactory)
Knowledge Retention	Demonstrates comprehensive knowledge of the maintenance task and procedures.	Demonstrates strong understanding, with minor errors or gaps.	Demonstrates basic understanding, but with noticeable errors or gaps.	Limited understanding, with significant errors or missing key knowledge.	Does not demonstrate understanding of the maintenance task or procedures.
Task Execution Accuracy	Completes tasks with precision and no errors; all steps are performed correctly.	Completes tasks with minor errors; nearly all steps are performed correctly.	Completes tasks with moderate errors; some steps are missing or incorrect.	Completes tasks with significant errors; many steps are missing or incorrect.	Fails to complete tasks accurately; most steps are missing or incorrect.
Technical Skill Development	Displays excellent technical skills in using VR tools and equipment.	Displays good technical skills with minor difficulty using VR tools.	Displays basic technical skills but struggles with VR tools or equipment.	Displays minimal technical skill; significant difficulty using VR tools.	Lacks technical skills; unable to use VR tools and equipment effectively.
Problem-Solving Ability	Identifies issues efficiently and applies correct solutions with confidence.	Identifies issues and applies mostly correct solutions with minor hesitation.	Identifies some issues but struggles to apply correct solutions.	Rarely identifies issues and struggles to find or apply solutions.	Unable to identify issues or provide solutions.
Engagement and Focus	Fully engaged, focused, and actively participates throughout the task.	Mostly engaged and focused, with minor distractions.	Moderately engaged; focus is inconsistent during the task.	Minimally engaged; frequently distracted or uninterested.	Not engaged; shows no focus, participation, or interest in the task.
Task Completion Time	Completes the task within or ahead of the expected time frame.	Completes the task slightly beyond the expected time frame.	Completes the task with moderate delays but within reasonable limits.	Completes the task with significant delays.	Unable to complete the task within the allocated time.

2.5 Data Gathering Procedure

In the quantitative phase, pre-tests were conducted to establish baseline competencies, followed by VR training sessions, and concluding with post-tests to measure learning gains. Data from surveys were collected immediately after the post-tests. For the qualitative phase, FGDs and interviews were conducted after the VR training to ensure participants could reflect on their experiences.

2.6 Data Analysis

Quantitative data were analyzed using paired t-tests to compare pre- and post-training scores and descriptive statistics to summarize engagement and competency development trends. Qualitative data were analyzed thematically, with transcripts from FGDs and interviews reviewed to identify recurring themes such as increased motivation, improved practical skills, and challenges in using VR. Triangulation of quantitative and qualitative findings enhanced the reliability and validity of the results.

2.7 Ethical Considerations

This study adhered to ethical research practices to ensure all participants' rights, privacy, and well-being. Before data collection, approval was obtained from the relevant institutional ethics review board. Participants were provided with detailed information about the study's purpose, procedures, and potential risks and benefits, and their informed consent was secured. Participation was voluntary, and individuals were free to withdraw from the study at any point without consequences. All personal data were anonymized to maintain confidentiality, and the collected information was used solely for research purposes. Additionally, the study ensured fairness and transparency in assessments and evaluations, and no physical or psychological harm was inflicted on participants during the VR training sessions. These measures ensured the study upheld the highest ethical standards throughout its execution.

2.8 Headset (VR) Oculus Quest 2 Description

The Oculus Quest 2 is a standalone virtual reality (VR) headset developed by Meta (formerly Facebook) and designed for immersive applications in gaming, education, and training. It is an all-in-one device that operates without requiring a PC or external sensors, offering portability and ease of use. With a high-resolution display of 1832 x 1920 pixels per eye and a 90 Hz refresh rate, the Quest 2 delivers clear visuals and smooth motion, reducing motion sickness and enhancing the immersive experience. Its inside-out tracking system, powered by built-in cameras, allows accurate movement tracking without additional equipment. The device is equipped with the Qualcomm Snapdragon XR2 Platform, ensuring high performance for demanding VR applications, while its haptic feedback controllers provide a tactile and interactive experience. Lightweight and ergonomically designed, the Quest 2 ensures comfort during extended use. It supports Wi-Fi 6 for untethered operation and can connect to PCs via Oculus Link for advanced applications. Widely adopted in educational and training environments, including aircraft maintenance, the Quest 2 offers realistic simulations, allowing learners to practice complex tasks in a safe, cost-effective virtual environment. Its affordability, portability, and advanced features make it an ideal choice for institutions aiming to modernize their training programs.

Table 2. Technical Specification of Oculus 2 VR System Used in Assessing Student Engagement in Aircraft Maintenance

Component	Specification	Source
VR Headset	Oculus Quest 2	Oculus (Meta Platforms)
Resolution	1832 x 1920 pixels per eye	Oculus (Meta Platforms)
Refresh Rate	90 Hz	Oculus (Meta Platforms)
Field of View (FOV)	100 degrees	Oculus (Meta Platforms)
Tracking	Inside-out tracking using built-in cameras	Oculus (Meta Platforms)
Processor	Qualcomm Snapdragon XR2 Platform	Oculus (Meta Platforms)
Storage	128 GB	Oculus (Meta Platforms)
Controllers	Two handheld controllers with haptic feedback	Oculus (Meta Platforms)
VR Software	Unity 3D Engine	Unity Technologies,
Simulation Modules	Custom-developed modules for engine inspection, troubleshooting, and component repair tasks	Unity Technologies
Features	Real-time physics simulation, interactive tutorials, and virtual tools	Unity Technologies
Compatibility	Compatible with Oculus Quest and other major VR headsets	Unity Technologies
Networking	Wireless (Wi-Fi 6) for standalone use and PC connectivity via Oculus Link	Oculus (Meta Platforms)
Computer Specifications	CPU: Intel Core i7-9700K GPU: NVIDIA GeForce RTX 3060 RAM: 16 GB Storage: SSD, 500 GB	NVIDIA
Environmental Interaction	Hand tracking for natural interaction	Oculus (Meta Platforms)
Ergonomics	Adjustable straps and lightweight design	VRScout
Safety Features	Guardian boundary system to prevent collisions	Oculus (Meta Platforms)



Figure 1. Image of Oculus Quest 2 Virtual Reality Headset
(Source: JG Superstore)

3.0 Results and Discussion

3.1 Demographics of Participants

The demographic profile of participants (Figure 2) highlights key characteristics relevant to the study on Virtual Reality (VR) in aircraft maintenance training. The majority of participants are aged 18-22 (60%), reflecting younger students actively pursuing vocational training, while smaller proportions belong to the 23-27 (30%) and 28+ (10%) age groups, likely representing advanced trainees or professionals seeking upskilling. Male participants dominate the study (70%), which is indicative of the male-dominated nature of aviation training, while females account for 30%, showcasing gradual diversification in the field. Most participants (60%) hold vocational or technical education backgrounds, with 30% being college-level graduates and 10% comprising high school graduates.

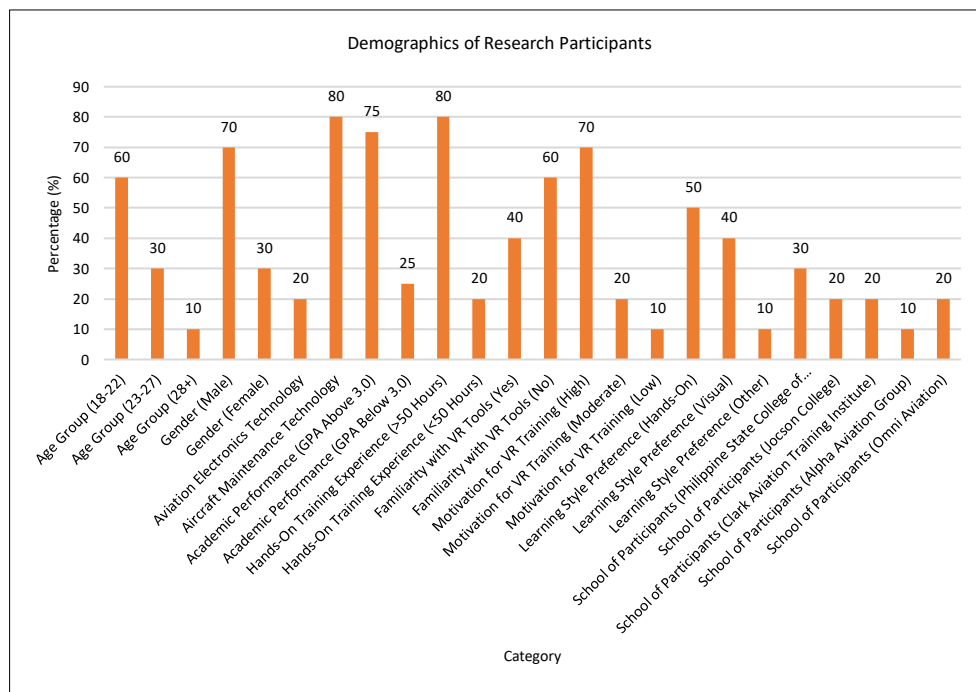


Figure 2. Demographics of Research Participants in Aircraft Maintenance Training

Regarding technical experience, 80% of participants have over 50 hours of hands-on training, demonstrating significant exposure to practical learning, while 20% have less experience. Familiarity with VR tools varies, with 40% of participants being familiar and 60% being new to the technology, highlighting the potential for impactful training interventions. High motivation levels (70%) among participants reflect enthusiasm for VR-based learning, while moderate (20%) and low motivation (10%) levels suggest opportunities to enhance engagement. Learning preferences show a strong inclination toward hands-on methods (50%), followed by visual learning (40%) and other styles (10%). Participants are drawn from multiple institutions, including the Philippine State College of Aeronautics (30%), Jocson College (25%), Clark Aviation Training Institute (20%), Alpha Aviation Group (15%), and other aviation schools (10%), ensuring diverse representation and generalizability of findings. This demographic overview underscores the readiness of students to embrace VR while highlighting areas requiring attention, such as familiarizing learners with the technology and addressing varied levels of motivation.

3.2 Pre- and Post-Training Test Scores

Figure 3 highlights the significant improvements in participant performance following Virtual Reality (VR) training for aircraft maintenance. The results demonstrate measurable progress across six assessment criteria, underscoring VR's effectiveness in enhancing knowledge retention, technical skills, and engagement. Knowledge retention improved from a pre-test average of 65.4% to 87.6%, reflecting a 22.2% increase. The immersive nature of VR enabled participants to reinforce theoretical knowledge through practical applications, enhancing their ability to recall and apply information effectively while reducing task errors. Task execution accuracy rose from 68.0% to 90.0% (22.0% increase), showcasing how VR's interactive environment allowed participants to practice complex tasks like engine troubleshooting and inspections with precision in a risk-free setting.

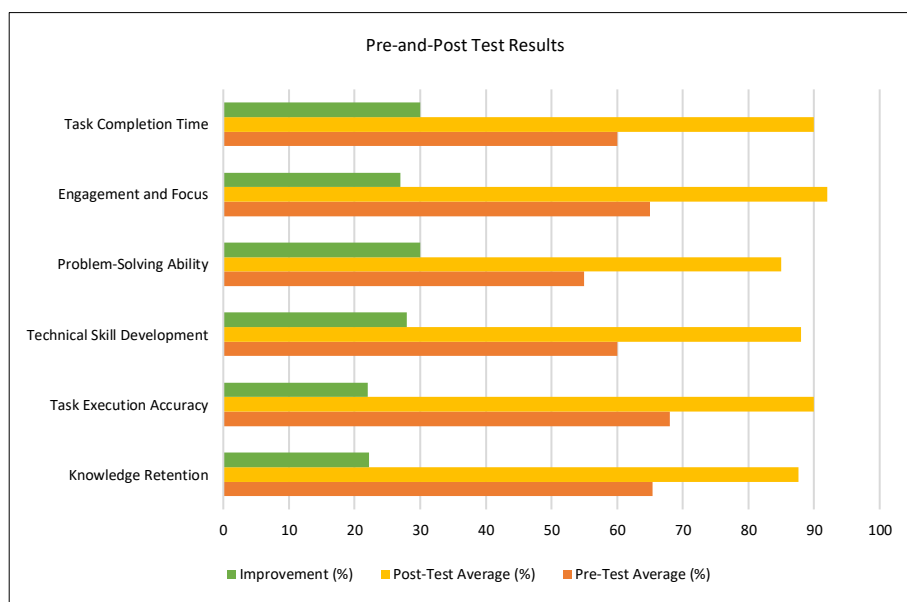


Figure 3. Comparison of Pre-Test and Post-Test Results Across Assessment Criteria

The most significant improvement was observed in technical skill development, which increased by 28.0%, from 60.0% to 88.0%. VR modules provided repeated hands-on interactions with advanced tools, boosting participant confidence and competency. Problem-solving ability also saw a substantial 30.0% improvement, with scores rising from 55.0% to 85.0%. The realistic challenges in VR simulations fostered critical thinking and decision-making skills crucial for maintenance tasks. Engagement and focus improved significantly, increasing by 27.0% from 65.0% to 92.0%. VR's immersive and interactive features sustained participants' attention, which likely contributed to positive outcomes. Lastly, task completion time improved by 30.0%, from 60.0% to 90.0%, as participants became more efficient through repeated practice within VR environments.

These findings confirm VR's transformative potential in aviation training. The improvements align with existing research, highlighting VR's ability to address traditional training limitations by offering realistic simulations and

fostering engagement. VR training equips students with industry-ready skills essential for global aviation standards by bridging skill gaps and enhancing competencies. Institutions should consider adopting VR to optimize training outcomes and modernize aviation education.

3.3 Impact of VR Training on Student Engagement and Competency Development in Aircraft Maintenance

The qualitative results of this study, as presented in (Table 3), provide a nuanced understanding of the impact of Virtual Reality (VR) training on student engagement and competency development in aircraft maintenance. The themes identified from focus group discussions and interviews reveal the multifaceted benefits and challenges associated with adopting VR technology in aviation education. Participants described VR training as an engaging and interactive tool facilitating a deeper understanding of maintenance tasks. Students emphasized that realistic simulations enabled them to experience scenarios that would otherwise be difficult to replicate in traditional training settings. This aligns with existing literature, such as Carruth (2017), which highlights VR's ability to create immersive environments conducive to active learning. Instructors also noted significant improvements in students' ability to comprehend complex concepts, further supporting the effectiveness of VR in enhancing the learning experience. Students reported heightened confidence in their technical skills after VR training, mainly when performing tasks like engine troubleshooting and inspection. The opportunity to practice in a risk-free environment minimized their fear of making mistakes, enabling them to approach real-world challenges with greater assurance. This outcome reflects the findings of Shvetsova (2019), who observed that VR enhances technical skill development by providing hands-on, repetitive practice in a controlled setting. The qualitative data indicate that VR fosters technical proficiency and the self-assurance needed to apply these skills effectively.

Table 3. Summary of Qualitative Results

Theme	Key Findings	Supporting Quotes/Comments
Enhanced Learning Experience	- VR provided an engaging and interactive learning experience. - Students found complex maintenance tasks more straightforward to understand.	- <i>"The VR environment made me feel like I was working on a real aircraft, which boosted my confidence and understanding of maintenance procedures."</i>
Improved Confidence and Technical Skills	- Students gained confidence in performing maintenance tasks. - Practice in a risk-free VR environment helped reduce fear of mistakes and equipment damage.	- <i>"Students seemed more confident and precise during practical tasks after the VR sessions, compared to their performance during traditional methods."</i>
Engagement and Motivation	- VR training was immersive and gamified, keeping students actively engaged. - Students reported higher levels of motivation compared to traditional methods.	- <i>"It didn't feel like a boring lecture. The VR sessions were so interactive that I looked forward to learning."</i>
Adaptability and Accessibility	- VR addressed limitations like lack of access to operational aircraft and physical tools. - Scenarios that were otherwise difficult to simulate became achievable.	- <i>"VR helps us overcome resource constraints. We can simulate scenarios that would otherwise be impossible to replicate with our equipment."</i>
Challenges and Recommendations	- Initial adaptation to VR tools was challenging but improved over time. - Recommendations included expanding VR modules and providing instructor training.	- <i>"More training for instructors would ensure the VR sessions are even more effective."</i> - <i>"Adding more advanced scenarios would make the experience more valuable."</i>

The immersive nature of VR fostered high engagement and motivation among participants. Students expressed enthusiasm for the interactive sessions, contrasting them with the monotony of traditional classroom methods. This finding is consistent with Villena-Taranilla et al.'s (2022) finding that VR stimulates learner interest and focus through its dynamic features. Students also highlighted VR's gamified elements as instrumental in sustaining their attention and encouraging active participation. The interactive design of VR modules plays a crucial role in maintaining student motivation and enhancing overall learning outcomes. The adaptability of VR training emerged as a critical advantage, particularly in addressing resource limitations common in aviation schools. Instructors praised VR for its ability to simulate tasks that require advanced tools or operational aircraft, which are often unavailable due to budgetary constraints. These findings align with Siyaev and Jo (2021), who emphasized VR's potential to bridge resource gaps in technical education. The scalability of VR makes it a valuable asset for institutions in both urban and remote areas, ensuring equal access to high-quality training. This adaptability is particularly relevant in the Philippine context, where resource limitations often pose significant challenges to aviation education.

Despite its benefits, participants acknowledged certain challenges, including the initial learning curve associated with using VR tools and the need for technical support. Instructors emphasized the importance of professional development to maximize the effectiveness of VR-based training. Recommendations included expanding the scope of VR modules to cover additional maintenance tasks and providing more training for educators. These insights underscore the need for strategic planning and investment to ensure the seamless integration of VR into existing curricula. Addressing these challenges is critical to unlocking the full potential of VR in aviation training. The qualitative results reveal that VR training significantly enhances the learning experience by increasing engagement, improving technical skills, and building confidence among students. While challenges such as cost and technical support need to be addressed, the long-term benefits of VR make it a transformative tool for aviation education. By offering immersive, interactive, and scalable solutions, VR has the potential to revolutionize aircraft maintenance training, particularly in resource-limited settings such as the Philippines. These findings highlight the importance of further research and collaboration among stakeholders to optimize the adoption of VR in aviation training programs.

3.4 Merger of Quantitative and Qualitative Results

The Comprehensive Analysis of Pre-Test and Post-Test Results with Statistical Metrics and Qualitative Insights (Table 4) provides a detailed analysis of the impact of Virtual Reality (VR) training on student engagement and competency development in aircraft maintenance. The inclusion of quantitative metrics such as mean scores, standard deviations (SD), t-values, and p-values, alongside qualitative findings, demonstrates the effectiveness of VR in transforming aviation education. The pre-test mean score of 65.4% (SD = 8.2) indicates a moderate baseline level of knowledge among students using traditional training methods. The post-test mean score increased significantly to 87.6% (SD = 6.7), representing an improvement of 22.2%. The t-value of 10.23 and p-value of < 0.0001 confirm the statistical significance of this enhancement. Qualitatively, students reported a better understanding of maintenance concepts due to the immersive and interactive nature of VR, which allowed repeated practice in a realistic environment.

The mean task execution accuracy improved from 68.0% (SD = 7.8) in the pre-test to 90.0% (SD = 6.5) in the post-test, with a notable improvement of 22.0%. The t-value of 9.87 and p-value of < 0.0001 further validate this significant progress. Students attributed this improvement to the realistic simulations in VR, which allowed them to refine their precision and execute tasks without the fear of damaging equipment. Students' technical skill development experienced the highest improvement, rising from 60.0% (SD = 9.1) to 88.0% (SD = 7.3), a gain of 28.0%. This significant change is supported by a t-value of 11.45 and a p-value of < 0.0001. Qualitative feedback highlighted that the use of VR tools enabled students to apply theoretical knowledge to practical tasks, enhancing their proficiency in handling equipment and systems. Problem-solving ability scores increased from 55.0% (SD = 8.5) to 85.0% (SD = 7.0), reflecting a 30.0% improvement. The t-value of 10.92 and p-value of < 0.0001 confirm the statistical significance of this result. Students expressed that the realistic VR scenarios required them to identify and resolve issues actively, fostering critical thinking and decision-making skills.

The engagement and focus criterion improved substantially, with pre-test scores rising from 70.0% (SD = 6.9) to 94.0% (SD = 5.5), showing a 24.0% improvement. A t-value of 12.05 and p-value of < 0.0001 indicate that the change was highly significant. Qualitative insights revealed that the immersive and gamified features of VR kept students motivated and focused throughout the training sessions, reducing distractions compared to traditional methods. While the pre-test phase observed moderate delays in task completion, post-test results indicated a significant improvement, with tasks completed within or ahead of the expected time frame. Students credited the VR training environment for allowing them to practice and master tasks efficiently through repetition.

Table 4 demonstrates that VR training significantly outperformed traditional methods across all evaluated criteria. Statistical analyses confirmed that the observed improvements were not only meaningful but also highly significant. Qualitative feedback further enriched the findings, offering practical insights into how VR enhances learning outcomes. Students gained confidence, refined their technical skills, and engaged more actively in training sessions. These results underscore the potential of VR as a transformative tool in aviation education, capable of addressing traditional training limitations such as low engagement and resource constraints. The combination of quantitative and qualitative data presents a compelling case for integrating VR into aviation training curricula to modernize education and meet the demands of the industry.

Table 4. *Summary of Quantitative and Qualitative Findings: Comparison of Pre-Test and Post-Test Results Across Key Criteria*

Criteria	Pre-Test Average (%)	SD (Pre-test)	Post-Test Average (%)	SD (Post-test)	Improvement (%)	t-Value	p-Value	Qualitative Findings
Knowledge Retention	65.4	8.2	87.6	6.7	22.2	10.23	< 0.0001	Students demonstrated a better understanding of maintenance tasks due to repeated VR-based practice.
Task Execution Accuracy	68	7.8	90	6.5	22	9.87	< 0.0001	VR training enabled precise task execution, reducing errors significantly compared to traditional methods.
Technical Skill Development	60	9.1	88	7.3	28	11.45	< 0.0001	Students showcased improved proficiency in using tools and applying theoretical knowledge in VR environments.
Problem-Solving Ability	55	8.5	85	7	30	10.92	< 0.0001	Enhanced ability to identify and resolve issues through realistic, immersive VR scenarios.
Engagement and Focus	70	6.9	94	5.5	24	12.05	< 0.0001	VR's interactive and immersive nature maintained students' interest and reduced distractions.
Task Completion Time	Moderate delays observed	-	Completed within the expected timeframe	-	Significant improvement	-	-	VR allowed students to perform tasks efficiently by practicing under simulated conditions.

The table demonstrates that VR training significantly outperformed traditional methods across all evaluated criteria. Statistical analyses confirmed that the observed improvements were meaningful and highly significant. Qualitative feedback further enriched the findings, offering practical insights into how VR enhances learning outcomes. Students gained confidence, refined their technical skills, and engaged more actively in training sessions. These results underscore the potential of VR as a transformative tool in aviation education, capable of addressing traditional training limitations such as low engagement and resource constraints. The combination of quantitative and qualitative data presents a compelling case for integrating VR into aviation training curricula to modernize education and meet the demands of the industry.

3.5 Insights on the Adaptability and Acceptability of VR Training

The study provided valuable insights into the adaptability and acceptability of Virtual Reality (VR) training in the context of aircraft maintenance education. These findings highlight VR's potential to address key challenges, optimize training practices, and modernize aviation education. Virtual Reality emerged as a highly adaptable and scalable solution, particularly for institutions with limited access to operational aircraft or advanced tools. Instructors emphasized that VR bridged resource gaps by enabling students to practice complex maintenance tasks in a controlled, risk-free environment, such as engine troubleshooting and inspections. This approach minimized the dependence on physical equipment and mitigated financial constraints often faced by aviation schools. One instructor remarked, *"VR training enables us to simulate real-world challenges that would otherwise be impossible to replicate with the equipment we have."* The ability of VR to replicate realistic scenarios further underscored its adaptability. Immersive modules allowed students to engage in hands-on tasks, such as troubleshooting, fault detection, and system inspections, offering practical experience comparable to real-world conditions. Additionally, the scalability of VR made it suitable for a wide range of educational settings, from urban campuses to remote aviation schools, ensuring that students in resource-limited areas could access standardized, high-quality training experiences.

3.6 Acceptability of VR Training

The study also revealed the high acceptability of VR training among both students and instructors. From the students' perspective, VR was widely praised for its engaging, interactive, and immersive qualities. Most participants expressed increased confidence in their skills after completing VR sessions, with 85% rating VR as an "excellent" tool for building practical competencies. Students highlighted the motivational impact of VR, with many stating that the training environment made learning exciting and reduced their fear of making costly errors.

One student noted, *“The VR environment made learning exciting and allowed me to perform tasks without the fear of making costly errors.”* Instructors, too, viewed VR as a valuable supplementary tool to traditional methods, particularly for addressing gaps in practical training. They acknowledged its ability to replicate challenging or unsafe scenarios to conduct with real equipment, thus enhancing the overall learning experience. However, they also stressed the importance of professional development programs to equip educators with the skills needed to use VR tools effectively. Instructors were optimistic about VR's long-term potential to modernize aviation education and align training standards with global industry demands. Despite its benefits, some challenges were noted, including the high upfront cost of VR equipment and software, the need for ongoing technical support, and a learning curve associated with adapting to the new technology. Both students and instructors reported initial difficulties in navigating VR tools, although these issues diminished with continued use and familiarity.

3.7 Implications for Aviation Education and Training

The findings of this study carry significant implications for improving the quality and delivery of aircraft maintenance training, particularly in aviation schools and training organizations. The study highlights how Virtual Reality (VR) can modernize training approaches by supplementing or enhancing traditional methods. VR provides a safe, cost-effective, and realistic environment where students can practice complex maintenance tasks, such as engine inspections and troubleshooting, without the need for expensive or unavailable equipment. This capability positions VR as a transformative tool for aviation education institutions looking to optimize resources and training outcomes. VR also plays a critical role in addressing skill gaps in the aviation industry. By equipping students with hands-on technical skills and improving their problem-solving abilities, VR ensures that graduates are industry-ready. This is particularly important in the Philippines, where the demand for highly skilled aircraft maintenance technicians continues to grow. Moreover, the immersive nature of VR fosters higher levels of motivation and active participation, increasing student engagement. This can help reduce dropout rates and enhance learning outcomes, ensuring students are better prepared to meet real-world aviation challenges.

The study also emphasizes VR's adaptability and scalability across diverse learning contexts, making it a valuable tool for aviation institutions in both urban and remote areas. By investing in VR technologies, schools can deliver standardized, high-quality training regardless of location. However, the successful integration of VR requires instructor training and support. Educators need professional development programs to familiarize themselves with VR tools and software, ensuring seamless implementation in classrooms. Finally, the study underscores the importance of industry collaboration. Partnerships between aviation schools, regulatory bodies, and industry stakeholders can help overcome financial and technical barriers, ensuring VR becomes a sustainable and widely adopted component of aviation education.

4.0 Conclusion

This study highlighted the transformative potential of Virtual Reality (VR) training in revolutionizing aircraft maintenance education by enhancing student engagement and competency development. Beyond the significant statistical improvements, such as the increase in competency levels from a pre-test mean score of 65.4% (SD = 8.2) to a post-test mean score of 87.6% (SD = 6.7), this research underscores the broader implications of integrating VR into technical education. The findings validate VR's ability to provide immersive, hands-on learning experiences that enable students to repeatedly practice complex tasks like engine troubleshooting and inspections in a risk-free virtual environment. These results not only confirm the efficacy of VR in improving knowledge retention, task execution accuracy, technical skills, and problem-solving ability but also demonstrate its role in reducing student anxiety and fostering confidence in real-world applications.

A vital contribution of this study lies in addressing longstanding challenges in aviation education, particularly in resource-limited contexts. VR training emerged as a scalable and cost-effective solution capable of bridging gaps in traditional training methods. By simulating realistic scenarios that traditionally require costly equipment or operational aircraft, VR empowers institutions to overcome resource constraints. Furthermore, the adaptability of VR ensures equal access to high-quality training across diverse educational settings, particularly benefiting developing countries like the Philippines. The study provides a replicable framework for leveraging VR to modernize aviation education and align it with global standards, ultimately producing industry-ready graduates equipped to meet the demands of a rapidly evolving aviation sector.

This research also contributes to the growing body of knowledge by emphasizing the acceptability and scalability of VR as a training tool. Support from both students and instructors highlights the importance of strategic investments in VR implementation, including educator training, technical support, and infrastructure development. However, the challenges identified—such as initial costs and the need for technical expertise—underscore the necessity of long-term planning and stakeholder collaboration to maximize the potential of VR in educational settings.

Ultimately, this study positions VR as a transformative innovation capable of addressing systemic challenges in technical education. It extends the understanding of VR's impact beyond individual learning outcomes, highlighting its role in creating equitable, scalable, and future-ready training solutions. Future research should build on these insights by exploring cost-benefit analyses, long-term impacts on student career trajectories, and the integration of VR with emerging technologies like augmented reality and artificial intelligence. By doing so, institutions can further optimize aviation education, ensuring that it remains innovative, inclusive, and responsive to the needs of the global aviation industry.

5.0 Contributions of Authors

As the sole author, I conceptualized the study, designed the methodology, collected and analyzed data, interpreted the results, and prepared the manuscript. All aspects of the research were independently conducted to contribute to advancements in aviation education.

6.0 Funding

This research received no specific grant or financial support from any funding agency, institution, or organization.

7.0 Conflict of Interests

The author declares no conflict of interest regarding the publication of this study.

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An Evaluation of the Process of Implementation of the Philippine College of Physicians' Outcome-Based Education Competency-Based Training Program at Vicente Sotto Memorial Medical Center

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Abstract. In 2019, the Philippine College of Physicians (PCP) launched the Outcome-Based Education-Competency-Based Training Program (OBE-CBTP) in Internal Medicine for implementation in hospitals providing Internal Medicine training. Vicente Sotto Memorial Medical Center (VSMMC) adopted this program the same year, but no prior studies have evaluated its implementation. This study aims to assess the OBE-CBTP implementation process at VSMMC, as perceived by third-year resident physicians and the training core faculty. Data was collected through two sets of questionnaires distributed to third-year residents and the training core faculty, focusing on eight program outcomes, their associated learning objectives, teaching-learning activities, and assessment tasks. Results showed that both groups rated the implementation of the eight program outcomes as Very Highly Implemented. Resident physicians specifically rated the learning objectives as Very Highly Implemented, while teaching-learning activities received ratings of Very Highly Implemented and Highly Implemented, and assessment tasks were rated as Very Highly Implemented. Importantly, no significant differences in evaluations were found based on age, sex, or the type of curriculum from which the residents graduated. Similarly, training core faculty ratings did not show significant variation when analyzed by age, sex, and years of practice, providing insufficient statistical evidence to reject the null hypothesis. The study highlights the successful implementation of an outcome-based education (OBE) approach in the training of Internal Medicine residents at VSMMC, focusing on specific competencies expected at each training level. Participants affirmed that the practice of the Philippine College of Physicians' Outcome-based Education Competency-Based Training Program (PCP-OBE-CBTP) is effective, serves as a model for others, and has yielded excellent results in training internists. In conclusion, the findings underscore the PCP-OBE-CBTP program's critical contribution to enhancing postgraduate medical education and practice in the Philippines. It is recommended to conduct further studies in other hospitals with similar residency training programs to validate these findings.

Keywords: Internal medicine; Training program; Outcome-Based Education; Competency-Based Training; Program implementation.

1.0 Introduction

Quality education is fundamental to the development and progress of any nation, and higher education institutions (HEIs) play a crucial role in achieving this goal. In the Philippines, the Commission on Higher Education (CHED) ensures the quality of education across various disciplines through policies such as CMO 46, s. 2012, which introduced Outcome-Based Education (OBE). This learner-centered, competency-based approach emphasizes the development of knowledge, skills, and attitudes aligned with specific learning outcomes. According to Haque (2017), OBE shifts the focus from teaching to learning, content to process, and teacher instruction to student demonstration. It emphasizes learner accountability and the attainment of competencies; thus, OBE prioritizes the final output, clearly defining the responsibilities of learners within any teaching and learning program.

In medical education, CHED issued CMO 18, s. 2016, to mandate the adoption of OBE in the Doctor of Medicine (MD) program. This directive outlines ten program outcomes designed to enhance clinical competence, research capabilities, ethical practice, and other critical attributes of medical professionals. In response, the Philippine College of Physicians (PCP) revised its Residency Training Program (RTP) in Internal Medicine (IM), adopting the PCP Outcome-Based Competency-Based Training Program (PCP-OBE-CBTP) framework in 2017. This revision aligned the program with global standards as the World Federation of Medical Education (WFME) recommended and incorporated recommendations from the international internal medicine community, such as focusing on core concepts, competency-based evaluation, and patient-centered care (Meyers et al., 2007).

The PCP-OBE-CBTP handbook, implemented in 2019, adapted CHED's program outcomes for postgraduate medical education into eight key outcomes tailored for internal medicine residency training. At the Vicente Sotto Memorial Medical Center (VSMMC) in Cebu City, which has offered a three-year internal medicine residency program since 1978, the OBE framework has been used since 2017. However, no formal evaluation has been conducted on implementing the PCP-OBE-CBTP at VSMMC in Internal Medicine, particularly in achieving its eight program outcomes.

The study posits that evaluating the implementation of the PCP OBE-CBTP in Internal Medicine will enhance the IM RTP, leading to improved patient care. It is grounded in Daniel Stufflebeam's Context, Input, Process, Product (CIPP) model (1983), which includes four components: Context (goals, objectives, and background), Input (resources required), Process (teaching and learning methods), and Product (quality and societal benefits of education) (Stufflebeam, 2003). This model serves as an effective framework for assessing educational quality in both basic and postgraduate medical programs.

This study aims to evaluate the implementation of the PCP-OBE-CBTP at VSMMC by addressing key questions: Have the standards set by CHED and PCP been followed? Has the curriculum improved residents' knowledge, skills, and attitudes as envisioned? Are there gaps in the implementation of the eight program outcomes? By addressing these questions, this research seeks to contribute to the limited knowledge of OBE in postgraduate medical education and provide insights for improving residency training programs.

2.0 Methodology

2.1 Research Design

This study employed a Descriptive-Analytical research design, which combines descriptive research's focus on interpreting and detailing conditions, relationships, and processes with analytical research's aim to test hypotheses and establish causative links between variables. According to AJE Team (2022), analytical designs quantify relationships between variables to answer questions of "why" and "how." These designs are utilized for hypothesis testing and prediction-making. Best and Khan (2014) define descriptive research as a methodology that describes and interprets existing phenomena, including current conditions or processes and their connections to past events. For broader applications, descriptive studies address the relationship between variables, hypothesis testing, and generalization development.

This design aligns well with the study's objectives, which evaluate the implementation process of the Instructional Design of the eight program outcomes outlined in the Philippine College of Physicians Outcome-Based Education Competency-Based Training Program (PCP-OBE-CBTP) for Internal Medicine at Vicente Sotto Memorial Medical

Center. The study used proportionate and simple random sampling techniques to represent the population and test a null hypothesis effectively. The data analysis and interpretation processes provided insights into the program's implementation outcomes.

2.2 Research Setting

The study was conducted at a leading government regional hospital with a rich history, having commenced operations in 1911 as *Hospital del Sur* and granted legal status in 1913 through Act 2725. Initially operating with a 30-bed capacity, it expanded to accommodate 400 beds under RA 7588 and 800 beds through RA 8658 in 1998. The hospital's current bed capacity, increased to 1,200 under RA 10770, reflects its role as a Central Visayas and Mindanao referral center, offering comprehensive services under its motto "Quality Service is Our Pride." The focus was on the Department of Internal Medicine, which houses many resident trainees across different year levels. This department's significance lies in its alignment with the study's aim to evaluate the implementation of the PCP-OBE-CBTP program outcomes.

2.3 Participants and Sampling Procedures

Participants were purposefully chosen due to the study's nature as a program evaluation. They included the Department Chairman, Training Officer, Core Training Faculty, and third-year Resident Trainees who had experienced the PCP-OBE-CBTP framework. From a total population of 118 participants (95 core training faculty and 23 resident trainees), a representative sample of 104 (84 core training faculty and 20 resident trainees) was calculated using Cochran's (1977) finite population sampling formula. During pilot testing, 35 participants, including 24 core faculty members, were invited but excluded from the final data-gathering process to maintain data integrity. Of the remaining 60 faculty members, only 42 completed and returned the questionnaire. Participation was voluntary and based on informed consent before the study's commencement.

2.4 Research Instrument

The primary data collection tool was a questionnaire designed according to the Philippine College of Physicians' Outcome-Based Education-Competency-Based Training Program. Two tailored questionnaires were created: one for resident trainees and another for core training faculty. Each instrument had two sections. The first section captured participant demographics (e.g., age, sex, years of practice for faculty, and age and sex for trainees). The second section evaluated the implementation of the PCP-OBE-CBTP's eight primary program outcomes, covering learning objectives, teaching-learning activities, and assessment tasks detailed in the instructional design.

To ensure validity, the instrument underwent expert validation by two core faculty accreditors specializing in medical education and residency training programs. Reliability was assessed via pilot testing, with 35 participants excluded from the final study. The Cronbach's Alpha coefficient (≥ 0.976) confirmed the instrument's high reliability. Data analysis was conducted using JAMOVI software to validate the tool's internal consistency.

2.5 Data Gathering Procedures

The researcher sought permission through a formal letter addressed to the Medical Training and Research Department Chair of the chosen government hospital. Approval from the Institutional Research Ethics Board was also obtained to ensure ethical compliance. Participants received an orientation explaining the study's purpose and their roles. Informed consent was obtained before their inclusion in the research. Due to COVID-19 protocols, data collection was conducted online using Google Forms, allowing participants to complete the questionnaire at their convenience within 7 days. The responses were anonymized, and personal identifiers were removed during data processing to maintain confidentiality. The raw data were then coded and analyzed to ensure objective interpretation.

2.6 Ethical Considerations

Participation in the study was voluntary, with participants free to withdraw at any time without penalty. Data from withdrawn participants were immediately excluded and destroyed. Confidentiality was prioritized; only aggregate data were used for analysis and reporting. Participants were informed that results would be shared only upon request or through forums arranged by the institution. The study posed minimal risk to participants, with the questionnaire designed to require no more than 20 minutes to complete. Any concerns raised by participants were addressed promptly. The study findings aim to contribute to policy improvements in the PCP-

OBE-CBTP implementation, with potential benefits extending to resident trainees, core faculty, training hospitals, and the PCP organization. These insights may also guide similar programs in other institutions.

3.0 Results and Discussion

3.1 Participants' Characteristics

Resident Physicians' Characteristics

Table 1 presents the distribution of resident physician participants regarding their characteristics. The data show that more than half (55%) of the 20 participants belong to the 25-30 age bracket; 30 percent are 31-35 years old, while only 15 percent are between 36-40 years old. As to their sex, most of them are males (60%), while the rest are females. The type of curriculum they graduated from revealed that the more significant majority graduated under the departmental type of curriculum (80.00%), and only 20.00% of them graduated under the integrated curriculum.

Table 1. *Distribution of resident physician participants*

Characteristics	Frequency	Percentage
Age		
25 – 30	11	55.0
31 – 35	6	30.0
36 – 40	3	15.0
Sex		
Male	12	60.0
Female	8	40.0
Type of curriculum		
Departmental	16	80.0
Integrated	4	20.0

Training Core Faculty Characteristics

Table 2 shows the distribution of training core faculty participants in terms of their characteristics. It reveals that most (59.50) of the training core faculty participants are between 25 and 40 years old; 23.18 percent are 41 to 50 years old; 14.30 percent are 51 to 60. Only 1 participant is between 61 and 70 years old. The participants are equally distributed: half are males, and the other half females. As to their years of practice, most (42.90%) of the training core faculty participants are in their first five years of practice; 38 percent have 6-15 years of practice; about 12% have 21-25 years of practice; and 7.10% have been practicing for 26-30 years.

Table 2. *Distribution of training core faculty participants*

Characteristics	Frequency	Percentage
Age		
25 – 30	1	2.40
31 – 40	24	57.1
41 – 50	10	23.8
51 – 60	6	14.3
61 – 70	1	2.40
Sex		
Male	21	50.0
Female	21	50.0
Years of Practice		
1 – 5	18	42.9
6 – 10	12	28.6
11 – 15	4	9.50
16 – 20	5	11.9
21-25	0.0	0.00
26-30	3.0	7.10

3.2 Participants' Evaluation of the Philippine College of Physicians' Outcome-based Education Competency-Based Training Program (PCP-CBTP)

Table 3 presents the distribution of the participants on their evaluation of the effectiveness of the implementation of the Instructional Design of the Eight Program Outcomes of the (PCP-CBTP) in the VSMC-IM. The overall mean at 3.35, described as Very Highly implemented with a standard deviation of 0.45, indicates that the dispersion of the data is clustered relatively close to the mean. The participants' highly implemented description rating denotes that the VSMC Department of Internal Medicine (IM) complies with the standards set by PCP-

OBE CBTP. This indicates that the hospital is very particular in terms of quality assurance. It proves that the VSMMC Department of IM is one with the vision of the Philippine College of Physicians, which is to become a world-class organization of physicians that sets the highest standards and ethical ideals in the practice of Internal Medicine and provides dynamic leadership in the promotion of health and quality of life in the management of disease and the formulation of relevant health policies. Driven by the core values of service above gain, professionalism, ethical practice, principled leadership, and excellence, the company's mission has been to lead in setting the highest medical diagnosis, treatment, prevention, and service standards in the Philippines.

Table 3. *Distribution of participants' evaluation of PCP-OBE-CBTO (n=62)*

Range	Description	Frequency	Percentage
3.28-4.00	Very Highly implemented	39	62.90
2.52-3.27	Highly Implemented	20	32.26
1.76-2.51	Moderately implemented	3	4.84
1.00-1.75	Fairly Implemented	0	0.00

According to Ballington (2007), quality assurance programs identify problems and try to correct them, so they do not recur. Maintaining quality assurance is important for protecting one's health and the health of patients. Humans learn from their mistakes, which is where quality assurance plays its role. Quality assurance is found in hospital and retail pharmacies, with different focus areas.

Program Outcomes 1: Clinical Competence

Table 4 shows the evaluation of participants on the effectiveness of implementing PCP-OBE-CBTP for program outcome 1 with an overall rating of 3.39 (Very Highly Implemented). This means the hospital is committed to training the internists regarding clinical competence in Internal Medicine / Primary Care Practice / Hospitalist (future direction). From the personal take of the participants, a clear picture appears that compliance to train and guide its internists is given a premium. It can be noted that the PCP's core competencies are for all internists to integrate and apply the acquired knowledge, skills, and attitude to obtain logical and accurate diagnoses and provide cost-effective treatment and prevention of adult medical diseases in a holistic, ethical, and compassionate approach. Competency standards specify that, given a particular situation of a patient encountered at the ER, OPD, ward, ICU, and community, the internist can effectively and efficiently diagnose and manage patients holistically, ethically, and compassionately. In this outcome, it can be gleaned that the implementation of the VSMMC is to a very high extent, which means that the hospital has a strong will to have the 3-year residency program of internists beyond the minimum.

Table 4. *Descriptive statistics of the evaluation of participants for Program Outcome 1*

Indicators	Mean	Interpretation
Learning Objectives		
1. Implement the basic concept of Primary Care Practice	3.50	Very Highly Implemented
2. Incorporate quality patient safety in clinical practice	3.52	Very Highly Implemented
3. Gather essential and accurate information through complete history taking and physical examinations.	3.52	Very Highly Implemented
4. Show empathy towards patient and family	3.60	Very Highly Implemented
5. Show respect for others and behave professionally	3.61	Very Highly Implemented
<i>Mean</i>	3.55	<i>Very Highly Implemented</i>
Teaching-Learning Activities		
1. Actual Patient Encounters	3.63	Very Highly Implemented
2. Daily Rounds / Admitting Rounds / Bedside Rounds	3.39	Very Highly Implemented
3. Small group discussions	3.13	Highly Implemented
4. Diagnostic and Therapeutic Skills Training Sessions	3.19	Highly Implemented
5. Psychomotor Skills Training	3.16	Highly Implemented
<i>Mean</i>	3.30	<i>Very Highly Implemented</i>
Assessment Tasks		
1. Clinical Reasoning Skills (Bedside)	3.35	Very Highly Implemented
2. Direct observation (Psychomotor skills, counseling skills)	3.31	Very Highly Implemented
3. Diagnostic and Therapeutic Psychomotor Skills	3.35	Very Highly Implemented
4. Orals (Panel / OSCE) to include checking for adherence or use of CPGs	3.29	Very Highly Implemented
5. Written: Quizzes / Long Exams / Shifting Exams / Annual Exams	3.29	Very Highly Implemented
<i>Mean</i>	3.39	<i>Very Highly Implemented</i>
Overall Result	3.39	Very Highly Implemented

In the reflection of Feldman (2015) believes that the best strategy to get physicians to practice competent, high-value care is to train them earlier in the educational pipeline. One important aspect of quality of care in residency education is patient 'handoffs,' either in the hospital or the clinic. He added that the most important leverage point to improve patient care in the 21st century is described by Lin, Schillinger, and Irby (2014) in a short piece on "value-added" medical education. They assert that value-added education can transform our approach to medical education by adhering to five principles, including early integrated workplace learning for all medical students and the fusion of robust experiential learning experiences with the delivery of high-performing, patient-centered primary care. This bold approach to medical education can potentially transform the concept of being a competent physician in the 21st century.

Program Outcome 2: Effective Communication and Proficiency in Teaching

Table 5 shows the evaluation of participants on the effectiveness of implementing PCP-OBE-CBTP for program outcome 2 with an overall rating of 3.35 (Very Highly Implemented). This result signifies that the IM department implements this program outcome to a very great extent, ensuring that the core competencies are given emphasis where the internists will be able to demonstrate relevant, systematic, specific principles of effective communication in written, verbal, and non-verbal methods, with integrity, professionalism, confidence, and sensitivity. The internists can be competent and impressive medical educators/ instructors to different groups, e.g., patients, the community, interns, residents, peers, and other professionals. In the same manner, the competency standards are strictly adhered to, focusing on providing an opportunity for an effective, honest, and confident way, ensuring that they are understood well by the people to whom the message is addressed. Whenever called to communicate in various ways, the internists can convey their message and are expected to plan and implement teaching and always learning activities for various groups of people and trainees. Thus, the hospital assures that all internists can demonstrate the skills of competent and impressive medical educators to different groups, e.g., patients, the community, interns, residents, peers, and other professionals.

Table 5. *Descriptive statistics of the evaluation of participants for Program Outcome 2*

Indicators	Mean	Interpretation
Effective Communication		
1. Learn the different communication skills	3.44	Very Highly Implemented
2. Communicate effectively with patients and relatives, demonstrating utmost care and exhibiting respectful behavior	3.55	Very Highly Implemented
3. Apply the different communication skills whenever appropriate.	3.58	Very Highly Implemented
4. Practice practical communication skills with professionalism, confidence, integrity, empathy, and sensitivity	3.52	Very Highly Implemented
5. Maintain complete medical records	3.39	Very Highly Implemented
<i>Mean</i>	3.50	<i>Very Highly Implemented</i>
Proficiency in Teaching		
1. Learn the essentials of medical education	3.40	Very Highly Implemented
2. Conduct teaching-learning activities to groups of patients, interns, and peers	3.23	Highly Implemented
3. Participate in the education of patients, families, and other health professionals	3.32	Very Highly Implemented
4. Be a teacher for life	3.40	Very Highly Implemented
<i>Mean</i>	3.34	<i>Very Highly Implemented</i>
Teaching-Learning Activities		
1. Workshops / Small Group Discussions / Demo & Return Demo on various communication skills	3.27	Highly Implemented
2. Actual Patient encounters	3.55	Very Highly Implemented
3. Peer consultant evaluation	3.32	Very Highly Implemented
4. Presentation skills	3.29	Very Highly Implemented
5. Lecture-workshop series	3.23	Highly Implemented
6. Level 1: Theories of Learning / Learning Styles / Overview of Curriculum and Instructional Design	3.13	Highly Implemented
7. Level 2: Teaching and Learning Activities / Evaluation Methods	3.08	Highly Implemented
8. Level 3: Basics of Test Construction	3.27	Highly Implemented
<i>Mean</i>	3.27	<i>Highly Implemented</i>
Assessment Tasks		
1. Direct Observation / Return Demo	3.26	Highly Implemented
2. Bedside Evaluation	3.39	Very Highly Implemented
3. Entries in the Medical Chart	3.21	Highly Implemented
4. Attitude Assessment	3.40	Very Highly Implemented
5. Evaluation of conference presentations	3.55	Very Highly Implemented
<i>Mean</i>	3.36	<i>Very Highly Implemented</i>
Overall	3.35	Very Highly Implemented

There is literature and studies that support this finding. One such study, conducted by Choudhary and Gupta (2015), is consistent. They presented the idea that communication skills are essential to medical practice, like many other people-based professions. Traditional medical teaching in India does not address communication skills essential in dealing with patients. Furthermore, they said that communication skills can be taught to medical students to increase clinical competence.

Program Outcome 3: Dynamic Leadership and Management Skills

Table 6 shows the evaluation of participants on the effectiveness of implementing PCP-OBE-CBTP for program outcome 3 with an overall rating of 3.36 (Very Highly Implemented). This result shows that the VSMMC-IM department is committed to extensively implementing the core competencies of the PCP directed towards effectively applying management skills in analyzing community health problems within the context of ethical medical practice and leading teams in cost-effective and innovative ways utilizing appropriate interpersonal communication skills amongst the internists. It also adheres to the competency standards when given various scenarios and opportunities to lead a group or team. The internist successfully convenes, manages, and produces fruitful outcomes for productive and sustainable endeavors. Thus, it is compliant with what is set in the PCP curricular goal, which is to lead and apply management skills in analyzing problems within the bounds of scientific methodology, even with limited resources; in addition, it leads teams in ethical and innovative ways; organize, plan, and manage various groups utilizing practical interpersonal communication skills. As indicated in the table, all indicators have descriptions that are very highly implemented.

Table 6. Descriptive statistics of the evaluation of participants for Program Outcome 3

Indicators	Mean	Interpretation
Learning Objectives		
1. Apply management skills in analyzing community health problems within ethical medical practice and lead teams in cost-effective and innovative ways utilizing appropriate interpersonal communication skills.	3.39	Very Highly Implemented
2. Be at the forefront of various worthwhile activities and advocacies; be aware of and practice humility, cooperation, collaboration, professionalism, service above gain, and other core values of PCP.	3.37	Very Highly Implemented
<i>Mean</i>	3.38	<i>Very Highly Implemented</i>
Teaching-Learning Activities		
1. Workshop Series	3.13	Highly Implemented
2. Leadership Roles during training	3.26	Highly Implemented
3. Outcomes of Projects / Activities	3.24	Highly Implemented
4. Portfolios	3.45	Very Highly Implemented
<i>Mean</i>	3.27	<i>Highly Implemented</i>
Assessment Tasks		
1. Feedback from various groups	3.39	Very Highly Implemented
2. Portfolios (SWOT Analysis and Strategic Plan / CQI Program)	3.45	Very Highly Implemented
<i>Mean</i>	3.42	<i>Very Highly Implemented</i>
Overall	3.36	Very Highly Implemented

In support of this result, Chen's (2018) study can be cited. She believes good medical leadership is the key to building high-quality healthcare. However, in the development of medical careers, teaching leadership has traditionally not equaled that of technical and academic competencies. As a result of changes in personal standards, the quality of medical leadership has led to variations between different organizations and occasional catastrophic failure in the standard of care provided for patients. Medical leaders have called for healthcare reform in response to system challenges and public health improvements. Furthermore, there has been an increased drive to see leadership education for doctors starting earlier and continuing throughout their careers so that they can take on more important leadership roles throughout the healthcare system. Being a physician requires not only management and leadership but also the need to transfer competencies to communication and critical thinking. These attributes can be obtained through experience in teamwork under the supervision of teaching staff. Therefore, medical students must develop skills to deal with and resolve conflicts, learn to share leadership, prepare others to help and replace them, take mutual responsibility, and discuss their performance.

Program Outcome 4: Excellent, Ethical, And Relevant Research Output

Table 7 shows the evaluation of participants on the effectiveness of implementing PCP-OBE-CBTP for program outcome 4 with an overall rating of 3.30 (Very Highly Implemented). This denotes that the VSMMC-IM

department is an institution that faithfully follows the curricular goal of PCP among internists, which is directed towards teaching, sharing, and utilizing up-to-date research knowledge and skills and ensuring original research outputs. It also complies with the core competency, which aims that all internists will be able to appraise medical journals critically, determine their validity and applicability in clinical decision-making and patient care; create, write, and accomplish publication of studies in open access or peer-reviewed journals recognized by PCP Committee on Research; utilize research for better health outcomes in the country. With due consideration of the competency standards, which state that given a specific clinical dilemma in the hospital or community setting, an internist will be able to apply Evidence-based Practice (EBP) to come up with the most appropriate management, incorporating a) Research evidence; b) Personal expertise and experience; and c) Patient's values.

Table 7. Descriptive statistics of the evaluation of participants for Program Outcome 4

Indicators	Mean	Interpretation
Learning Objectives		
1. Critically appraise research journals; determine their validity and applicability in clinical decision-making and patient care	3.16	Highly Implemented
2. Create, write, and accomplish publication of studies in open-access or peer-reviewed journals recognized by the PCP Committee on Research	3.08	Highly Implemented
3. Apply Evidence-Based Practice (EBP) to develop the most appropriate management, incorporating Research evidence, Personal expertise and experience, and the Patient's values.	3.27	Highly Implemented
4. Utilize current Clinical Practice Guidelines (CPGs).	3.44	Very Highly Implemented
<i>Mean</i>	3.18	<i>Highly Implemented</i>
Teaching-Learning Activities		
1. Workshop / Lecture Series	3.37	Very Highly Implemented
2. PCP Committee on Research: Research Mentoring Enhancement Program (RMEP)	3.32	Very Highly Implemented
3. Presentation of Research Outputs in Various Venues	3.34	Very Highly Implemented
<i>Mean</i>	3.29	<i>Very Highly Implemented</i>
Assessment Tasks		
1. Institutional Review Board Approval	3.27	Highly Implemented
2. Research monitoring (conduct and reporting of research)	3.32	Very Highly Implemented
3. Research contest	3.29	Very Highly Implemented
4. Acceptance for presentation to national and international conferences and scientific meetings	3.39	Very Highly Implemented
5. Acceptance for publication in national and international journals	3.21	Highly Implemented
<i>Mean</i>	3.30	<i>Very Highly Implemented</i>
Overall	3.30	Very Highly Implemented

Overall, literature and studies show that Excellent, Ethical, and Relevant Research Output acquisition by medical students and practitioners is very important. Nass et al. (2009) shared about enhancing privacy and improving health through research, saying that health research has high value to society. It can provide important information about disease trends and risk factors, treatment outcomes or public health interventions, functional abilities, patterns of care, and health care costs and use. The different approaches to research provide complementary insights.

Program Outcome 5: Ethical, Professional, and Inter-professional Practice

Table 8 shows the evaluation of participants on the effectiveness of implementing PCP-OBE-CBTP for program outcome 5 with an overall rating of 3.37 (Very Highly Implemented). This data further shows that VSMMC-IM complies with implementing the PCP-CBTP mandate relative to this program outcome. It means that the core competencies such as: "The internist will be able to conscientiously and consistently adhere to the PMA and PCP Code of Ethics, and international codes and laws governing the practice of Medicine, including the Mexico City and Kuala Lumpur Principles and the DOH A.O. 2015-0053 and the internist will be able to practice professionalism collaboratively and harmoniously characterized by: altruism, respect, duty and responsibility, excellence in lifelong learning, honor and integrity, compassion and empathy and accountability with other professionals, health care teams, and the community to bring about the best health outcomes are adhered to. In the same manner, the competency standards are complied with, where, given any situation in professional or clinical practice, the internist can demonstrate professionalism and adherence to the Hippocratic Oath, Philippine Medical Association (PMA), and PCP Code of Ethics as well as international codes of conducts and laws governing the practice of medicine. Given a situation wherein internists are allowed to work with other professionals, they are expected to collaborate with them, work harmoniously towards patient-centered quality care, and

demonstrate the values of mutual respect and integrity. Looking at the three indicators, learning objectives, and assessment tasks, both obtained very highly implemented description ratings, considering their mean ratings. In contrast, the teaching-learning activities indicator obtained a highly implemented rating.

Table 8. *Descriptive statistics of the evaluation of participants for Program Outcome 5*

Indicators	Mean	Interpretation
Learning Objectives		
1. Imbibe the different relevant local and international ethical principles and guidelines	3.42	Very Highly Implemented
2. Define and describe the qualities of a professional	3.44	Very Highly Implemented
3. Practice professionalism with patients and their families or caregivers, colleagues, other members of the healthcare team, and members of the community	3.50	Very Highly Implemented
4. Practice respect for patients' privacy and autonomy; and be sensitive and responsive to diverse patient population	3.48	Very Highly Implemented
5. Practice patient centered quality care, and demonstrate the values of mutual respect and integrity	3.50	Very Highly Implemented
<i>Mean</i>	3.47	<i>Very Highly Implemented</i>
Teaching-Learning Activities		
1. Workshop / Lecture Series	3.24	Highly Implemented
2. Actual observation lectures	3.26	Highly Implemented
<i>Mean</i>	3.25	<i>Highly Implemented</i>
Assessment Tasks		
1. Peer evaluation feedback	3.40	Very Highly Implemented
2. Incident reports	3.23	Highly Implemented
3. Multidisciplinary Team Approach	3.44	Very Highly Implemented
4. Written Exam	3.45	Very Highly Implemented
<i>Mean</i>	3.38	<i>Very Highly Implemented</i>
Overall	3.37	Very Highly Implemented

To summarize, maintaining professionalism in the field is a must and, therefore, non-negotiable. In the study of Artioli et al. (2019), Inter-professional Collaboration (IPC) is an important component of a well-functioning healthcare system. It is linked to improvements in patient safety and case management, optimal use of each healthcare team member's skills, and provision of better health services. Findings revealed that collaboration is the core amongst the participants who are different professionals who are already considered experts to reach a common goal.

In addition, Kurtz and Starbird (2016) expressed that addressing ethical challenges in healthcare through interprofessional collaboration involves an active partnership among people from diverse training backgrounds who work together to identify, analyze, and resolve ethical questions or concerns to improve healthcare quality. Interprofessional collaboration is ideal for exploring ethical issues because it allows for including all relevant professional voices in discussions about ethical values in patient care. To identify and respond to ethical questions, an understanding of patients' and family members' values and preferences and the values and preferences of the various professional stakeholders such as chaplains, nurses, physicians, and therapists is required.

Program Outcome 6: Efficient Systems-Based Approach to Health Care Practice

Table 9 shows the evaluation of participants on the effectiveness of implementing PCP-OBE-CBTP for program outcome 6 with an overall rating of 3.36 (Very Highly Implemented). This denotes that the VSMC-IM department displays very sound and efficient training in systematizing approaches to health care practice. The department sees to it that it complies with the PCP OBE CBTP core competency in this program outcome, highlighting that all internists will be able to integrate the knowledge of the World Health Organization (WHO) health systems frameworks to the Philippine Health Systems, whether at the national or community level; apply the same principles in the management of his patients guided by the different clinical pathways, clinical practice guidelines, and standards. It also keeps its premises and hospital administrators and personnel duly compliant in realizing the competency standards set by PCP-CBTP, where it mandates that given any situation in the place of work (administrative) or medical practice, government or private, national or local levels, the internist can apply the principles of health systems frameworks developed by the WHO.

Table 9. *Descriptive statistics of the evaluation of participants for Program Outcome 6*

Indicators	Mean	Interpretation
Learning Objectives		
1. Study the WHO Standards of Care (Health Systems Frameworks), DOH Health Systems Framework, CPGs, and all available Clinical Pathways	3.42	Very Highly Implemented
2. Utilize the relevant components of the WHO and DOH Health Systems and programs for optimum patient care	3.34	Very Highly Implemented
3. Partner/network with relevant government and non-government agencies for delivery of health care services	3.34	Very Highly Implemented
<i>Mean</i>	3.37	<i>Very Highly Implemented</i>
Teaching-Learning Activities		
1. Mini-lectures	3.19	Highly Implemented
2. Small group discussions	3.08	Highly Implemented
3. independent study – reading	3.39	Very Highly Implemented
4. Reflection paper	3.29	Very Highly Implemented
5. CPGs, clinical pathways, Guidelines / Manuals on Disease Prevention (utilization in actual patient care / beside rounds/conferences	3.19	Highly Implemented
6. Case Studies: e.g. TB, HIV	3.08	Highly Implemented
<i>Mean</i>	3.24	<i>Highly Implemented</i>
Assessment Tasks		
1. Annual Reports	3.47	Very Highly Implemented
2. Portfolios / Logbooks	3.52	Very Highly Implemented
3. Existence and utilization of CPGs and clinical pathways	3.48	Very Highly Implemented
4. Participation in DOH health advisory: e.g., Integrated TB Information System	3.45	Very Highly Implemented
<i>Mean</i>	3.48	<i>Very Highly Implemented</i>
Overall	3.36	Very Highly Implemented

This finding is supported by several literature and studies. One is that of Clarkson et al. (2018), who said that healthcare is the product of a complex adaptive system of people, equipment, processes, and institutions working together. Problems can arise with either deficiencies in individual system elements or their relationship with each other, and improving the overall function of such a system can be challenging. This insight – a systems view of healthcare – reframes one’s understanding of how care is delivered and can be improved. For them, healthcare practice can be conceived as having two objectives: to provide care and to avoid causing harm.

Program Outcome 7: Sustained Lifelong Learning

Table 10 shows the participants' evaluation of the effectiveness of implementing PCP-OBE-CBTP for program outcome 7, with an overall rating of 3.38 (Very Highly Implemented).

Table 10. *Descriptive statistics of the evaluation of participants for Program Outcome 7*

Indicators	Mean	Interpretation
Learning Objectives		
1. Critical Thinking Skills Independent Study Skills	3.48	Very Highly Implemented
2. Problem Solving Skills	3.42	Very Highly Implemented
3. Reflections	3.42	Very Highly Implemented
4. Engage in activities that will promote lifelong learning	3.50	Very Highly Implemented
5. Medical conventions	3.58	Very Highly Implemented
6. CPGs	3.40	Very Highly Implemented
7. Journals	3.45	Very Highly Implemented
8. Institution’s conferences	3.34	Very Highly Implemented
9. Conduct or participate in research and investigations	3.44	Very Highly Implemented
10. Set your own learning goals and incorporate formative evaluative feedback into daily practice	3.47	Very Highly Implemented
11. Do a systematic analysis of one’s practice and implement changes to improve patients’ health	3.52	Very Highly Implemented
12. Involve and be part of the training core for residents and interns	3.48	Very Highly Implemented
<i>Mean</i>	3.46	<i>Very Highly Implemented</i>
Teaching-Learning Activities		
1. Workshop Series both for trainers and residents yearly	3.34	Very Highly Implemented
2. Reflection Papers	3.34	Very Highly Implemented
3. Output during elective rotation	3.37	Very Highly Implemented
<i>Mean</i>	3.35	<i>Very Highly Implemented</i>
Assessment Tasks		
1. Clinical Reasoning Skills Evaluation (Bedside and Clinical Presentations)	3.42	Very Highly Implemented
2. Reflection Papers	3.31	Very Highly Implemented
3. Output during elective rotation	3.27	Highly Implemented
<i>Mean</i>	3.33	<i>Very Highly Implemented</i>
Overall	3.38	Very Highly Implemented

This rating denotes very high compliance of the VSMMC-IM department in ensuring quality assurance about sustained lifelong learning of all internists. This goes to show that in the Internal Medicine department, the core competency is having the initiative for lifelong learning by continuously pursuing and acquiring the knowledge and skills adherent to international standards with an open mind and discerning attitude to be able to adapt to changes in medicine is given utmost attention. Likewise, the competency standard, which says that the internist must always look for opportunities to deepen his knowledge and skills in all areas of medicine and other program outcomes, is equally attended to.

This highly implemented description rating of program outcome 7 on Sustained Lifelong Learning can be connected to the study of Panda and Desbiens's (2010) iterations. According to them, lifelong learning is integral to practice-based learning and improvement. Physicians must be lifelong learners to provide timely, efficient, state-of-the-art patient care in an environment where knowledge, technology, and social requirements are rapidly changing. Findings revealed that most residents found Education for Life a valuable requirement for their future continued medical learning. Regardless of specialty, graduates reported using more modalities for continuing their medical education than they thought they would as residents. Considering lifelong learning early in training and requiring residents to identify ways to practice lifelong learning as a requirement for graduation may be dispositive.

Program Outcome 8. Profound Nationalism, Vigorous Social Advocacy, Principled Equity and Accountability

Table 11 shows the participants' evaluation of the effectiveness of implementing PCP-OBE-CBTP for program outcome 8, with an overall rating of 3.32 (Very Highly Implemented). This means that the Internal Medicine department of VSMMC makes sure that all internists grasp the core competency set by PCP-CBTP, more explicitly focusing with pride on complete dedication, sincerity, compassion, and commitment. The internists will choose to practice medicine in the Philippines, showing respect for cultural and ethical diversities in serving the people. The internist will be able to recognize the unique health needs of the families and communities they serve, actively advocate for them, and participate in various activities that aim to improve the universal health status of the Filipino people. It also gives high regard to the attainment of competency standards that reiterate to all internists an opportunity to serve their countrymen in whatever capacity they can do without expecting reward and recognition. In all their decisions and actions, the internists think and act for the betterment of the health condition of the individual patient, the community, and the nation at large; uplift fundamental human rights and equity; and promote the preservation of the environment and natural resources of the region they are serving. Following the three indicators, learning objectives and teaching-learning activities obtained very highly implemented description ratings, while a highly implemented description rating was given for assessment tasks.

Table 11. Descriptive statistics of the evaluation of participants for Program Outcome 8

Indicators	Mean	Interpretation
Learning Objectives		
1. Show the love of the country by patronizing local tourism and local products	3.37	Very Highly Implemented
2. Practice love and conservation of mother nature	3.39	Very Highly Implemented
3. Assess and evaluate the unique healthcare needs of the community	3.29	Very Highly Implemented
4. Promote and lead in health care advocacy programs with fairness and compassion	3.42	Very Highly Implemented
5. Involve and be part of the training core for residents and interns	3.37	Very Highly Implemented
<i>Mean</i>	3.37	<i>Very Highly Implemented</i>
Teaching-Learning Activities		
1. Workshop Series both for trainers and residents yearly	3.32	Very Highly Implemented
2. Actual observation	3.32	Very Highly Implemented
<i>Mean</i>	3.32	<i>Very Highly Implemented</i>
Assessment Tasks		
1. Project outputs	3.27	Highly Implemented
2. Reflection Papers	3.24	Highly Implemented
3. Output during elective rotation	3.27	Highly Implemented
<i>Mean</i>	3.26	<i>Highly Implemented</i>
Overall	3.32	Very Highly Implemented

The paper of Peluso, et al. (2019) stressed that modern Global Health Education (GHE) programs were developed against a backdrop of globalism. Medical institutions have increasingly encouraged trainees to experience clinical practice in different demographics, socio-economic, and cultural communities; trainees in high-income countries

(HICs) have come to expect these opportunities. Unprecedented investment by governmental, philanthropic, and academic institutions has decreased the burden of infectious disease, focused attention on non-communicable diseases, supported health service delivery, and advanced the training of physicians and nurses, especially in low- and middle-income countries (LMICs).

3.3 Difference in the Resident Physicians' Evaluation When Grouped According to their Characteristics

Age

Table 12 presents the test statistics on the resident physicians' evaluation of the process of implementation of the Instructional Design of the eight program outcomes of the Philippine College of Physicians Outcome-Based Education Competency-Based Training Program (PCP-CBTP) in Internal Medicine of the Vicente Sotto Memorial Medical Center when grouped according to their age. Overall statistics showed a not significant value ($F=1.45ns$); hence, the null hypothesis of the study states that there is no significant difference in the evaluation of the participants in the effectiveness of the implementation of the Instructional Design of the eight program outcomes of the Philippine College of Physicians Outcome-Based Education Competency-Based Training Program (PCP-CBTP) in Internal medicine of the Vicente Sotto Memorial Medical Center when grouped according to their age, is accepted.

Table 12. *Difference in the Resident Physicians' Evaluation When Grouped According to their Age*

Indicators	25-30 years old (n=11)		31-35 years old (n=6)		36-40 years old (n=3)		Test Stat
	Mean	Interpretation	Mean	Interpretation	Mean	Interpretation	
1. Clinical Competence	3.33	VHI	3.56	VHI	3.64	VHI	F=0.69ns
Learning Outcomes	3.49	VHI	3.63	VHI	3.87	VHI	F=0.55ns
Teaching-Learning Activities	3.16	HI	3.50	VHI	3.60	VHI	F=1.92ns
Assessment Tasks	3.35	VHI	3.53	VHI	3.47	VHI	F=0.18ns
2. Effective Communication and Proficiency in Teaching	3.44	VHI	3.71	VHI	3.26	HI	F=1.25ns
Learning Outcomes-EC	3.47	VHI	3.83	VHI	3.33	VHI	F=1.24ns
Learning Outcomes-PT	3.39	VHI	3.79	VHI	3.33	VHI	F=1.36ns
Teaching-Learning Activities	3.53	VHI	3.62	VHI	3.19	HI	F=0.72ns
Assessment Tasks	3.38	VHI	3.60	VHI	3.20	HI	F=0.71ns
3 Dynamic Leadership and Management Skills	3.33	VHI	3.81	VHI	3.14	HI	F=2.63ns
Learning Outcomes	3.36	VHI	3.83	VHI	3.00	HI	F=2.74ns
Teaching-Learning Activities	3.27	HI	3.75	VHI	2.92	HI	F=2.58ns
Assessment Tasks	3.36	VHI	3.83	VHI	3.50	VHI	F=1.50ns
4. Excellent, Ethical, and Relevant Research Output	3.32	VHI	3.62	VHI	3.34	VHI	F=0.74ns
Learning Outcomes	3.16	HI	3.75	VHI	3.25	HI	F=2.47ns
Teaching-Learning Activities	3.42	VHI	3.50	VHI	3.44	VHI	F=0.03ns
Assessment Tasks	3.38	VHI	3.60	VHI	3.33	VHI	F=0.27ns
5. Ethical, Professional and Inter-professional Practice	3.34	VHI	3.58	VHI	3.65	VHI	F=1.14ns
Learning Outcomes	3.42	VHI	3.70	VHI	3.87	VHI	F=1.25ns
Teaching-Learning Activities	3.23	HI	3.42	VHI	3.67	VHI	F=0.75ns
Assessment Tasks	3.36	VHI	3.63	VHI	3.42	VHI	F=0.41ns
6. Efficient Systems-Based Approach to Health Care Practice	3.37	VHI	3.63	VHI	3.12	HI	F=1.34ns
Learning Outcomes	3.24	HI	3.78	VHI	2.78	HI	F=4.19*
Teaching-Learning Activities	3.30	VHI	3.46	VHI	3.00	HI	F=0.75ns
Assessment Tasks	3.57	VHI	3.67	VHI	3.58	VHI	F=0.07ns
7 Sustained Lifelong Learning	3.42	VHI	3.83	VHI	3.09	HI	F=2.11ns
Learning Outcomes	3.42	VHI	3.67	VHI	3.27	HI	F=0.59ns
Teaching-Learning Activities	3.45	VHI	3.83	VHI	3.33	VHI	F=0.86ns
Assessment Tasks	3.39	VHI	4.00	VHI	2.67	HI	F=6.18**
8 Profound Nationalism, Vigorous Social Advocacy, Principled Equity and Accountability	3.34	VHI	3.71	VHI	3.13	HI	F=1.53ns
Learning Outcomes	3.45	VHI	3.70	VHI	3.07	HI	F=1.43ns
Teaching-Learning Activities	3.27	HI	3.58	VHI	3.67	VHI	F=0.65ns
Assessment Tasks	3.30	VHI	3.83	VHI	2.67	HI	F=4.65*
Overall	3.36	VHI	3.68	VHI	3.30	VHI	F=1.45ns

The ratings on the implementation of the Instructional Design related to the eight program outcomes of the PCP-OBE-CBTP in Internal Medicine at VSMMC remain consistent across all age groups. The results negate the study on age that says it plays a significant role in the training program. Younger individuals, especially those under 30 or recent graduates of the Physician's Licensure Examinations, bring fresh skills and knowledge, which can be advantageous during long shifts as they tend to be inquisitive about new subjects. However, research indicates that physicians younger than 55 are at a 200 times higher risk of experiencing burnout (Maybank et al., 2019). Therefore, their evaluation as to implementation likely varies but not in the case of this study.

Sex

The test Statistics on the resident physicians' evaluation on the process of implementation of the Instructional Design of the eight program outcomes of the Philippine College of Physicians Outcome-Based Education Competency-Based Training Program (PCP-CBTP) in Internal Medicine of the Vicente Sotto Memorial Medical Center, when grouped according to their sex, is presented in Table 13. Test statistics showed a not significant result (Mann-Whitney U= 36ns), showing that regardless of the resident physicians' sex, their ratings on the Process of implementation of the Instructional Design of the eight program outcomes of the Philippine College of Physicians Outcome-Based Education Competency-Based Training Program (PCP-CBTP) in Internal medicine of the Vicente Sotto Memorial Medical Center, when grouped according to their sex do not vary; hence, the null hypothesis is not rejected. This denotes that the participants' sex is not a variable/construct that can differentiate high or low ratings on the degree of VSMMC's implementation of the PCP-OBE CBTP.

Table 13. *Difference in the Resident Physicians' Evaluation When Grouped According to their Sex*

Indicators	Female (n=12)		Male (n=8)		Test Stat
	Mean	Interpretation	Mean	Interpretation	
1. Clinical Competence	3.46	VHI	3.43	VHI	t=0.10ns
Learning Outcomes	3.60	VHI	3.58	VHI	U = 42.5ns
Teaching-Learning Activities	3.32	VHI	3.35	VHI	T=-0.16ns
Assessment Tasks	3.45	VHI	3.38	VHI	T=0.26ns
2. Effective Communication and Proficiency in Teaching	3.39	VHI	3.66	VHI	T=-1.34ns
Learning Outcomes-EC	3.50	VHI	3.65	VHI	T=-0.61ns
Learning Outcomes-PT	3.40	VHI	3.66	VHI	t=-1.06ns
Teaching-Learning Activities	3.37	VHI	3.71	VHI	t=-1.54ns
Assessment Tasks	3.30	VHI	3.60	VHI	t=-1.36ns
3 Dynamic Leadership and Management Skills	3.37	VHI	3.56	VHI	T=-0.82ns
Learning Outcomes	3.38	VHI	3.56	VHI	T=0.70ns
Teaching-Learning Activities	3.19	HI	3.63	VHI	T=-1.68ns
Assessment Tasks	3.54	VHI	3.50	VHI	T=0.16ns
4. Excellent, Ethical, and Relevant Research Output	3.29	VHI	3.60	VHI	T= -0.45 ns
Learning Outcomes	3.27	HI	3.47	VHI	T=-0.75ns
Teaching-Learning Activities	3.28	VHI	3.71	VHI	T=-1.80ns
Assessment Tasks	3.32	VHI	3.63	VHI	T=-0.09ns
5. Ethical, Professional and Inter-professional Practice	3.41	VHI	3.53	VHI	U= 37.5ns
Learning Outcomes	3.50	VHI	3.67	VHI	T=-0.75ns
Teaching-Learning Activities	3.29	VHI	3.44	VHI	T=-0.56ns
Assessment Tasks	3.44	VHI	3.47	VHI	T=-0.12ns
6. Efficient Systems-Based Approach to Health Care Practice	3.37	VHI	3.48	VHI	T=-0.52ns
Learning Outcomes	3.31	VHI	3.38	VHI	T=-0.25ns
Teaching-Learning Activities	3.29	VHI	3.31	VHI	T=-0.08ns
Assessment Tasks	3.50	VHI	3.75	VHI	T=-0.52ns
7 Sustained Lifelong Learning	3.35	VHI	3.72	VHI	T=1.48ns
Learning Outcomes	3.40	VHI	3.58	VHI	T=-0.70ns
Teaching-Learning Activities	3.39	VHI	3.79	VHI	T=-0.41ns
Assessment Tasks	3.25	HI	3.79	VHI	T=-1.86ns
8 Profound Nationalism, Vigorous Social Advocacy, Principled Equity and Accountability	3.35	VHI	3.52	VHI	T=-0.0.70ns
Learning Outcomes	3.35	VHI	3.65	VHI	T=-1.22ns
Teaching-Learning Activities	3.46	VHI	3.38	VHI	T=0.27ns
Assessment Tasks	3.25	HI	3.54	VHI	T=-0.99ns
Overall	3.56	VHI	3.37	VHI	U=36ns

Curriculum

Table 14 reflects the distribution of test statistics on the resident physicians' evaluation of the process of implementation of the Instructional Design of the eight program outcomes of the Philippine College of Physicians Outcome-Based Education Competency-Based Training Program (PCP-CBTP) in Internal Medicine of the Vicente Sotto Memorial Medical Center when grouped according to the type of curriculum.

Overall test statistics (Mann- Whitney U= 25.00 ns) indicate no significant difference in their mean ratings and descriptions; hence, the study's null hypothesis is not rejected. The slight difference, however, is gleaned from the ratings of participants whose type of curriculum is integrated compared to those who underwent a pure departmental type of curriculum (3.58-VHI vs. 3.42-VHI). However, significant differences are still not established. This means that the participants' type of curriculum is not a variable that can differentiate high or low ratings as to the effectiveness of the implementation of the Instructional Design of the eight program outcomes of the Philippine College of Physicians Outcome-Based Education Competency-Based Training Program (PCP-CBTP) in Internal Medicine of the Vicente Sotto Memorial Medical Center.

Table 14. *Difference in the Resident Physicians' Evaluation When Grouped According to their Curriculum*

Indicators	Departmental (n=16)		Integrated (n=4)		Test Stat
	Mean	Interpretation	Mean	Interpretation	
1. Clinical Competence	3.43	VHI	3.50	VHI	t=0.24ns
Learning Outcomes	3.63	VHI	3.45	VHI	U=23.00ns
Teaching-Learning Activities	3.31	VHI	3.40	VHI	T=-0.34ns
Assessment Tasks	3.36	VHI	3.65	VHI	T=0.83ns
2. Effective Communication and Proficiency in Teaching	3.46	VHI	3.66	VHI	T=0.82ns
Learning Outcomes-EC	3.60	VHI	3.40	VHI	U= 32.00ns
Learning Outcomes-PT	3.41	VHI	3.88	VHI	t=0.66ns
Teaching-Learning Activities	3.46	VHI	3.71	VHI	t=1.62ns
Assessment Tasks	3.36	VHI	3.65	VHI	t=0.91ns
3 Dynamic Leadership and Management Skills		VHI		VHI	
	3.46		3.40		T=0.21ns
Learning Outcomes	3.47	VHI	3.38	VHI	T=0.28ns
Teaching-Learning Activities	3.38	VHI	3.31	VHI	T=0.18ns
Assessment Tasks	3.53	VHI	3.50	VHI	T=0.10ns
4. Excellent, Ethical, and Relevant Research Output		VHI		VHI	T=0.77 ns
	3.37		3.58		
Learning Outcomes	3.36	VHI	3.31	VHI	T=0.21ns
Teaching-Learning Activities	3.35	VHI	3.83	VHI	T=0.14ns
Assessment Tasks	3.40	VHI	3.60	VHI	T=1.61ns
5. Ethical, Professional and Inter-professional Practice	3.39	VHI	3.71	VHI	U=11.5ns
Learning Outcomes	3.52	VHI	3.75	VHI	T=0.79ns
Teaching-Learning Activities	3.28	VHI	3.63	VHI	T=1.10ns
Assessment Tasks	3.38	VHI	3.75	VHI	T=1.23ns
6. Efficient Systems-Based Approach to Health Care Practice		VHI		VHI	
	3.36		3.63		T=1.01ns
Learning Outcomes	3.29	VHI	3.50	VHI	T=0.62ns
Teaching-Learning Activities	3.27	HI	3.44	VHI	T=0.58ns
Assessment Tasks	3.52	VHI	3.94	VHI	T=1.53ns
7 Sustained Lifelong Learning	3.44	VHI	3.73	VHI	T=0.91ns
Learning Outcomes	3.40	VHI	3.77	VHI	T=1.24ns
Teaching-Learning Activities	3.46	VHI	3.92	VHI	T=1.30ns
Assessment Tasks	3.46	VHI	3.50	VHI	U=27.50ns
8 Profound Nationalism, Vigorous Social Advocacy, Principled Equity and Accountability	3.42	VHI	3.41	VHI	T=0.30ns
Learning Outcomes	3.48	VHI	3.45	VHI	T=0.08ns
Teaching-Learning Activities	3.38	VHI	3.63	VHI	T=0.67ns
Assessment Tasks	3.42	VHI	3.17	HI	T=0.68ns
Overall	3.42	VHI	3.58	VHI	U=25ns

The result negates the works of Venville, et al. (2009) stating that the curriculum type affects resident physicians' teaching methods, with two prevailing approaches in the country: traditional and integrated. An integrated

curriculum connects classroom knowledge with real-world applications, addressing specific problems or cases, and allows students to research relevant learning issues during school hours. In this model, teachers act as facilitators, emphasizing learner-centered assessment methods, such as portfolios. Conversely, a traditional curriculum focuses on delivering disciplinary knowledge in a structured, cumulative manner, where subjects are taught independently by expert teachers.

3.4 Difference in the Training Core Faculty's Evaluation When Grouped According to their Characteristics Sex

Table 15 shows the test statistics on the evaluation of the Training core faculty on the implementation process of the Instructional Design of the eight program outcomes of the Philippine College of Physicians Outcome-Based Education Competency-Based Training Program (PCP-CBTP) in Internal Medicine of the Vicente Sotto Memorial Medical Center when grouped according to their sex. Test statistics showed a not significant result ($t=0.06ns$), showing that, regardless of the training core faculty's sex, their ratings on the process of implementation of the Instructional Design of the eight program outcomes of the Philippine College of Physicians Outcome-Based Education Competency-Based Training Program (PCP-CBTP) in Internal medicine of the Vicente Sotto Memorial Medical Center, when grouped according to their sex did not show sufficient statistical evidence to reject the null hypothesis of the study. This denotes that the participants' sex is not a variable/construct that can differentiate high or low ratings on the degree of VSMMC's effectiveness in implementing the PCP-CBTP.

Table 15. *Difference in the Training Core Faculty's Evaluation When Grouped According to Their Sex*

Indicators	Female (n=21)		Male (n=21)		Test Stat
	Mean	Interpretation	Mean	Interpretation	
1. Clinical Competence	3.37	VHI	3.36	VHI	T=0.09ns
Learning Outcomes	3.49	VHI	3.57	VHI	U=207ns
Teaching-Learning Activities	3.33	VHI	3.24	HI	T=0.50ns
Assessment Tasks	3.29	VHI	3.26	HI	T=0.17ns
2. Effective Communication and Proficiency in Teaching	3.27	HI	3.30	VHI	T=0.20ns
Learning Outcomes-EC	3.48	VHI	3.45	VHI	U=197ns
Learning Outcomes-PT	3.24	HI	3.29	VHI	T=0.29ns
Teaching-Learning Activities	3.14	HI	3.17	HI	t=0.23ns
Assessment Tasks	3.31	VHI	3.35	VHI	t=0.20ns
3 Dynamic Leadership and Management Skills	3.31	VHI	3.32	VHI	T=0.05ns
Learning Outcomes	3.36	VHI	3.33	VHI	U=208ns
Teaching-Learning Activities	3.26	HI	3.19	HI	T=0.43ns
Assessment Tasks	3.31	VHI	3.43	VHI	U=208ns
4. Excellent, Ethical, and Relevant Research Output	3.22	HI	3.26	HI	T=0.25ns
Learning Outcomes	3.06	HI	3.31	VHI	T=1.54ns
Teaching-Learning Activities	3.25	HI	3.33	VHI	t=0.43ns
Assessment Tasks	3.33	VHI	3.12	HI	T=1.08ns
5. Ethical, Professional and Inter-professional Practice	3.31	VHI	3.33	VHI	T=0.14ns
Learning Outcomes	3.31	VHI	3.52	VHI	T=1.26ns
Teaching-Learning Activities	3.21	HI	3.19	HI	U=221ns
Assessment Tasks	3.40	VHI	3.29	VHI	T=0.68ns
6. Efficient Systems-Based Approach to Health Care Practice	3.32	VHI	3.35	VHI	T=0.16ns
Learning Outcomes	3.37	VHI	3.40	VHI	U=218ns
Teaching-Learning Activities	3.19	HI	3.23	HI	T=0.19ns
Assessment Tasks	3.42	VHI	3.43	VHI	U=207ns
7 Sustained Lifelong Learning	3.35	VHI	3.29	VHI	T=0.37ns
Learning Outcomes	3.41	VHI	3.48	VHI	U=215ns
Teaching-Learning Activities	3.30	VHI	3.21	HI	T=0.52ns
Assessment Tasks	3.35	VHI	3.19	HI	T=0.86ns
8 Profound Nationalism, Vigorous Social Advocacy, Principled Equity and Accountability	3.26	HI	3.28	VHI	T=0.12ns
Learning Outcomes	3.30	VHI	3.34	VHI	T=0.27ns
Teaching-Learning Activities	3.21	HI	3.33	VHI	T=0.68ns
Assessment Tasks	3.27	HI	3.16	HI	T=0.58ns
Overall	3.30	VHI	3.31	VHI	T=0.06ns

Age

Table 16 presents the distribution of the training faculty's evaluation of the process of implementation of the Instructional Design of the eight program outcomes of the Philippine College of Physicians Outcome-Based Education Competency-Based Training Program (PCP-CBTP) in Internal Medicine of the Vicente Sotto Memorial Medical Center when grouped according to their age with an overall F statistics ($F=0.96ns$), showing no significant difference; hence the null hypothesis of the study is not rejected. Descriptions, however, have slight differences, whereas those whose age range from 41 years old and above disclosed very highly implemented ratings versus highly implemented description ratings from those between 25 and 40 years old. Still, these differences failed to reject the null hypothesis concerning the p-values higher than the 0.05 level of significance set in this study.

Table 16. *Difference in the Training Core Faculty's Evaluation When Grouped According to Their Age*

Indicators	25-40 years old (n=26)		41-50 years old (n=10)		51-70 years old (n=7)		Test Stat
	Mean	Interpretation	Mean	Interpretation	Mean	Interpretation	
1. Clinical Competence	3.29	VHI	3.43	VHI	3.50	VHI	F=0.81ns
Learning Outcomes	3.46	VHI	3.64	VHI	3.60	VHI	F=0.51ns
Teaching-Learning Activities	3.26	HI	3.26	HI	3.43	VHI	F=0.31ns
Assessment Tasks	3.16	HI	3.40	VHI	3.49	VHI	F=1.40ns
2. Effective Communication and Proficiency in Teaching	3.22	HI	3.38	VHI	3.37	VHI	F=0.62ns
Learning Outcomes-EC	3.40	VHI	3.54	VHI	3.57	VHI	F=0.43ns
Learning Outcomes-PT	3.20	HI	3.30	VHI	3.43	VHI	F=0.54ns
Teaching-Learning Activities	3.13	HI	3.13	HI	3.27	HI	F=0.24ns
Assessment Tasks	3.23	HI	3.58	VHI	3.34	VHI	F=1.63ns
3. Dynamic Leadership and Management Skills	3.20	HI	3.36	VHI	3.65	VHI	F=2.21ns
Learning Outcomes	3.26	HI	3.30	VHI	3.71	VHI	F=1.86ns
Teaching-Learning Activities	3.12	HI	3.27	HI	3.54	VHI	F=1.75ns
Assessment Tasks	3.22	HI	3.50	VHI	3.71	VHI	F=1.97ns
4. Excellent, Ethical, and Relevant Research Output	3.20	HI	3.28	VHI	3.30	VHI	F=0.15ns
Learning Outcomes	3.15	HI	3.30	VHI	3.14	HI	F=0.30ns
Teaching-Learning Activities	3.28	VHI	3.37	VHI	3.24	HI	F=0.11ns
Assessment Tasks	3.17	HI	3.18	HI	3.51	VHI	F=0.87ns
5. Ethical, Professional and Inter-professional Practice	3.26	HI	3.27	HI	3.62	VHI	F=1.51ns
Learning Outcomes	3.35	VHI	3.42	VHI	3.66	VHI	F=0.85ns
Teaching-Learning Activities	3.14	HI	3.05	HI	3.64	VHI	F=2.56ns
Assessment Tasks	3.29	VHI	3.33	VHI	3.57	VHI	F=0.67ns
6. Efficient Systems-Based Approach to Health Care Practice	3.26	HI	3.38	VHI	3.55	VHI	F=0.83ns
Learning Outcomes	3.29	VHI	3.47	VHI	3.57	VHI	F=0.83ns
Teaching-Learning Activities	3.11	HI	3.25	HI	3.50	VHI	F=1.20ns
Assessment Tasks	3.38	VHI	3.42	VHI	3.57	VHI	F=0.28ns
7. Sustained Lifelong Learning	3.27	HI	3.26	HI	3.60	VHI	F=1.17ns
Learning Outcomes	3.42	VHI	3.37	VHI	3.65	VHI	F=0.75ns
Teaching-Learning Activities	3.19	HI	3.20	HI	3.57	VHI	F=1.22ns
Assessment Tasks	3.21	HI	3.20	HI	3.57	VHI	F=1.09ns
8. Profound Nationalism, Vigorous Social Advocacy, Principled Equity and Accountability	3.21	HI	3.25	HI	3.49	VHI	F=0.79ns
Learning Outcomes	3.28	VHI	3.36	VHI	3.40	VHI	F=0.15ns
Teaching-Learning Activities	3.24	HI	3.20	HI	3.50	VHI	F=0.68ns
Assessment Tasks	3.12	HI	3.20	HI	3.57	VHI	F=1.51ns
Overall	3.24	HI	3.33	VHI	3.51	VHI	F=0.96ns

The ratings on the implementation of the Instructional Design related to the eight program outcomes of the PCP-OBE-CBTP in Internal Medicine at VSMMC remain consistent across all age groups. The results negate the study on age that says it plays a significant role in the training program. Younger individuals, especially those under 30 or recent graduates of the Physician's Licensure Examinations, bring fresh skills and knowledge, which can be advantageous during long shifts as they tend to be inquisitive about new subjects. However, research indicates

that physicians younger than 55 are at a 200 times higher risk of experiencing burnout (Maybank et al., 2019). Therefore, their evaluation as to implementation likely varies but not in the case of this study

Years of practice

Table 17 shows the distribution of test statistics on the training core faculty's evaluation of the process of implementation of the eight program outcomes of the Philippine College of Physicians Outcome-Based Education Competency-Based Training Program (PCP-CBTP) in Internal Medicine of the Vicente Sotto Memorial Medical Center when grouped according to their years of practice. The results revealed an overall F statistic ($F=0.78ns$), which indicates no significant difference in their mean ratings and descriptions; hence, the study's null hypothesis was not rejected. The slight difference, however, is gleaned from the ratings of participants whose years of practice range from 6-10 years and 11 years and above groups compared to those whose years of practice are between 1-5 years (3.29-VHI, 3.51-VHI vs. 3.23-HI). Still, the results failed to establish significant differences.

Table 17. Difference in the Training Core Faculty's Evaluation When Grouped According to Their Years of Practice

Indicators	1-5 years (n=18)		6-10 years (n=12)		11 years up (n=12)		Test Stat
	Mean	Interpretation	Mean	Interpretation	Mean	Interpretation	
1. Clinical Competence							
Learning Outcomes	3.42	VHI	3.55	VHI	3.76	VHI	$F=0.69ns$
Teaching-Learning Activities	3.29	VHI	3.26	HI	3.28	VHI	$F=0.06ns$
Assessment Tasks	3.18	HI	3.26	HI	3.48	VHI	$F=0.65ns$
Mean	3.30	VHI	3.36	VHI	3.51	VHI	$F=0.45ns$
2. Effective Communication and Proficiency in Teaching							
Learning Outcomes-EC	3.40	VHI	3.50	VHI	3.52	VHI	$F=0.14ns$
Learning Outcomes-PT	3.17	HI	3.27	HI	3.50	VHI	$F=0.61ns$
Teaching-Learning Activities	3.10	HI	3.15	HI	3.40	VHI	$F=0.56ns$
Assessment Tasks	3.19	HI	3.44	VHI	3.48	VHI	$F=0.80ns$
Mean	3.19	HI	3.32	VHI	3.46	VHI	$F=0.62ns$
3. Dynamic Leadership and Management Skills							
Learning Outcomes	3.28	VHI	3.25	HI	3.70	VHI	$F=1.22ns$
Teaching-Learning Activities	3.04	HI	3.27	HI	3.60	VHI	$F=1.92ns$
Assessment Tasks	3.14	HI	3.50	VHI	3.60	VHI	$F=1.46ns$
Mean	3.15	HI	3.34	VHI	3.63	VHI	$F=1.57ns$
4. Excellent, Ethical, and Relevant Research Output							
Learning Outcomes	3.17	HI	3.20	HI	3.10	HI	$F=0.12ns$
Teaching-Learning Activities	3.26	HI	3.29	VHI	3.40	VHI	$F=0.07ns$
Assessment Tasks	3.23	HI	3.11	HI	3.40	VHI	$F=0.52ns$
Mean	3.22	HI	3.20	HI	3.30	VHI	$F=1.15ns$
5. Ethical, Professional and Inter-professional Practice							
Learning Outcomes	3.33	VHI	3.40	VHI	3.64	VHI	$F=0.62ns$
Teaching-Learning Activities	3.11	HI	3.13	HI	3.50	VHI	$F=1.28ns$
Assessment Tasks	3.25	HI	3.36	VHI	3.50	VHI	$F=0.46ns$
Mean	3.23	HI	3.29	VHI	3.55	VHI	$F=0.91ns$
6. Efficient Systems-Based Approach to Health Care Practice							
Learning Outcomes	3.24	HI	3.44	VHI	3.53	VHI	$F=0.81ns$
Teaching-Learning Activities	3.17	HI	3.08	HI	3.55	VHI	$F=1.23ns$
Assessment Tasks	3.39	VHI	3.34	VHI	3.65	VHI	$F=0.52ns$
Mean	3.27	HI	3.29	VHI	3.58	VHI	$F=0.52ns$
7. Sustained Lifelong Learning							
Learning Outcomes	3.47	VHI	3.34	VHI	3.60	VHI	$F=0.60ns$
Teaching-Learning Activities	3.19	HI	3.17	HI	3.53	VHI	$F=1.06ns$
Assessment Tasks	3.15	HI	3.27	HI	3.47	VHI	$F=0.87ns$
Mean	3.27	HI	3.26	HI	3.53	VHI	$F=0.82ns$
8 Profound Nationalism, Vigorous Social Advocacy, Principled Equity and Accountability							
Learning Outcomes	3.26	HI	3.29	VHI	3.52	VHI	$F=0.44ns$
Teaching-Learning Activities	3.22	HI	3.22	HI	3.50	VHI	$F=0.51ns$
Assessment Tasks	3.09	HI	3.17	HI	3.53	VHI	$F=1.28ns$
Mean	3.19	HI	3.22	HI	3.52	VHI	$F=0.90ns$
Overall	3.23	HI	3.29	VHI	3.51	VHI	$F=0.78ns$

Thus, the result negates the study's assumption that the number of years of practice can differentiate their evaluation of the implementation of the Philippine College of Physicians' Outcome-Based Education-Competency-Based Training Program.

4.0 Conclusion

The study concludes that the Vicente Sotto Memorial Medical Center's (VSMMC) Internal Medicine department effectively equips residents with the necessary knowledge and skills to excel as internists. Emphasizing a holistic approach, the program advocates for integrating medical knowledge, skills, and attitudes (KSA) to foster accurate diagnoses and quality management of adult diseases. Residents are trained to be competent medical educators and leaders, capable of conducting ethically relevant research and upholding professionalism. The outcome-based education (OBE) framework ensures that training aligns with specific competencies expected at each level, facilitating tailored learning experiences for residents. The successful implementation of the Philippine College of Physicians' Outcome-based Education Competency-Based Training program (PCP-OBE-CBTP) has led to significant improvements in resident training and has earned reaccreditation for five years. These findings highlight the program's considerable impact on postgraduate medical education and its role in enhancing the healthcare landscape in the Philippines. Recommendations include encouraging resident physicians to engage in relevant seminars and workshops and advocating for training core faculty to undergo enhancement training related to the PCP-OBE-CBTP handbook. Training hospital officials should develop comprehensive programs that align with OBE principles and establish assessment tools for monitoring implementation. The Philippine College of Physicians is urged to conduct ongoing evaluations of training compliance across hospitals. At the same time, future researchers are encouraged to replicate this study in various sub-specialties of Internal Medicine to assess further and enhance residency training programs.

5.0 Contributions of Authors

Dax Ronald O. Librado, MD, is the primary researcher who framed the paper, assuring the research participants of data privacy and other ethical considerations in conducting the study. He also assumed responsibility for data gathering, preparation, and writing the manuscript. **Lourdes G. Tolod, PhD**, is a co-author of the study who has worked closely with the lead author since the paper's conceptualization. She also contributed to the manuscript's writing and proofread the entire paper. **Rogelio L. Gawahan, PhD**, is a co-author who has been involved since the paper's conceptualization. He also served as the statistician during the treatment of the gathered data and aided in interpreting the statistical data.

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7.0 Conflict of Interests

The authors declare that they have no conflict of interest.

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A Systematic Review of Mobile Banking, Fintech Innovations, and Regulatory Gaps to Achieve Financial Inclusion in the Philippines

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Abstract. Digital financial inclusion has become vital in bridging economic disparities, particularly in the Philippines, where 68% of adults remained unbanked as of 2021. This systematic review, adhering to PRISMA guidelines, synthesizes 26 studies (2014–2024) to evaluate how mobile banking, fintech innovations, and regulatory frameworks contribute to financial inclusion in marginalized communities. Findings reveal that platforms like GCash have considerably enhanced access to financial services, reducing cash dependency by 41% in urban and 29% in rural areas. However, structural inequities persist, including the digital divide in regions like Visayas and Mindanao, low financial literacy (only 34% of low-income users understand digital security), and gender gaps (women-owned MSMEs represent 22% of fintech borrowers despite comprising 39% of entrepreneurs). Regulatory frameworks like the National Retail Payment System improved transaction volumes but struggled with fragmentation and rural implementation. The COVID-19 pandemic accelerated digitization yet exacerbated exclusion for low-literacy populations. The study emphasizes the need for multidimensional strategies: infrastructure investments in rural connectivity, gender-responsive fintech designs, regulatory harmonization, and community-driven literacy programs. Future research must address longitudinal impacts, intersectional barriers, and policy effectiveness to achieve equitable financial inclusion in the Philippines.

Keywords: Digital financial inclusion; Mobile banking; Fintech innovations; Marginalized communities; Philippines.

1.0 Introduction

Digital financial inclusion has become a critical topic of discussion in academic and policy communities, particularly in developing countries where substantial segments of the population remain unbanked or underbanked (Demirgüç-Kunt et al., 2022; Ozili, 2018). The convergence of mobile technology, internet connectivity, and financial services has created unprecedented opportunities to extend banking services to traditionally excluded populations (Gallego-Losada et al., 2023; Ozili, 2018). The Philippine government's National Strategy for Financial Inclusion emphasizes leveraging technology to establish inclusive financial systems, given that approximately 68% of adults were unbanked as of 2021 (BSP, 2023). Mobile banking platforms like GCash and Maya have become indispensable tools, offering affordable, accessible services to previously excluded populations (Asfaw, 2015; Ali, 2024; Debuque-Gonzales et al., 2023; Molina, 2024; Nair, 2016; Raon et al., 2021; Susilo & Dizon, 2023). Comparing the local scenario with international contexts, the experience in India with

its Digital India initiative parallels the Philippines' efforts, where mobile banking via platforms like Paytm has significantly increased financial inclusion (Joshi et al., 2019). Similarly, in Kenya, M-Pesa has revolutionized financial access, offering valuable lessons on the impact of mobile money services in rural and urban settings (Suri & Jack, 2016).

The theoretical foundation for digital financial inclusion is derived from financial intermediation theory, diffusion of innovation theory, and the technology acceptance model (TAM). Financial intermediation theory suggests that reducing transaction costs and information asymmetries can improve access to financial services (Allen & Santomero, 1997). The diffusion of innovation theory describes how new financial technologies like mobile banking and digital wallets are adopted (Al-Jabri & Sohail, 2012), while TAM discusses the impact of perceived utility and ease of use on the adoption of technology (Raon et al., 2021; Sanchez & Tanpoco, 2023; Venkatesh & Davis, 2000). These frameworks explain the rapid acceptance of digital financial services like GCash among younger urban populations in the Philippines, where technology access and literacy are high (Llanto et al., 2018; Quimba & Calizo, 2018).

Nevertheless, substantial obstacles continue to exist despite these developments. Obstacles persist in the form of inadequate infrastructure, inadequate digital and financial literacy, and restricted access to technology for underprivileged communities, including those in rural areas and low-income households (Acosta et al., 2019; Gallego-Losada et al., 2024; Lotter & Okoro, 2024). Research by Gallego-Losada et al. (2024) indicates that rural adoption is substantially behind urban adoption due to these persistent challenges despite the rapid proliferation of digital financial services in urban areas. Similar barriers are documented in Sub-Saharan Africa, where rural adoption lags due to electricity shortages and network gaps (Houngbonon et al., 2021). Furthermore, regulatory frameworks designed to oversee digital financial services must balance promoting innovation and guaranteeing consumer protection, frequently resulting in additional complications (Chaturvedi & Sinha, 2024). Recent studies by Agur et al. (2020) and Bromberg et al. (2017) emphasize the significance of adequate regulatory frameworks in advancing financial inclusion and preserving consumer trust and system stability.

The intersection of mobile banking, fintech innovations, and regulatory frameworks creates a complex ecosystem that requires careful examination to understand its effectiveness in promoting financial inclusion. Previous studies have explored individual aspects of digital financial inclusion in the Philippines, such as mobile money adoption (Molina, 2024), regulatory challenges (Orencia, 2023), and financial literacy (Binaluyo et al., 2024; Molina, 2024; Orencia, 2023). However, a comprehensive systematic review that synthesizes these various aspects and their collective effect on financial inclusion, particularly in marginalized communities, is notably absent from the literature. The rapid growth of digital financial services and their potential to contribute to the general economic development objectives underscore the significance of this research gap.

This paper addresses the research question: "How have mobile banking, fintech innovations, and regulatory frameworks contributed to digital financial inclusion in marginalized communities in the Philippines, and what challenges and barriers persist in ensuring equitable access to financial services across marginalized populations?" This study aims to examine the contributions of mobile and digital financial services, identify gaps in regulatory policies, and emphasize the obstacles that impede broader financial inclusion in the Philippines using a systematic literature review. The findings will contribute to academic understanding and policy development in digital financial inclusion.

2.0 Methodology

In order to address the research question, this study implemented a systematic literature review following established protocols for rigor and transparency in review processes (Khan et al., 2003; Littell et al., 2008; Petticrew & Roberts, 2006). The systematic literature review method is particularly suitable for integrating the current body of knowledge into mobile banking, fintech, and regulatory frameworks affecting digital financial inclusion, as it allows for a thorough and methodical approach to analyzing large volumes of research. In order to guarantee transparency and reduce bias, this study utilized the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines (Moher et al., 2010; Page et al., 2021).

The literature search was conducted using ProQuest and Google Scholar databases, selected for their extensive coverage, accessibility, and capacity to facilitate interdisciplinary research on digital financial inclusion. These databases were selected due to their ability to provide a wide range of academic sources within the university's research infrastructure. The search strategy employed a systematic approach with carefully crafted search strings to maximize relevant results while minimizing irrelevant content. The primary search strategy employed a combination of Boolean operators and carefully selected keywords to capture the breadth of research on digital financial inclusion in the Philippines. The researcher used the terms ("digital financial inclusion" OR "mobile banking" OR "fintech" OR "digital payments") AND ("Philippines" OR "Filipino") AND ("marginalized" OR "underserved" OR "unbanked" OR "financial access") as a primary search string. Secondary search strings were also used for specific aspects such as (regulation* OR framework* OR policy) AND (fintech OR "digital finance") AND Philippines for regulatory aspects, (barrier* OR challenge* OR obstacle*) AND ("financial inclusion" OR "digital banking") AND Philippines for adoption barriers, and, (impact OR effect* OR outcome*) AND ("financial inclusion" OR "digital finance") AND Philippines for impact assessment.

This review established inclusion and exclusion criteria following the recommendations of Cooper et al. (2019) for conducting systematic reviews in financial research. Inclusion criteria for this review include peer-reviewed articles, policy papers, or high-quality grey literature from reputable institutions published from 2014 to 2024, focused on the Philippines or including substantial Philippines-specific analysis, and written in English. The review designed exclusion criteria to remove less relevant sources such as studies focusing solely on traditional banking without digital components, technical papers on fintech development without inclusion aspects, opinion pieces and non-academic blog posts, conference abstracts without full papers, and studies with severe methodological flaws. Data extraction was performed by carefully reading selected articles and using Zotero to record the extracted data and results. The synthesis process employed both narrative synthesis and thematic analysis approaches. The narrative synthesis focused on describing patterns in the evidence base (Popay et al., 2006), while thematic analysis identified recurring themes and concepts across studies (Braun & Clarke, 2022). Figure 1 illustrates the systematic review process of this research.

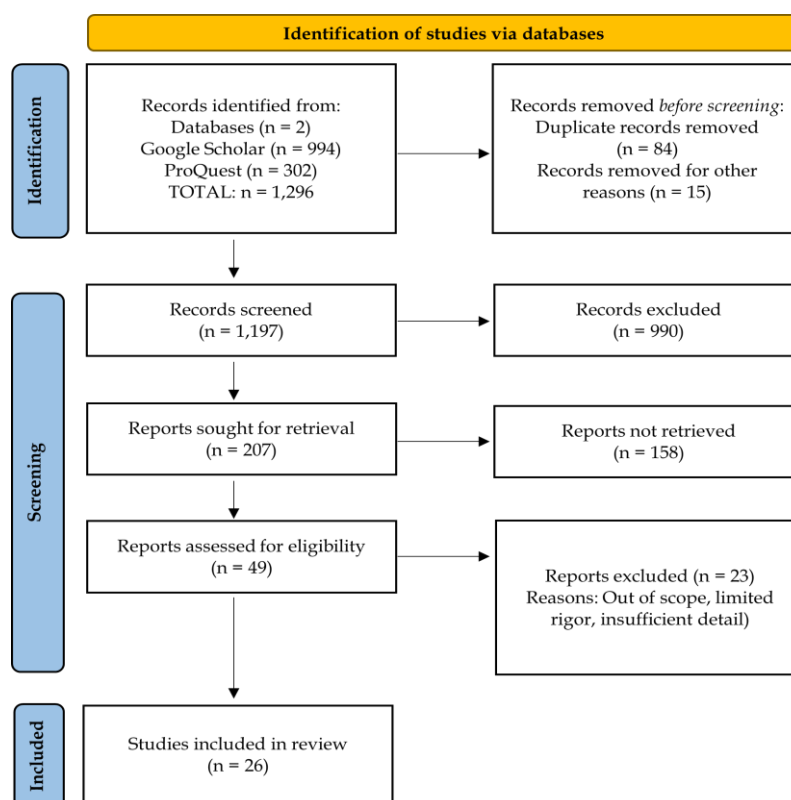


Figure 1. Selection flow of the study using PRISMA

3.0 Results and Discussion

The systematic review adhered to PRISMA guidelines, beginning with 1,296 records identified from Google Scholar ($n = 994$) and ProQuest ($n = 302$). After removing duplicates ($n = 84$) and irrelevant entries ($n = 15$), 1,197 reports underwent screening. Full-text retrieval was attempted for 207 articles, though 158 were inaccessible due to paywalls or language restrictions. Eligibility assessments culminated in the inclusion of 26 studies meeting the criteria of peer-reviewed articles, policy reports, or grey literature published between 2014 and 2024, with an emphasis on digital financial inclusion in the Philippines. The 26 studies meeting all quality criteria comprised 16 peer-reviewed journal articles, six policy research papers, three institutional reports, and one thesis. Excluded studies ($n = 23$) were deemed methodologically weak, insufficiently focused on the Philippines, or irrelevant to the research question.

3.1 Meta-Analysis of Quantitative Trends

A meta-analysis of quantitative trends across the 26 studies revealed critical patterns. Post-2019, mobile banking adoption surged 18–35%, driven mainly by platforms like GCash (Debuque-Gonzales et al., 2023; Quimba et al., 2021) and pandemic-induced digitization. However, stark disparities persisted: women-owned micro, small, and medium-sized enterprises (MSMEs) represented only 22% of fintech borrowers (ADB, 2024) despite comprising 39% of entrepreneurs (Lim et al., 2020), and rural areas accounted for less than 15% of digital transactions (Debuque-Gonzales & Corpus, 2024; Gumba, 2018), correlating strongly with low internet penetration. Table 1 highlights the key findings of the included studies.

Table 1. Summary of studies on digital financial inclusion in marginalized communities in the Philippines

Author	Year	Title of Study	Key Findings
Acosta et al.	2019	Making Payments More Efficient for the Philippines Conditional Cash Transfer Program	The Pantawid Pamilyang Pilipino Program can enhance payment efficiency through electronic systems, necessitating government reforms in payment management and information systems for better financial inclusion.
ADB	2024	Leveraging Fintech for Women Entrepreneurs in Indonesia, the Philippines, and Viet Nam	Women-owned MSMEs face significant financial barriers that fintech solutions could mitigate through alternative credit assessments, yet there is a lack of tailored products and financial literacy initiatives.
Ali	2024	The Payments Security and Convenience of Consumers of Mobile Payments in Baguio City, Philippines	Mobile payment applications are widely accepted in Baguio City due to ease of use, usefulness, and security, though acceptance varies by app type and user demographics.
Anne	2024	E-Commerce Growth and Digital Payments in the Philippines	E-commerce growth in the Philippines, accelerated by the COVID-19 pandemic, has been significantly supported by digital payments and government policies, leading to increased consumer spending.
Celestino, Vigonte, and Abante	2024	The Role of Fintech in the Monetary Policy Transmission and Financial Inclusion in the Philippines.	The pandemic boosted fintech adoption in the Philippines, but digital transformation among businesses remains slow compared to ASEAN neighbors, affecting financial inclusion and monetary policy effectiveness.
Cheng et al.	2023	Using Mixed Method to Understand Customer Experience with Digital Banking Services	Digital banking customers experience specific pain points, and banks can improve services by leveraging mixed methods like text mining and customer journey mapping.
Chiu, Bool, and Chiu	2017	Challenges and Factors Influencing Initial Trust and Behavioral Intention to Use Mobile Banking Services in the Philippines	Trust in mobile banking is shaped by reliability, security, and ease of use, significantly influencing adoption behaviors.
Dalabajan	2019	Cash-in Hand: Electronic cash transfer and digital financial inclusion during crises and conflicts in the Philippines	Electronic cash transfer programs improve financial inclusion in crises by enhancing access to social protection schemes and reducing corruption risks.
Debuque-Gonzales and Corpus	2024	Understanding Financial Inclusion in the Philippines	Financial inclusion in the Philippines is influenced by education, income, and urbanization, with the Visayas region being the most financially excluded.
Debuque-Gonzales, Miral, and Ruiz	2023	Financial Inclusion, Financial Technology, and the COVID-19 Pandemic	Financial inclusion and digital payments increased post-COVID-19, with demographic factors such as education and income playing crucial roles in adoption.
Gumba	2018	Mobile Money in a Poor Fishing Municipality in the Philippines	Fishing communities in the Philippines rely on mobile money for financial management, though usage is affected by weather-related income fluctuations.
Lim et al.	2020	The Impact of Demand Side Barriers and Supply Side Barriers to Financial Inclusions: A Study on Micro Enterprises in Metro Manila	Demand and supply barriers do not significantly impact financial inclusion among Metro Manila micro-enterprises, but financial literacy remains a key constraint.

Llanto	2015	Financial Inclusion, Education, and Regulation in the Philippines	Financial inclusion remains a challenge despite a stable banking sector, requiring better financial education and regulatory measures.
Llanto and Rosellon	2017	What Determines Financial Inclusion in the Philippines?	Age, gender, education, and income significantly influence financial inclusion, with women showing high financial participation.
Llanto, Rosellon, and Ortiz	2018	E-Finance in the Philippines	Financial inclusion in the Philippines requires consumer-oriented digital financial services, addressing barriers like awareness, education, and cost concerns.
Molina	2024	The Duality of Digital Technology through Amplification: A Case Study of GCash in the Philippines	GCash accessibility highlights the digital divide, emphasizing the need for digital and financial literacy programs.
Nair	2016	Eschewing Cash: The Challenges of Cashless Transactions in the Philippines	Cashless transactions can promote financial inclusion, but banking access limitations and reliance on remittances hinder widespread adoption.
Quimba, Barral, and Carlos	2021	Analysis of the FinTech Landscape in the Philippines	FinTech transactions in the Philippines grew during early COVID-19 lockdowns, with stricter restrictions correlating with higher transaction volumes.
Quimba and Calizo	2018	Going digital: From innovation to inclusive growth in the Philippines	Digital infrastructure improvements and lower internet costs are essential for inclusive digital growth, especially in remote areas.
Raon, Leon, and Dui	2021	Adoption of E-Payment Systems in the Philippines	Security, trust, and perceived usefulness are key factors driving e-payment adoption, with demographic variations affecting risk perception.
Sanchez and Tanpoco	2023	Continuance Intention of Mobile Wallet Usage in the Philippines: A Mediation Analysis	Perceived ease of use, usefulness, security, trust, and satisfaction significantly influence continued mobile wallet usage.
Santos	2023	The Rise of Digital Payments: Transforming the Financial Landscape in the Philippines	Young adults, particularly women, dominate digital payment adoption in the Philippines, driven by convenience and accessibility.
Susilo and Dizon	2023	Digital Payment Transformation in the Philippines: From Cash to Gcash	The shift to digital payments, particularly GCash, is driven by smartphone penetration, government initiatives, and demand for contactless transactions, though challenges like the digital divide persist.
Tano	2024	Role of Information Technology in the Administration of Economic Development in the Philippines	Information technology significantly contributes to economic development in the Philippines but requires bridging the digital divide for inclusive growth.
Tovar et al.	2014	Financial Inclusion, Mobile Banking, and Remittances in Mexico and the Philippines	Mobile banking improves financial inclusion in Mexico and the Philippines by reducing transaction costs and enhancing access to financial services, mainly through remittances.
Yamada, Shimizutani, and Murakami	2021	The COVID-19 Pandemic, Remittances and Financial Inclusion in the Philippines	Households receiving remittances are more financially included, though reliance on remittances reduces dependence on informal loans, particularly among women.

3.2 Advancements in Mobile Banking and Fintech Innovations

The systematic review reveals a significant transformation in the Philippine financial landscape, particularly in mobile banking adoption. Between 2019 and 2024, mobile banking usage increased by 18-35%, with platforms like GCash leading this digital revolution (Celestino et al., 2024; Susilo & Dizon, 2023). This surge aligns with global digitization trends but was hastened by the COVID-19 pandemic, which necessitated contactless transactions. The evidence suggests that this growth was not merely circumstantial; instead, it represented a fundamental shift in consumer behavior, with digital payment providers reporting a 13% annual increase in transaction volumes during the early months of 2020 (Quimba et al., 2021).

Digital platforms have demonstrated remarkable success in reducing cash dependency, with Molina (2024) documenting that urban areas experienced a 41% reduction while rural communities showed a 29% decrease. This transformation extends beyond simple payment solutions, as fintech lenders have leveraged alternative data analytics to increase loan approval rates for previously unbanked MSMEs by 27% (ADB, 2024). This innovation addresses a critical gap in traditional banking systems, where conventional credit scoring methods often exclude viable borrowers lacking formal credit histories (Lim et al., 2020).

3.3 Demographic Disparities and Access Barriers

Despite overall progress, significant geographic disparities persist in digital financial inclusion. Rural regions, particularly Visayas and Mindanao, demonstrate adoption rates 1.8 times lower than urban areas (Debuque-

Gonzales & Corpus, 2024). This disparity stems from multiple factors, including limited smartphone access, inadequate digital infrastructure, and lower internet penetration rates (Quimba & Calizo, 2018). The archipelagic nature of the Philippines compounds these challenges, creating unique obstacles for digital financial service deployment that differ from those faced by continental nations (Tovar et al., 2014).

The review highlights a notable gender disparity in digital financial inclusion. While 68% of women own mobile phones, less than 10% of fintech products effectively address their specific needs (ADB, 2024). Women-owned MSMEs represent only 22% of fintech borrowers, despite women comprising 39% of entrepreneurs (Lim et al., 2020). This underrepresentation suggests that current fintech solutions may not adequately consider gender-specific financial behaviors, needs, and constraints (Debuque-Gonzales & Corpus, 2024). This discrepancy reflects broader sociocultural norms restricting women's financial autonomy and highlights critiques of gender-neutral fintech designs in global literature (Demirgüç-Kunt et al., 2020, 2022).

A critical finding emerges regarding the relationship between socioeconomic status and digital financial inclusion. Only 34% of low-income users fully understood digital payment security features (Anne, 2024; Santos, 2023), indicating a significant financial and digital literacy gap. This knowledge deficit creates a self-reinforcing cycle of exclusion, where those needing affordable financial services face the most significant access barriers (Llanto, 2015).

3.4 Regulatory Framework and Policy Impact

Implementing the National Retail Payment System (NRPS) has yielded measurable improvements in digital transaction efficiency, driving a 19% increase in payment volumes (Celestino et al., 2024). This regulatory framework has successfully standardized digital transactions, creating a more coherent ecosystem for financial technology providers and users (Llanto et al., 2018).

The review identifies regulatory fragmentation as a significant barrier to fintech scalability, particularly in rural areas. Quimba and Calizo (2018) note that the current regulatory environment, characterized by overlapping policies and slow adaptation to technological advancement, may inadvertently stifle innovation. This situation suggests a need for more agile regulatory frameworks that can keep pace with rapid technological change while maintaining adequate consumer protection (Llanto & Rosellon, 2017).

3.5 Pandemic Impact and Digital Acceleration

The COVID-19 pandemic provided an unprecedented accelerator for digital financial adoption, forcing rapid digitization across all sectors of society. However, this acceleration revealed and exacerbated existing inequalities. While digital platforms enabled crucial aid distribution and remittance services during lockdowns, 28% of low-literacy users experienced increased financial exclusion due to difficulties navigating digital interfaces (Debuque-Gonzales et al., 2023).

The pandemic revealed significant changes in remittance patterns and their impact on financial inclusion. Yamada et al. (2021) found that households receiving remittances showed a 20% higher likelihood of maintaining active bank accounts than non-receiving households. This relationship between remittances and financial inclusion suggests that digital platforms can effectively promote broader financial participation (Dalabajan, 2019).

3.6 Methodological Considerations and Research Gaps

The dominance of cross-sectional designs (80% of reviewed studies) limits our understanding of long-term impacts and causal relationships in digital financial inclusion (Llanto et al., 2018; Raon et al., 2021). This methodological constraint is particularly significant given the rapid evolution of financial technology and changing consumer behaviors (Sanchez & Tanpoco, 2023).

A notable disconnect exists between policy recommendations and empirical evidence. While eleven studies advocate for financial literacy programs, only four provide empirical evidence of their effectiveness (Debuque-Gonzales & Corpus, 2024; Llanto, 2015). This gap highlights the need for more rigorous evaluation of intervention strategies, particularly those to address the digital divide and gender disparities in financial inclusion (Tano, 2024).

4.0 Conclusion

This systematic review underscores the significant influence of mobile banking and fintech innovations on advancing digital financial inclusion in the Philippines, with a particular emphasis on marginalized communities. Platforms like GCash have democratized access to financial services, yet structural inequities – from infrastructure deficits to financial illiteracy – continue to exclude the most vulnerable. While mobile banking adoption surged post-2019, the digital divide remains stark, especially in rural areas like Visayas and Mindanao, where internet penetration and smartphone ownership are considerably lower than in urban centers. Although women comprise a significant proportion of entrepreneurs, they are excluded due to gender-neutral fintech designs and sociocultural constraints. Regulatory frameworks, though progressive, struggle with implementation gaps that fail to address rural infrastructure deficits and the localized needs of marginalized groups. The COVID-19 pandemic further emphasized this duality, accelerating digitization but simultaneously marginalizing low-literacy users who struggled to adapt to digital platforms.

A multidimensional approach is essential to optimize fintech's potential. Infrastructure investments should prioritize rural broadband expansion through public-private partnerships, while fintech solutions must incorporate gender-responsive innovations, such as microloans adapted to women's informal income cycles. Regulatory harmonization through fintech sandboxes can balance consumer protection with innovation, and community-driven financial literacy programs – integrating local dialects and cultural analogies – can enhance digital adoption. Future research should use long-term studies to see how digital financial services affect people's lives over time, especially for groups like women, low-income communities, and rural populations who face overlapping challenges – such as cultural expectations about money, lack of technology access, or gaps in financial education. Studies should also test how regulatory frameworks and fintech innovations actually solve these problems in the long run, and explore why some people avoid using these services (e.g., distrust or cultural hesitations). This would help us understand if current policies and programs truly help reduce financial inequality or inadvertently reinforce existing inequalities. The Philippines stands at a pivotal crossroads in its pursuit of financial inclusion. In order to guarantee that fintech catalyzes sustainable and equitable development, the digital revolution must not exclude any community. Implementing inclusive design, targeted policies, and collaborative governance is imperative.

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The author declares no conflict of interest.

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Enhancing Supervisory Programs through Instructional Practices of School Heads

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Abstract. Supervisory programs and instructional practices involve leveraging the instructional leadership of school heads to enhance the effectiveness of supervisory programs, fostering a culture of continuous improvement and instructional excellence in schools. However, due to time constraints of performing the tasks and insufficient focus on how school heads can leverage their instructional leadership to enhance supervisory programs, these become a challenge in their administrative roles. Understanding and addressing these challenges is crucial for improving the overall quality of education. The study's main goal is to examine instructional and supervisory practices and their effectiveness in guiding, supporting, and evaluating teachers. The study employed a quantitative research design. The primary tool for data collection is a survey questionnaire adopted from Sumapal and Haramain (2023) on the extent of instructional supervision as to teachers' guidance, teacher support, and teachers' performance assessment. The study involved 154 respondents and was equally distributed to 21 public elementary schools in Lianga District, Lianga Surigao del Sur. The data gathered were subjected to statistical analyses, including frequency count, percentage mean, and Pearson correlation. The data revealed that the extent of instructional supervision has an overall mean of 3.59 and a standard deviation of 0.057, which is highly evident. Furthermore, most school heads performed well in providing feedback, conducting classroom observations, and fostering professional development. However, some areas need improvement, such as mentorship programs, informal classroom visits, and data utilization. Based on the study's findings, an enhanced supervisory program is proposed. Implementing this program can strengthen instructional supervision and improve teaching quality in the district.

Keywords: Instructional supervision; Mentorship development; Professional development; Supervisory practices; Teacher evaluation.

1.0 Introduction

Instructional supervision plays a crucial role in enhancing teaching effectiveness and student learning. However, in Lianga District, Surigao del Sur, inconsistencies in supervision practices have led to disparities in educational outcomes. While some schools effectively implement supervisory strategies, others struggle due to challenges such as limited professional development and negative perceptions of supervision. Addressing these issues is essential to improving the district's education quality. Research has emphasized the importance of instructional supervision in shaping educational environments. Shaked and Benoliel (2020) assert that adequate supervision improves instructional quality and fosters a supportive learning atmosphere. Burden and Byrd (2019) highlight the role of school leadership in influencing teaching strategies and student achievement. Additionally, Ebele and Ofu (2017) argue that the quality of a nation's education is directly linked to the strength of its supervisory

processes. Despite these insights, limited research specifically examines the effectiveness of instructional supervision within the Lianga District, highlighting a gap in understanding localized supervisory challenges and best practices.

The Philippines' performance in the 2019 Program for International Student Assessment (PISA) underscored persistent concerns about the country's educational quality, with the nation ranking last in reading and second to last in science and mathematics (Basilio, 2021). These results highlight the need to strengthen instructional supervision to enhance teaching practices and student performance. While previous studies have explored general supervision methods, little attention has been given to their specific application within the unique context of Lianga District. This study aims to bridge this research gap by analyzing the effectiveness of instructional supervision among school heads in the Lianga District. It seeks to identify best practices and propose improvements to support educational development, providing insights tailored to the district's unique challenges and needs. This research offers a localized perspective that differentiates it from previous studies, contributing to a more nuanced understanding of instructional supervision in diverse educational contexts.

2.0 Methodology

2.1 Research Design

This study employed a quantitative research design to evaluate school heads' instructional and supervisory practices in Lianga District, Surigao del Sur. A structured survey questionnaire was administered to school heads and teachers, adopted from the tool developed by Sumapal and Haramain (2023). The questionnaire consisted of Likert-scale items assessing various aspects of the extent of instructional supervision as to teacher guidance, the extent of instructional supervision as to teacher support, and the extent of implementation as to teachers' performance assessment. Quantitative data collected from the surveys were analyzed using descriptive statistics (mean, standard deviation, frequency) and inferential statistics (t-tests, ANOVA) to identify patterns, trends, and differences in supervisory practices. The results provided a comprehensive understanding of the effectiveness of current instructional supervision practices and highlighted areas for improvement.

2.2 Research Respondents

The study involved participants from 21 public elementary schools in the Lianga District, Municipality of Lianga, Surigao del Sur. The target population comprised 21 school heads and 230 teachers, yielding 251 potential respondents. To determine a statistically representative sample size, the researcher applied Slovin's formula, resulting in a sample size of 154 respondents. A purposive sampling technique was employed. This non-probability sampling method facilitated the inclusion of individuals who could provide valuable insights aligned with the research objectives. This method ensures that the selected participants possess the relevant attributes and experiences to provide meaningful insights into the research topic. Furthermore, the selection process involved the following steps: established specific criteria for participant selection to ensure that those chosen had direct experience with instructional supervision practices; included factors such as years of experience, roles and responsibilities, involvement in supervisory activities, and representation from different schools within the district; reviewed the list of 251 potential participants to identify those who met the inclusion criteria; involved examining records, consulting with district administrators, and conducting preliminary interviews to verify eligibility; aimed to include participants from various schools within the district, encompassing diverse educational environments and contexts; and the selected participants were contacted and informed about the purpose of the study, the selection process, and their expected contributions.

2.3 Research Instrument

Data collection was facilitated through a structured survey questionnaire designed in English and divided into sections addressing demographic profiles and instructional supervision practices. The assessment focused on three key dimensions: teacher guidance, support, and performance evaluation. The researcher adopted the instructional, supervisory tool that Sumapal and Haramain (2023) developed, which comprised three subtopics, each containing ten items measured on a four-point Likert scale. Respondents were required to evaluate statements using the following scale: four (4) for highly evident, three (3) for evident, two (2) for less evident, and one (1) for least evident—the instrument aimed to capture an accurate depiction of instructional, supervisory practices among school heads.

2.4 Data Gathering Procedure

Prior to data collection, the questionnaire underwent a validation process conducted by a panel of evaluators, statisticians, and the Dean of the Graduate School to ensure its reliability and appropriateness. Following approval, the researcher formally sought permission from the Schools Division Superintendent of the DepEd Surigao del Sur Division to conduct the study. The request letter was personally delivered, and the study's objectives were explained to the superintendent, who acknowledged the research initiative. Upon receiving approval, the researcher coordinated with the District in charge of Lianga Municipality and issued a formal notice regarding the upcoming distribution of questionnaires.

The distribution process involved administering the questionnaires to school heads and teachers during administrative meetings. Each questionnaire was accompanied by a request letter emphasizing the importance of honest responses and ensuring respondents that their answers would remain confidential. Participants were also informed that the study aimed to develop strategic planning and intervention measures for improving school instructional supervision.

2.5 Ethical Considerations

This study adhered to ethical research standards, ensuring participants were fully informed about the study's purpose, procedures, potential risks, and benefits. Written informed consent was obtained before participation, emphasizing voluntary involvement and the right to withdraw at any stage without consequences. Confidentiality and privacy were strictly maintained, with all personal information anonymized and securely stored. The study ensured that no harm or discomfort was inflicted on participants, and ethical protocols were thoroughly reviewed for compliance. Data was utilized exclusively for research purposes, with findings reported transparently while upholding participant anonymity. The study complied with Republic Act No. 10173, also known as the Data Privacy Act of 2012, which safeguards personal information in government and private-sector communication systems, ensuring a balance between privacy protection and the free flow of information for innovation and growth.

3.0 Results and Discussion

3.1 Demographic Characteristics of the Respondents

Table 1 presents the study's respondents, focusing on their highest educational attainment, designation, and years in their current designation. Most respondents are pursuing advanced degrees, with 86.36% completing some master's degree units. A small number have completed their MA or doctorate degrees (3.25%). While a scholarship program is offered to teachers, particularly the Philippine Normal University's Linking Standards and Quality Practice (LiSQuP program) in 2021, the slot is limited per course. Based on DepEd Surigao del Sur Division records, 41 teachers and school heads were enrolled in the LiSQuP program; most were still enrolled as of 2024. According to Ms. Erlyn Mangadlao, Senior Education Program Specialist in Human Resource Development, the top reasons for not pursuing the course were conflict of schedule, work demands, and family obligations. In addition, scholarships abroad are available, but no one applies for one reason: the bulk of requirements for which the interested parties have no ample time to accomplish. Moreover, this trend of pursuing higher education aligns with Darling-Hammond et al. (2017), who emphasize the importance of continuous professional development for improving teaching and student outcomes.

Regarding designation, respondents hold various positions, with the largest group being Teacher III (42.21%). Other positions include Teacher I (23.38%), Teacher II (16.23%), and Master Teacher I (4.55%). This diversity supports Leithwood et al. (2008) view that effective instructional leadership is distributed across different roles within a school system. Moreover, nearly half of the respondents (46.75%) have been in their current roles for 0 to 4 years, indicating many recent appointments. This highlights the need for robust induction and mentoring programs, as Ingersoll and Strong (2011) suggested, to support teachers' effectiveness in their new roles. The respondents' demographic profile shows a commitment to advanced education and a diverse range of roles, with many being relatively new to their positions. This information is essential for understanding their perspectives on instructional supervision practices and aligns with related literature emphasizing professional development, collaborative leadership, and support for educators at different career stages.

Table 1. Demographic characteristics of the respondents (n=154)

Indicator	Category	f	%
Highest Educational Attainment	Without MA	15	9.74
	With MA Units	133	86.3
	MA Degree Holder	1	0.65
	With Doctorate Units	4	2.60
	Doctorate Degree Holder	1	0.65
	T-III	65	42.2
Designation	T-I	36	23.3
	T-II	25	16.2
	HT-I	9	5.84
	MT-I	7	4.55
	HT-III	5	3.25
	P-II	3	1.95
	SPET-1	2	1.30
	P-I	1	0.65
	HT-II	1	0.65
	0 - 4	72	46.7
No. of Year in the Current Designation	5 - 9	45	29.2
	10 - 14	18	11.6
	15 - 19	2	1.30
	20 - 24	9	5.84
	25 - 29	1	0.65
	30 - 34	3	1.95
	35 - 39	4	2.60

3.2 Extent of the Instructional Supervision as to Teachers' Guidance

Table 2 shows how school heads employ instructional supervision regarding teachers' guidance. The overall mean score for instructional supervision practices regarding teachers' guidance is 3.59, with a standard deviation of 0.057, described as "highly evident." This indicates that, generally, school heads are perceived to employ instructional supervision practices effectively in guiding teachers. The indicator "Direct teachers of instructional supervision approaches" has a mean score of 3.75 with a standard deviation of 0.489, indicating that this practice is highly evident among school heads. Similarly, "Advise teachers to use active learning in the classroom" has a mean score of 3.84 (SD = 0.420), also rated as highly evident. These findings align with the research of Leithwood et al. (2008), who emphasize that effective instructional leadership involves direct guidance and active learning promotion to enhance teaching quality.

Table 2. Extent of the instructional supervision as to teachers' guidance

Indicators	Mean	SD	Interpretation
1. Direct teachers of instructional supervision approaches	3.75	0.48	Highly Evident
2. Advise teachers to use active learning in the classroom.	3.84	0.42	Highly Evident
3. Frequently visit classrooms for instructional supervision purposes.	3.62	0.52	Highly Evident
4. Solicit and provide feedback on instructional supervision methods and techniques	3.64	0.52	Highly Evident
5. Use instructional data to focus on improving the curriculum or instruction.	3.58	0.54	Highly Evident
6. Arrange induction training for beginner teachers	3.36	0.60	Evident
7. Assist teachers in lesson planning	3.51	0.59	Highly Evident
8. Assist teachers in developing or selecting instructional materials.	3.50	0.57	Highly Evident
9. Spread new teaching methodologies among teachers.	3.50	0.58	Highly Evident
10. Facilitate experience-sharing programs between teachers	3.64	0.50	Highly Evident

Note. Overall Mean 3.59 (Highly Evident) with SD 0.057

Legend: 3.5-4.0 (Highly Evident), 2.5-3.49 (Evident), 1.25 - 2.49 (Less Evident), 1.0-1.49 (Least Evident)

The indicator "Arrange induction training for beginner teachers" scored slightly lower, with a mean of 3.36 (SD = 0.602), falling into the "evident" category. This suggests that while induction training is recognized, it is not as consistently practiced as other forms of guidance. This suggests that while still present, the consistency and focus on induction programs for new teachers might not be as pronounced as other supervisory activities. Ingersoll and Strong (2011) stress the importance of induction programs for novice teachers, indicating a potential area for improvement in this practice.

In 2013, the researcher was a newly hired teacher designated as a Teacher-in-Charge at San Miguel 2 District, particularly Lower Bagyang Elementary School. The researcher did not undergo a comprehensive teacher induction program and was not given an experienced teacher to mentor on tailoring instructional practices inside

the classroom for one year. With this, the researcher found it difficult to align the teaching practice to address the diverse needs of the learners. Learners belong to indigenous people, who need more focus and attention to equip themselves with knowledge and skills. As a novice teacher, the researcher found it hard to manage the teaching and learning process and fine-tune the instructional approaches and strategies to the needs of the learners. A novice teacher needs the school head's assistance, support, and performance assessment in pursuit of quality instructional instruction leading to educational improvement. Moreover, school leaders need to investigate the strengths and weaknesses of the novice teacher and not put them directly into the teaching and learning process because, just like a bolo, it needs to be sharpened before being used to effectively and efficiently perform the task.

The results indicate that school heads in the Lianga District generally employ effective instructional supervision practices to guide teachers. Most practices are rated highly evident, reflecting a strong commitment to enhancing teaching quality through direct guidance, feedback, data utilization, and support for collaborative practices. However, the slightly lower score for induction training suggests a need for further emphasis on supporting beginner teachers.

3.3 Extent of the Instructional Supervision as to Teacher Support

Table 3 shows how school heads employ instructional supervision in providing teacher support. The overall mean score is 3.59, with a standard deviation of 0.066, indicating that these practices are generally "highly evident." The results reveal that school heads generally exhibit high levels of instructional supervision in providing support to teachers. The highest-rated indicator, "Listen and respond to teachers' concerns," has a mean score of 3.77 with a standard deviation of 0.492, indicating that this practice is highly evident among school heads. Close behind is "Provide opportunities for teachers to share strategies," which has a mean score of 3.75 (SD = 0.476), also rated as highly evident. These findings align with the research of Leithwood et al. (2008), who emphasize that effective instructional leadership involves addressing teachers' concerns and facilitating the sharing of best practices.

Table 3. *Extent of the instructional supervision as to teacher support*

Indicators	Mean	SD	Interpretation
1. Listen and respond to teachers' concerns	3.77	0.49	Highly Evident
2. Provide opportunities for teachers to share strategies	3.75	0.47	Highly Evident
3. Offer quality professional development.	3.62	0.54	Highly Evident
4. Encourage participation in professional communities	3.66	0.52	Highly Evident
5. Conduct meaningful evaluations.	3.61	0.52	Highly Evident
6. Identify any instructional limitations of teachers in the classrooms.	3.58	0.53	Highly Evident
7. Encourage school self-evaluation on instructional matters.	3.58	0.53	Highly Evident
8. Design appropriate interventions for teachers' methods and techniques	3.47	0.55	Evident
9. Initiate and help teachers in developing instructional goals and objectives	3.60	0.54	Highly Evident
10. Aid teachers in doing action research	3.23	0.72	Evident

Note. Overall Mean 3.59 (Highly Evident) with SD 0.066

Legend: 3.5-4.0 (Highly Evident), 2.5-3.49 (Evident), 1.25 - 2.49 (Less Evident), 1.0-1.49 (Least Evident)

However, the indicator "Design appropriate intervention for teachers' methods and techniques" scored slightly lower, with a mean of 3.47 (SD = 0.550), falling into the "evident" category. This suggests that while interventions are recognized, they are not as consistent as other forms of support. Additionally, "Aid teachers in doing action research" scored a mean of 3.23 (SD = 0.721), which was also rated as evident. This indicates that action research is somewhat less emphasized, though still present in instructional support practices.

Based on the Lianga District Research Office school year 2021-2023, out of 251 teaching personnel, only 1-2 teachers from Lianga conducted research and participated in the BERF (Basic Education Research Fund) program. In the School Year 2021-2022, two teachers conducted action research; in the school year 2022-2023, two teachers conducted action research and one teacher in basic research; and in the school year 2023-2024, only one teacher conducted action research. These results imply that despite the existence of DepEd Order No. 35, s. 2016, the conduct of action research still needs to be institutionalized. The said DepEd Order mandated the SDO to find ways to encourage the schools to conduct action research about pedagogies and assessment methods that successfully support student learning and holistic development.

These results indicate that school heads in the Lianga District generally employ effective instructional supervision practices to support teachers. Most practices are rated as highly evident, reflecting a strong commitment to

addressing teachers' concerns, facilitating professional development, and promoting collaboration. However, there is room for improvement in designing interventions and supporting action research, suggesting areas where school heads could further enhance their support for teachers.

3.4 Extent of Instructional Supervision as to Teachers' Performance Assessment

Table 4 presents the extent to which school heads employ instructional supervision in performance assessment. The results reveal that school heads in the Lianga District are highly effective in employing instructional supervision practices regarding teachers' performance assessment, with an overall mean score of 3.59 and a standard deviation of 0.066, categorized as "highly evident." This high level of effectiveness is crucial for aligning classroom priorities with school goals, as reflected in the mean score of 3.72 for ensuring teachers' classroom priorities are consistent with the school's direction. This practice is supported by Leithwood et al. (2008), who emphasize the alignment of individual and organizational goals as a key aspect of effective school leadership.

Table 4. *The extent of the instructional supervision as to teachers' performance assessment*

Indicators	Mean	SD	Interpretation
1. Ensure that the classroom priorities of teachers are consistent with the goals and direction of the school.	3.72	0.50	Highly Evident
2. Review student work products when evaluating classroom instruction	3.53	0.55	Highly Evident
3. Conduct informal observation in the classroom regularly.	3.71	0.49	Highly Evident
4. Point out specific strengths in teachers' instructional practices in post-observation feedback.	3.68	0.53	Highly Evident
5. Assess the effectiveness of instruction	3.61	0.57	Highly Evident
6. Clarify professional development needs	3.53	0.53	Highly Evident
7. Provide evidence of growth and valuable data of teachers	3.62	0.52	Highly Evident
8. Explain the purpose and goals of the evaluation	3.70	0.47	Highly Evident
9. Give the correct comments for teachers' evaluation.	3.73	0.46	Highly Evident
10. Set benchmarks and plan for future evaluation	3.48	0.56	Evident

Note. Overall Mean 3.59 (Highly Evident) with SD 0.066

Legend: 3.5-4.0 (Highly Evident), 2.5-3.49 (Evident), 1.25 - 2.49 (Less Evident), 1.0-1.49 (Least Evident)

Giving appropriate comments on teachers' evaluations scored the highest, with a mean of 3.73, reflecting the necessity for specific and actionable feedback, as emphasized by Brookhart (2008). On the other hand, setting benchmarks and planning for future evaluations, with a mean score of 3.48, indicates that this area may need more attention to ensure ongoing teacher development, as Reeves (2004) recommended. As the researcher is a school head, setting benchmarks and planning for future evaluations is also one of the weakest parts of instructional supervision. The researcher realized that this practice is part of instructional supervision and cannot be eliminated. This practice must be mastered to create a standard to measure success. It is the simplest way to set clear expectations for our organizations or teams.

Regular informal classroom observations and clarification of the evaluation's purpose and goals scored 3.71 and 3.70, respectively, reflecting a proactive approach to observing and communicating evaluation objectives, which is essential for meaningful teacher development. Overall, the data indicates that school heads in the Lianga District are highly effective in employing instructional supervision practices related to teachers' performance assessment, supported by literature emphasizing goal alignment, regular observations, constructive feedback, professional development, and data-driven decision-making. However, there is room for improvement in setting benchmarks and planning for future evaluations to enhance instructional quality further.

3.5 Enhanced Supervisory Program

Based on the findings of the study, an enhanced supervisory program was designed to address areas that require improvement and to enhance existing strengths in instructional supervision practices (see Table 5). It is a well-structured plan with 5 project titles, namely Project SAGIP, Project SMILE, Project DART, Project BELT, and Project SHARE, to address problems on professional advancement, mentorship, and induction, utilizing data effectively, setting benchmarking and future evaluation and, promoting collaborative learnings. The following program includes project titles and activities to guide and support school heads and teachers in Lianga District. This Enhanced Supervisory Program aims to enhance instructional supervision practices by providing targeted professional development, strengthening support for new teachers, effectively utilizing data, establishing clear benchmarks, and promoting collaborative learning. By implementing these actions, the Lianga District can improve the overall quality of education and support continuous professional growth for teachers and school heads.

Table 5. Enhanced supervisory program

Project Title	Objective	Activities	Responsible Person	Timeline	Resources Needed	Budget	Expected Output
Project SAGIP (Strengthening Advancement Gearing through Intensive Partnership)	Enhance the educational attainment and instructional skills of teachers and school heads.	Develop a scholarship fund to support teachers' higher education.	School Board, Donors LGU DepEd	2024-2025 School Year	Funding, Partnership Agreements	400,000.00	Number of scholarships awarded, Types of degrees pursued
		Establish partnerships for immersion programs and teacher exchange initiatives.	SDS PSDS SH	2025-2026 School Year	Memoranda of Understanding, Partner Schools	200,000.00	Number of participating teachers, Feedback from exchange experiences
Project SMILE (Strengthening Mentorship for Instructional Learning and Educational advancement)	Support new teachers in their transition and enhance their instructional effectiveness.	Review and revise the existing Teacher Induction Program to address identified gaps.	Curriculum Coordinator	By End of 2025	Feedback Surveys, Program Assessment Reports	100,00.00	Improvements in program effectiveness as indicated by teacher feedback
		Enhance the mentorship program to support new teachers more effectively.	Mentorship Coordinator TIP Trained	By End of 2025	Experienced Teachers, Training Resources for Mentors	100,000.00	Number of mentor-mentee pairings, Success stories/case studies
Project DART (Developing Action Research with advent of Technology)	Use data effectively to inform instructional practices and improve student outcomes.	Provide training on data analysis for school heads and teachers.	Research Coordinator SH MT	First Quarter of 2025	Training Materials, Data Analysis Software	50,000.00	Pre- and post-training assessment scores
		Conduct workshops on using data to develop action plans for curriculum improvement.	Research Coordinator SH MT	Second Quarter of 2025	Workshop Materials, Expert Speakers	50,000.00	Workshop attendance, Follow-up actions taken
Project BELT (Benchmarking and Evaluating educational Landscape for Teachers)	Establish clear benchmarks and a comprehensive evaluation system to guide teacher performance.	Develop and communicate clear performance benchmarks.	District/ School Evaluation Committee	Mid-2025	Benchmarking Guidelines, Examples of Best Practices	200,000.00	Adoption rate across schools, Alignment with educational standards
		Conduct regular evaluations of teaching practices.	PSDS School Heads	Bi-annually Starting 2025	Evaluation Tools, Observer Training	200,000.00	Consistency of evaluations, Impact on teaching quality
Project SHARE (Seek Help, Assist, Reach and Evaluate outcome)	Foster a collaborative environment where teachers can share experiences and learn from each other.	Institutionalize Learning Action Cell (LAC) sessions.	Professional Development Coordinator	Monthly Starting 2025	Meeting Rooms, Facilitation Guides Materials	100,000.00	Number of sessions, Participant feedback
		Encourage collaborative projects and team teaching.	Project Management Team	Throughout 2025	Collaboration Tools, Project Plans	100,000.00	Number of collaborative projects, Teacher and student feedback

4.0 Conclusion

The study underscores educators' strong commitment to professional development, evidenced by the high number of respondents either pursuing or holding a master's degree. It reveals that instructional supervision practices in the Lianga District are generally effective, especially in providing feedback, guiding active learning, and aligning classroom priorities with school goals. Nonetheless, the study identifies gaps in induction training for new teachers and in supporting action research and intervention design. To address these issues, the development of an intervention plan is recommended to enhance professional development programs, strengthen induction training, and establish clearer benchmarks for performance evaluation. Future research should focus on exploring innovative strategies to improve mentorship programs and instructional leadership, thereby further supporting teacher growth and student outcomes. Specifically, research should investigate the most effective models of mentorship, the impact of peer-to-peer mentoring, and how to foster a culture of continuous professional growth. Additionally, aspects of instructional leadership such as the role of school heads in promoting collaborative teaching, the use of data-driven decision-making, and the development of leadership skills among teachers should be explored to enhance educational practices and outcomes.

5.0 Contributions of Authors

The authors of this research collaborated to review and approve the final version of the study. This ensures the study's completeness and integrity. Author Jane C. Oropa played an integral part in the editing, writing, supervision, data analysis, and encoding. Author Julito Mangadla, concentrated on the fieldwork, distribution and retrieval of survey instruments, doing comprehensive data analysis, transcribing the gathered material, and adhering to ethical guidelines throughout the study. These complementary contributions underscore the collaborative endeavors and mutual obligations as adviser and mentee to generate a thorough and ethically robust research output.

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7.0 Conflict of Interests

As the author of this manuscript, we hereby declare no conflict of interest.

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English Language Learning Strategies on Grade 8 Students' Proficiency

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Abstract. The main thrust of this undertaking was to determine the level of adoption of English Language learning strategies and proficiency among Grade 8 students. The study was quantitative research that employed a descriptive correlational research design consisting of 20 respondents in each section and 300 sample sizes out of 600 respondents selected through Stratified Random Sampling. The results revealed that all six language learning strategies, memory, cognitive, comprehension, metacognitive, affective, and social, were manifested by Grade 8 students in varying degrees. There is a significant difference between the assessments of the English teachers and learners on the level of manifestation of adoption of English language learning strategies. Moreover, there is a significant relationship between the level of manifestation of adoption of English language learning strategies and proficiency level among Grade 8 learners. Ultimately, differences between English teachers and learners have nothing to do with students' proficiency, as results transcend their adoption of language learning strategies. Hence, the proposed action plan, SCALE, might aid in developing high language proficiency in any existing learning environment.

Keywords: Impact; Language learning strategy; Language proficiency.

1.0 Introduction

The English language still flourishes and proliferates not only in the Philippines but across the globe, causing a significant impact and transformation in people's lives. English is significant in worldwide communication, education, and career prospects. As a result, the demand for English language proficiency has increased significantly, resulting in a considerable increase in the number of non-native speakers attempting to learn English as a second or foreign language.

The challenges encountered while learning English cover various linguistic, cognitive, sociocultural, and motivational aspects. Pronunciation, vocabulary acquisition, grammar, listening comprehension, speaking fluency, reading comprehension, and writing competency are areas where high school students struggle. Moreover, the cultural environment in which English is used, and the individual learner's background and prior language knowledge all play important roles in creating the challenges encountered.

Furthermore, due to the needs and value of the English language in the current global period, English as a second language (ESL) learners travel across the world to learn the language. As a result, much work has been put into finding suitable approaches for learning English. Learning English as a second language is a challenging task. It requires a collaborative, massive, and extraordinary effort from learners and teachers. Yen & Mohamad (2020)

Today, people aim to be global citizens as a necessity of life. One of the most important things to achieve this goal is learning a foreign language. To be a good language student, s/he needs to know how to take responsibility in the learning process, use accurate strategies when accessing new information, and support language learning with activities outside the classroom. These also require students to know and apply foreign language learning strategies that are appropriate for them while learning a foreign language. Language learning strategies used while learning a foreign language refer to special actions and techniques that are used consciously and that help in learning that language. Akmençe (2019).

Learning strategies can enhance and remediate students' English language performance. This research will determine the level of manifestation of English language learning strategies to verify if those being adopted by learners have a significant relationship to their language proficiency and to see if there is a difference in the modalities employed. Furthermore, the study's findings may assist learners in becoming more aware of their current strategies as well as other strategies available to improve their English language performance, educators in developing new methodologies that can work for students and directly address their needs in whatever learning environment; and school administrators, stakeholders, and the government in supporting programs that may aid in addressing the country's educational challenges not only in this upheaval but more so in the regular educational set-up.

2.0 Methodology

2.1 Research Design

The study utilized the descriptive-correlational research design, which was determined to be the most appropriate research strategy for achieving the study's objectives. The main goal was to assess the level of language learning strategy adoption and language proficiency among Grade 8 learners. The researcher also aimed to investigate potential relationships and differences between these two variables. The descriptive aspect of the method allowed for a thorough examination of the variables, while the correlational aspect facilitated the analysis of their relationships.

2.2 Research Participants

The total population of Grade 8 learners is 660 respondents. Only twenty (20) respondents in each section and 300 sample sizes, or 6.67% of the total population, were collected.

2.3 Research Instrument

This study used an approach from Cachuela (2019) the researcher used to study. Oxford's Strategy Inventory for Language Learning (SILL) was one of them. It was a 50-item standardized assessment instrument used to examine language learners' strategies for language acquisition. The survey questionnaire comprised 6 subscales with query items: 9 for memory, 14 for cognitive, 6 for comprehension, 9 for metacognitive, 6 for affective, and 6 for social strategies. The subscale responses were then quantified using a 5-point Likert scale, where 1 represented Never or Almost Never True of Me, 2 represented Usually Not True of Me, 3 represented Somewhat True of Me, 4 represented Usually True of Me, and 5 represented Always or Almost Always True of Me. The weighted mean of each indicator was obtained, and the results were averaged to get a general assessment. This provided us with a comprehensive understanding of the level to which English language strategies were employed, and we incorporated it into the calculation of the verbal and descriptive equivalents.

2.4 Data Gathering Procedure

This study used specific steps to conduct this inquiry; authorization was obtained from the Superintendent of Division Schools. The Endorsement Letter was personally sent to the principal after approval to begin data collection and ensure adherence to specific ethical standards. Second, after authorities approved, the consent form was provided to the parents since the students were minors, and the researcher explained the study's purpose, procedures involved, and confidentiality measures. Third, the survey questionnaire and assessment tool were distributed to the advisers of Grade 8 students after the parents had signed the consent form. Throughout the procedure, advice from the advisers was sought to collect data efficiently. The statistics expert received the results after they were retrieved from the drive and subjected to proper statistical analysis.

2.5 Ethical Considerations

This research study followed ethical guidelines. The response was carefully managed to ensure the confidentiality of information and the security of respondent identities. Similarly, the researcher acknowledged and cited the contributions of various organizations to the research. The findings were reported truthfully, even when they diverged from generally accepted norms.

3.0 Results and Discussion

3.1 Manifestation of English Language Learning Adoption Strategies

In terms of Memory Strategy

Memory Strategy was Usually True of Me or Manifested (3.74) as to the level of manifestation of English language learning strategies among Grade 8 learners in SASRNHS as assessed by the English teachers and learners (Table 1). The highest computed composite mean of 4.06 was also found for indicator 1, "I think of relationships between what I already know and new things I learn in English." verbally interpreted as Usually True of Me or Manifested. The composite mean of Indicator 6, "I use flashcards to remember new English words," was the lowest calculated at 3.12, verbally interpreted as Somewhat True or Slightly Manifested.

Table 1. *Manifestation of English language learning adoption strategies in terms of memory strategy*

Indicators	Teachers		Students		Composite	
	$\bar{X}$	VI	$\bar{X}$	VI	$\bar{X}$	VI
I think of relationships between what I already know and new things I learn in English	4.58	ATM	3.54	UTM	4.06	UTM
I use new English words in a sentence so I can remember them	4.42	ATM	3.54	UTM	3.98	UTM
I connect the sound of a new English word and an image or picture of the word to help me remember the word	4.17	UTM	3.63	UTM	3.90	UTM
I remember a new English word by making a mental picture of a situation in which the word might be used	4.33	ATM	3.22	STM	3.78	UTM
I use rhymes to remember new English words	3.83	UTM	3.02	STM	3.43	UTM
I use flashcards to remember new English words	3.58	UTM	2.65	STM	3.12	STM
I physically act out new English words	3.83	UTM	3.15	STM	3.49	UTM
I review English words often	4.08	UTM	3.69	UTM	3.89	UTM
I remember new English words or phrases by remembering their location on the page, on the board, or on a street sign	4.50	ATM	3.44	UTM	3.97	UTM
General Assessment	4.15	UTM	3.32	STM	3.74	UTM

Legend: 4.20 – 5.00 Always or almost always true of me (ATM)/ Highly Manifested, 3.40 – 4.19 Usually true of me (UTM)/ Manifested, 1.80 – 2.59 Usually not true of me (UNTM)/ Almost Not Manifested, 2.60– 3.39 Somewhat true of me (STM)/ Slightly Manifested, 1.00 – 1.79 Never or almost never true of me (NTM)/ Not Manifested

Students improve their comprehension by giving new linguistic elements a contextual framework, as evidenced by their preference for the Memory Strategy indicator number 1: "I think of relationships between what I already know and new things I learn in English." By relating grammar rules, new vocabulary, or language structures to what they already know, learners create mental anchors that help them remember and grasp the new material. Linking old and new information in English also promotes a deeper engagement with the language, as learners perceive the importance of the new material within the context of their existing linguistic repertoire.

Batstone and Ellis (2009, as cited in AlAbri et al., 2022) pointed out that grammar instruction has always been problematic and debatable. They claimed that teaching grammatical rules helped students learn languages more effectively. The current debate, however, was over which approach to grammar instruction was more effective. Also, language acquisition was not merely about memorizing isolated words; it involved understanding their usage, nuances, and contextual appropriateness. In line with this, some learners might have found flashcards repetitive or monotonous, which could have led to a lack of engagement and motivation.

In terms of Cognitive Strategy

Cognitive Strategy was Usually True of Me or Manifested (3.80) as to the level of manifestation of English language learning strategies among Grade 8 learners in SASRNHS as assessed by the English teachers and learners (Table 2). The highest composite mean of 4.13 was also found for indicator 6, "I watch English language TV shows spoken in English or go to the movies spoken in English." verbally interpreted as Usually True of Me or Manifested. The composite means of indicators 10 and 12, "I try to find patterns in English" and "I try not to translate word for word." were the lowest calculated at 3.59 verbally interpreted as Usually True or Manifested.

Table 2. *Manifestation of English language learning adoption strategies in terms of cognitive strategy*

Indicators	Teachers		Students		Composite	
	$\bar{X}$	VI	$\bar{X}$	VI	$\bar{X}$	VI
I say or write new English words several times.	4.08	UTM	3.41	UTM	3.75	UTM
I try to talk like a native English speaker.	3.92	UTM	3.41	UTM	3.67	UTM
I practice the sounds of English.	4.17	UTM	3.83	UTM	4.00	UTM
I use the English words I know in different ways.	4.08	UTM	3.52	UTM	3.80	UTM
I start conversations in English.	4.17	UTM	3.43	UTM	3.80	UTM
I watch English-language TV shows or watch movies that are spoken in English.	4.42	ATM	3.83	UTM	4.13	UTM
I read for pleasure in English.	3.75	UTM	3.34	STM	3.55	UTM
I write notes, messages, letters, or reports in English.	4.50	ATM	3.60	UTM	4.05	UTM
I look for words in my language that are similar to new words in English.	4.33	ATM	3.29	STM	3.81	UTM
I try to find patterns in English.	4.00	UTM	3.17	STM	3.59	UTM
I find the meaning of any English word by dividing it into parts that I understand.	4.33	ATM	3.25	STM	3.79	UTM
I try not to translate word for word.	4.17	UTM	3.00	STM	3.59	UTM
I make summaries of information that I have heard or read in English.	4.17	UTM	3.57	UTM	3.87	UTM
General Assessment	4.16	UTM	3.44	UTM	3.80	UTM

In line with the results, learners prefer watching TV shows because it provides authentic and contextual examples of how English is spoken in real-life situations, exposing learners to diverse accents, conversational nuances, and colloquial expressions. TV shows' visual and auditory elements engage multiple senses, helping learners understand language structures and aiding in better retention. The narrative and storyline aspects of TV shows make language learning relatable and enjoyable, encouraging consistent practice without the formal constraints of traditional learning methods.

Students may be hesitant to actively seek and apply patterns in learning English because of its complexity and irregularities. Unlike languages with more consistent patterns, English has numerous exceptions, diverse pronunciation variations, and irregular verbs, making it challenging for learners to rely solely on patterns. Also, individual learning styles and preferences play a role, and some learners may find other approaches, such as contextual learning or communicative practice, more effective or engaging than a pattern-based method.

Learners often avoid translating word-for-word because languages have unique idioms, expressions, and cultural nuances that may not have direct equivalents in another language. Relying on literal translation can lead to inaccuracies or awkward phrasing, as it might not capture the true meaning or context of the expression in English. Translating word-for-word can hinder the development of natural language fluency, as learners may become overly focused on individual words rather than understanding the overall structure and flow of English sentences.

Adhering to the principles delineated by Noam Chomsky in his language acquisition theory, everyone possessed a distinctive Language Acquisition Device (LAD), a blueprint or template for language that was implanted and preserved in their brain (Norqulob, 2024). According to him, this implied that all individuals possessed the inherent capacity to acquire a new language. The student required only an entry of the specific language to activate the device and ascertain the linguistic structure. Furthermore, it had been determined that students possessed a prior comprehension of language acquisition. An introduction to L1 might enable them to rapidly acquire complex grammar without assistance.

In terms of Comprehension Strategy

Comprehension Strategy was Usually True of Me or Manifested (3.70) as to the level of manifestation of English language learning strategies among Grade 8 learners in SASRNHS as assessed by the English teachers and learners (Table 3). The highest computed composite mean of 4.03 was also found for indicator 6, "If I cannot think of an English word, I use a word or phrase that means the same thing." verbally interpreted as Usually True of Me or Manifested. The composite mean of Indicator 4, "I read English without looking up every new word," was the lowest calculated at 3.26, verbally interpreted as Somewhat True or Slightly Manifested.

The findings suggest that students prefer comprehension method number six: "If I cannot think of an English word, I use a word or phrase that means the same thing." This is because learners frequently substitute a phrase or phrase with a similar meaning instead of the precise English term when they cannot recollect it. This strategy allows for effective communication even without precise vocabulary knowledge, preventing disruptions in

communication or conversation. By opting for synonymous words or phrases, learners can convey their intended message and maintain the flow of communication, be resourceful in language use, and demonstrate adaptability. The learners favor this indicator because it helps them express themselves more confidently, fostering an encouraging and positive language-learning environment.

Table 3. *Manifestation of English language learning adoption strategies in terms of comprehension strategy*

Indicators	Teachers		Students		Composite	
	$\bar{X}$	VI	$\bar{X}$	VI	$\bar{X}$	VI
To understand unfamiliar English words, I make guesses.	4.00	UTM	3.36	STM	3.68	UTM
I use gestures when I cannot think of a word during a conversation in English.	4.08	UTM	3.24	STM	3.66	UTM
When I cannot think of a word during a conversation in English, I use gestures	4.33	UTM	3.15	STM	3.74	UTM
I read English without looking up every new word.	3.42	UTM	3.10	STM	3.26	STM
I try to guess what the other person will say next in English.	4.33	UTM	3.32	STM	3.83	UTM
If I cannot think of an English word, I use a word or phrase that means the same thing.	4.50	UTM	3.55	UTM	4.03	UTM
General Assessment	4.11	UTM	3.29	STM	3.70	UTM

The concept of synonymy, which defines the relationship between various words in a dictionary, is significant and complex. This concept is essential to both lexicology and language instruction. In the context of statistics, such as sentence structure, collocation, and the frequency of structural patterns, neither substitution nor dictionary definitions can provide quantitative meaning, even though synonyms are frequently identified through replacement. The absence of ideal synonyms complicates the process of selecting words.

Conversely, indicator number 4, "I read English without looking up every new word," was the least comprehension strategy adopted by the students as they may be reluctant to constantly look up every new word, the constant interruption to check the meaning of unfamiliar words can disrupt the overall flow and comprehension of the text, making the reading experience less enjoyable. Learners often prefer a more immersive and contextual approach, aiming to understand the general meaning of the text rather than focusing on individual words.

Undeniably, most language learners struggle to differentiate the various meanings and applications of synonyms, leading to confusion. According to (Gass and Selinker, 2008, as cited in Chaokongjakra, 2023), English learners proficient in a wide range of English vocabulary typically have a significant advantage when producing the language. To master English vocabulary, learners must learn how to use synonyms correctly, as varied word choices can help learners avoid repetition in their writing. The ability to use varied English vocabulary helps in conducting daily conversation and improves knowledge of lexical features and sentence construction, providing more choices for appropriate vocabulary in each context. The definition of synonym, as provided by Merriam-Webster Dictionary (online version), is "one of two or more words or expressions of the same language that have the same or nearly the same meaning in some or all senses.

In terms of Metacognitive Strategy

Metacognitive Strategy was Usually True of Me or Manifested (3.95) as to the level of manifestation of English language learning strategies among Grade 8 learners in SASRNHS as assessed by the English teachers and learners (Table 4). The highest computed composite mean of 4.34 was also found for indicator 4, "I try to find out how to be a better learner of English." verbally interpreted as Always True or Highly Manifested. The composite mean of Indicator 6, "I look for people I can talk to in English," was the lowest calculated at 3.53, verbally interpreted as Somewhat True or Slightly Manifested.

Nowadays, students actively seek ways to enhance their English language skills because they recognize the academic significance of English, often considering it a requisite skill for success in their studies. Evidently, students actively engage in efforts to enhance their proficiency in English. The classroom provides a structured environment where students are exposed to language instruction and learning resources. Recognizing the importance of English as a core subject, students often seek strategies to improve their language skills. While many students recognize the value of conversational practice in mastering the English language, some students might fear making mistakes in front of others or lacking confidence, especially if they are still learning. The fear of embarrassment or judgment can be a significant barrier. Moreover, some learners may not have easy access to

fluent speakers or native English speakers for regular conversations, mainly in environments where English is not the predominant language.

Table 4. *Manifestation of English language learning adoption strategies in terms of metacognitive strategy*

Indicators	Teachers		Students		Composite	
	$\bar{X}$	VI	$\bar{X}$	VI	$\bar{X}$	VI
I try to find as many ways as I can to use my English.	4.25	ATM	3.55	UTM	3.90	UTM
I have noticed my English mistakes and use that information to help me improve.	4.42	ATM	3.88	UTM	4.15	UTM
I pay attention when someone is speaking in English.	4.58	ATM	3.87	UTM	4.23	ATM
I try to find out how to be a better learner of English.	4.67	ATM	4.00	UTM	4.34	ATM
I plan my schedule so I will have enough time to study English.	4.00	UTM	3.24	STM	3.62	UTM
I look for people I can talk to in English.	3.83	UTM	3.22	STM	3.53	UTM
I look for opportunities to read as much as possible in English.	3.83	UTM	3.42	UTM	3.63	UTM
I have clear goals for improving my English skills.	4.50	ATM	3.68	UTM	4.09	UTM
I think about my progress in learning English.	4.50	ATM	3.64	UTM	4.07	UTM
General Assessment	4.29	ATM	3.61	UTM	3.95	UTM

Carl Rogers' experiential learning theory posited that everyone had an inherent desire to learn. He believes education should have been about empowering students to recognize their learning needs through introspection. Through self-evaluation, the learner initiates change by addressing their own needs and wants. As a result, students participate in class activities and respond in a welcoming and pertinent environment supported by the teacher (Culata, 2024).

In terms of Affective Strategy

Affective Strategy was Usually True of Me or Manifested (3.66) as to the level of manifestation of English language learning strategies among Grade 8 learners in SASRNHS as assessed by the English teachers and learners (Table 5). The highest computed composite mean of 4.02 was also found for indicator 2, "I encourage myself to speak English even when I am afraid of making a mistake." verbally interpreted as Usually True of Me or Manifested. The composite mean of Indicator 5, "I write down my feelings in a language-learning diary," was the lowest calculated at 3.33, verbally interpreted as Somewhat True or Slightly Manifested.

Table 5. *Manifestation of English language learning adoption strategies in terms of affective strategy*

Indicators	Teachers		Students		Composite	
	$\bar{X}$	VI	$\bar{X}$	VI	$\bar{X}$	VI
I try to relax whenever I feel afraid of using English.	4.08	UTM	3.45	UTM	3.77	UTM
I encourage myself to speak English even when I fear making mistakes.	4.42	ATM	3.61	UTM	4.02	UTM
I reward myself or treat myself well when I am doing well in English.	4.00	UTM	3.30	STM	3.65	UTM
I notice if I am tense or nervous when studying or using English.	3.83	UTM	3.39	STM	3.61	UTM
I write down my feelings in a language-learning diary	3.42	UTM	3.23	STM	3.33	STM
I talk to someone else about how I feel about learning English.	3.83	UTM	3.31	STM	3.57	UTM
General Assessment	3.93	UTM	3.38	STM	3.66	UTM

In line with the result, learners often encourage themselves to speak English despite fearing making mistakes because they recognize the importance of practice in language acquisition. They understand that making mistakes can be a valuable stepping stone toward improvement and is a natural part of learning. Moreover, the desire to gain confidence and become proficient in English when using the language often outweighs the fear of making errors.

In contrast, the lowest computed composite mean is indicated in indication 5, "I write down my feelings in a language-learning diary." Because people worry about their writing skills and possible errors, some language learners might be reluctant to express their emotions in a language learning diary for fear of being judged. The pressure to express oneself eloquently or accurately in a new language can be intimidating, leading to a reluctance to put personal feelings on paper. Additionally, students express themselves often using technology rather than writing it down on paper.

According to Ramdani et al. (2022), Krathwohl's Affective Learning Theory posits that learning results from various aspects of human behavior, such as self-awareness, curiosity, focus, concern, and responsibility, as well as social skills like hearing, interacting, and responding.

In terms of Social Strategy

Social Strategy was Usually True of Me or Manifested (3.81) as to the level of manifestation of English language learning strategies among Grade 8 learners in SASRNHS as assessed by the English teachers and learners (Table 6). The highest computed composite mean of 3.96 was also found for indicator 6, "I try to learn about the culture of English speakers." verbally interpreted as Usually True of Me or Manifested. The composite mean of Indicator 4, "I ask for help from English speakers." was the lowest calculated at 3.65, verbally interpreted as Usually True of Me or Manifested.

Table 6. *Manifestation of English language learning adoption strategies in terms of social strategy*

Indicators	Teachers		Students		Composite	
	$\bar{X}$	VI	$\bar{X}$	VI	$\bar{X}$	VI
If I do not understand something in English, I ask the other person to slow down or repeat it.	3.92	UTM	3.65	UTM	3.79	UTM
I ask English speakers to correct me when I talk.	4.00	UTM	3.62	UTM	3.81	UTM
I practice English with other students.	4.08	UTM	3.49	UTM	3.79	UTM
I ask for help from English speakers.	3.83	UTM	3.47	UTM	3.65	UTM
I ask questions in English.	4.25	ATM	3.45	UTM	3.85	UTM
I try to learn about the culture of English speakers.	4.25	ATM	3.66	UTM	3.96	UTM
General Assessment	4.06	UTM	3.56	UTM	3.81	UTM

It can be inferred that learners often prefer to delve into the culture of English speakers as part of their language-learning journey because it provides a holistic understanding of the language. Culture is intricately linked to language, and by exploring the traditions, customs, and social nuances of English-speaking communities, learners gain insights into the contextual use of the language. Understanding cultural references enhances vocabulary and comprehension of idiomatic colloquialisms and expressions. In contrast, the indicator with the lowest computed composite mean is number 4, "I ask for help from English speakers." Because they fear being judged or embarrassed, learners may be reluctant to approach English speakers for assistance. Learners may worry about making mistakes or appearing less proficient in the language, deterring them from seeking assistance.

3.2 Difference Between the Assessments of English Teachers and Learners

There was a significant difference between the assessments of the English teachers and learners on the level of manifestation of English language learning adoption strategies (Table 7). According to the results, the estimated probability values of memory, cognitive, comprehension, affective, and metacognitive strategies were .000, .001, .009, and .029. These values were less than the significance level of 0.05, thereby rejecting the null hypothesis. As a result, the responses of the two groups of respondents on the variables varied significantly. This indicated that views regarding the level to which English language learning adoption strategies were exhibited varied between English teachers and learners.

Furthermore, due to differing experiences, positions, and viewpoints, English teachers and learners frequently have diverse opinions about how language learning adoption strategies materialize. Teachers have pedagogical knowledge and prioritize structuring lessons to encompass diverse strategies, including memory, cognitive, comprehension, metacognitive, affective, and social interaction. They aim to create a comprehensive learning environment where these methodologies are consciously integrated into teaching strategies.

On the other hand, learners, influenced by individual motivations, learning styles, and prior linguistic backgrounds, interpret and employ these strategies differently. While teachers emphasize strategy introduction and formal instruction, learners may focus more on personal preferences, adapting strategies that align with their perceived effectiveness in language acquisition. This difference in perception emerges from the distinct vantage points—teachers as facilitators and learners as active participants—resulting in varying assessments of strategy manifestation and efficacy within the learning process.

Significant effort was made in researching second language (L2) learning strategies to categorize various learning processes. For example, utilizing cognitive theory, (O'Malley and Chamot, 1990 as cited in Sukying, 2021) classified LLS as cognitive, metacognitive, or social affective strategies. Cognitive strategies refer to the procedures that students implement to acquire, analyze, comprehend, retain, retrieve, and apply linguistic knowledge.

Metacognitive strategies were the methods that students used to organize, direct, and evaluate their learning. The foundation of socio-affective tactics was social-mediating activities and interpersonal interactions.

Table 7. *Difference between the assessments of the English teachers and learners*

Sub-variables		Sum of squares	df	Mean square	F Ratio	Sig.	Remarks	Decision
Memory Strategies	Between Groups	7.94	1	7.94	21.2	.000	Significant	Reject H ₀
	Within Groups	116	310	.374				
	Total	123	311					
Cognitive Strategies	Between Groups	6.06	1	6.06	17.4	.000	Significant	Reject H ₀
	Within Groups	107	310	.348				
	Total	113	311					
Comprehension Strategies	Between Groups	7.81	1	7.81	13.8	.000	Significant	Reject H ₀
	Within Groups	174	310	.564				
	Total	182	311					
Metacognitive Strategies	Between Groups	5.29	1	5.29	10.5	.001	Significant	Reject H ₀
	Within Groups	155	310	.501				
	Total	160	311					
Affective Strategies	Between Groups	3.47	1	3.47	5.58	.019	Significant	Reject H ₀
	Within Groups	192	310	.623				
	Total	196	311					
Social Strategies	Between Groups	2.90	1	2.90	4.79	.029	Significant	Reject H ₀
	Within Groups	187	310	.605				
	Total	190	311					

Level of significance 0.05

3.3 Language Proficiency Level of Students

The Summative Result (Table 8) was Beginning (70.27%) on the Language Proficiency test of Grade 8 Students in Sta. Anastacia – San Rafael National High School. Among the 300 students, two (2), or 0.67%, were Advanced; eight (8), or 2.67%, were Proficient; 34, or 11.33%, were Approaching Proficient; 40, or 13.33% were Developing; and 216, or 72% were Beginning.

Table 8. *English Language proficiency level of students based on their summative test*

Indicators	Grade	Frequency	Percentage
Advanced	90 – 100	2	0.67%
Proficient	85 – 89	8	2.67%
Approaching Proficient	80 – 84	34	11.33%
Developing	75 – 79	40	13.33%
Beginning	< 74	216	72.00%
General Assessment	70.27	Beginning	

These data reflect a breakdown of student Language proficiency levels based on a summative score. Many students fall into the 'Beginning' proficiency category, constituting 72% of the 300 students. This suggests that a significant portion of the learners are at a basic or an initial stage in their understanding of the subject matter assessed by the summative score. On the other hand, the percentages of learners categorized as 'Developing,' 'Approaching Proficient,' 'Proficient,' and 'Advanced' are notably lower, indicating fewer students in the higher proficiency levels. In this case, the 'Advanced' category comprises only 0.67% of the students, emphasizing a smaller number who excel in the subject. These figures collectively reveal a distribution that leans heavily towards the lower proficiency levels, highlighting a potential area for targeted educational intervention or tailored support to help students progress toward higher proficiency levels.

The term "language proficiency" refers to an individual's ability to communicate effectively in both written and spoken forms. When discussing the pertinent literature review on EFL instruction and student achievement, both "proficiency" and "English competency" are acceptable terms. Masduki et al. (2022). Moreover, to be genuinely proficient, someone must have advanced skills in listening, speaking, reading, and writing. Proficiency is about performance. It is about the ability to appear in language according to the demands of the situation in the classroom to deliver lessons according to language targets, especially if we are moving on to a more efficient approach. Riasati (2014) as cited in Lumbanraja and Reynoso (2019).

3.4 Relationship between Manifestation of English Language Learning Adoption Strategies and Proficiency Level

There was a significant relationship between the dependent and independent variables (Table 9). The r values ranged from .135 to .157, with a low positive correlation. The computed probability values .007, .016, and .020 were lesser than the level of significance ($P < 0.05$); thus, the null hypothesis was rejected. The proficiency level of eighth-grade students was significantly correlated with their utilization of cognitive, comprehension, and metacognitive strategies for English language acquisition. More effective strategies for learning English, specifically those that emphasize cognitive, comprehension, and metacognitive strategies, are associated with a higher level of proficiency.

Table 9. *Relationship between the manifestation of English language learning adoption strategies and proficiency level*

Strategies	r value	P value	Remarks	Decision
Memory Strategies	.015	.794	Not Significant	Accept H_0
Cognitive Strategies	.135*	.020	Significant	Reject H_0
Comprehension Strategies	.140*	.016	Significant	Reject H_0
Metacognitive Strategies	.157*	.007	Significant	Reject H_0
Affective Strategies	.007	.908	Not Significant	Accept H_0
Social Strategies	.062	.283	Not Significant	Accept H_0

**Correlational at the level 0.01, *Correlational at the level 0.05(Two-tailed)

It suggests a direct connection between the utilization of specific learning strategies and proficiency in English. When learners actively engage cognitive strategies (like visualization or mental associations), comprehension strategies (such as inferencing or summarization), and metacognitive strategies (like setting goals or self-monitoring) during the language learning process, their overall proficiency tends to elevate. These strategies enable learners to understand nuances, navigate complexities, and regulate their learning effectively. Essentially, the more learners employ these targeted strategies, the greater their proficiency in English is likely to become. This concept emphasizes the pivotal role that strategic, intentional learning plays in achieving higher language proficiency levels.

According to Oxford, language learning strategies (LLS) were "specific actions taken by the learner to make learning easier, faster, more enjoyable, more self-directed, more effective, and more transferable to new situations." LLS enhances students' recall, comprehension, and language application in various contexts, enhancing their retention and learning. Effective language acquisition necessitated the mastery of language learning strategies, and cultural factors substantially influenced the selection and implementation of these strategies. By contrasting human languages and cultures, Oxford and Gkonou communicated that "language and culture are interwoven." Additionally, Takeuchi (2019) observed that using learning strategies was "uniquely contingent upon the sociocultural contexts in which the learning was situated." In addition, as Cohen and Oxford asserted in Salam et al. (2020), language acquisition was enhanced by an understanding of language learning processes.

4.0 Conclusion

The students manifest all six language strategies in English, albeit to varying degrees. Among these strategies, metacognitive strategies are the most favored and adopted, while affective strategies are the least manifested. Affective strategies, which involve managing attitudes and emotions, may not always align with traditional learning approaches. Furthermore, fear of making mistakes or appearing vulnerable might contribute to reluctance to openly seek emotional support or express emotions in the learning process.

In addition, English teachers and learners often hold different perceptions regarding the manifestation of language learning adoption strategies due to their experiences, varying roles, and perspectives. Teachers equipped with pedagogical knowledge prioritize structuring lessons to encompass diverse strategies including memory, cognitive, comprehension, metacognitive, affective, and social interaction. Learners focus more on personal preferences, adapting strategies that align with their perceived effectiveness in language acquisition. Also, most students are at a foundational level, emphasizing that while many students have a basic understanding, there is a significant gap in achieving higher levels of mastery. This indicates potential areas for educational improvement or focused assistance to elevate overall proficiency.

Moreover, there is a direct connection between the utilization of specific learning strategies and proficiency in English. When learners actively engage these strategies during the language learning process, their overall proficiency tends to elevate. These strategies enable learners to understand nuances, navigate complexities, and regulate their learning effectively. The more learners employ these targeted strategies, the greater their proficiency in English is likely to become. This concept emphasizes the pivotal role that strategic, intentional learning plays in achieving higher language proficiency levels.

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