

Original Article

ICT Self-Efficacy and Attitude Towards the Use of ICT for Learning Among Public High School Learners

Jocelyn C. Basbas^{1,2} , Geraldine P. Sumbise^{2,3} 

Author Information:

¹Senior High School Department, Cabatuan National High School, Schools Division of Calbayog, Calbayog City, Samar, Philippines

²Institute of Graduate Studies and Research, Christ the King College of Calbayog City, Inc., Calbayog City, Samar, Philippines

³Public Schools District Office, Schools Division of Calbayog, Calbayog City, Samar, Philippines

Corresponding Author:

Jocelyn C. Basbas
jocelyn.basbas@deped.gov.ph

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Abstract. As technology continues to advance in education, Information and Communication Technology (ICT) competence has become integral to learners' academic success. However, the increased presence of ICT in classrooms does not guarantee equitable or effective use, underscoring the need to examine the contextual and affective factors that influence ICT adoption and learning outcomes. This study examined ICT self-efficacy and attitudes toward using ICT for learning among public senior high school learners in the Oquendo Districts, Schools Division of Calbayog City, Samar, Philippines, during school year 2025-2026. Specifically, this study sought to describe the respondents' profiles, learners' ICT self-efficacy and attitudes toward using ICT, and the profile variables that predict ICT self-efficacy and attitudes toward using ICT. The researchers used a quantitative approach with a descriptive-comparative-correlational survey design among 286 respondents. Core findings indicated that learners exhibited high functional ICT self-efficacy, but showed sufficient rather than advanced skills in basic computer and software functions. Learners reported a favorable overall perspective on using ICT, but it was not much stronger than their perception that ICT is functional and entertaining. Only the Academic Strand significantly predicted ICT self-efficacy and attitude towards using ICT. Overall, public senior high schools showed high ICT self-efficacy and a strongly favorable attitude toward using ICT for learning. Based on the outcome of this study, it was highly recommended that an ICT intervention program be developed so learners can effectively use their devices to meet academic demands successfully.

Keywords: *Computerization; ICT self-efficacy; Learners' attitude toward ICT; Digital communication; Digital skills.*

Information and communication technology (ICT) has become deeply embedded in various aspects of today's life, including education, where its integration is seen as transformative in teaching methods, learning materials, and student engagement (Catalano et al., 2021). In the Philippine context, the drive for quality education, as articulated in the United Nations' Sustainable Development Goal 4 (SDG4), has steered the development of ICT knowledge and skills among school-age children (UNESCO, 2024). However, the rapid development and increased presence of ICT in classrooms does not automatically guarantee equitable or effective use. This persistent gap calls for a deeper examination of the contextual, psychological, and affective factors that influence ICT adoption and learning outcomes.

Central to this understanding is the concept of learners' ICT self-efficacy, which Bandura's (1982) social cognitive theory describes as learners' belief in their ability to successfully perform ICT-related tasks. For instance, when learners are confident in their ICT abilities, they are more likely to engage systematically with digital learning from the outset, approach complex problems with confidence, and apply effective strategies to digital problem-solving. This is especially crucial in Philippine education, where access to and availability of ICT resources vary widely (Agonas et al., 2024). Research indicates that Filipino students with greater ICT self-efficacy are better suited to thrive in digital learning environments and overcome technological obstacles with determination, which is increasingly important given the widening gap in many Philippine schools (Leonardo, 2021 June). Some studies have linked logical thinking to ICT self-efficacy as a higher-order cognitive process that supports learners' confidence in navigating digital tools and developing technology-related problem-solving skills (Alpian, 2022). Thus, ICT self-efficacy enables learners in the Philippine context to use ICT as a powerful tool for organizing academic tasks, experimenting with solutions, and developing analytical skills and logical conclusions (Abedi, 2023).

In addition to self-efficacy theory, the current study is anchored in Ajzen's (1987) Theory of Planned Behavior (TPB) and Davis et al.'s (1989) Technology Acceptance Model (TAM), both of which provide a strong theoretical foundation for examining how psychological processes intermingle with social factors affecting learners' ICT behavior and their outcomes. Certainly, the Theory of Planned Behavior (TPB), as a widely used framework, suggests that an individual's behavioral intentions and behaviors are influenced by their attitudes towards these outcomes as well as subjective norms and perceived behavioral control (Ajzen, 1987), while TAM posits that actual technology use directly relies on a user's behavioral intention. In terms of learners' use of ICT for learning, these theories reflect the processes by which learners develop attitudes and intentions toward using ICT tools during their learning activities (Schorr, 2023 February). Using this model, the current study compared learners' beliefs about ICT with their perceived skill in using digital resources in educational settings. Therefore, Bandura's self-efficacy theory shapes not just personal empowerment but also attitudes toward ICT, with implications for learning outcomes. Positive attitudes towards ICT are associated with higher motivation, self-confidence, and engagement in digital learning contexts (Bervell et al., 2025), while negative attitudes may result from insufficient exposure, inadequate skill, or perceived complexity, hindering meaningful ICT use in learning (Yan et al., 2021).

Subsequently, learners' ICT self-efficacy and attitudes toward ICT use may be driven by a dynamic interplay at the individual level, including demographic profile, contextual factors, and psychological and affective factors, which emphasizes the need to examine effective learners' ICT engagement. However, effective learners' engagement with ICT tools depends not only on connectivity, exposure time, and device availability at home or school but also on learners' beliefs about their capabilities and their attitudes toward using ICT for educational purposes. In the Philippine classroom, these factors are deeply intertwined with substantial contextual barriers and opportunities linked to student exposure to ICT, which in turn influence learning outcomes (Agonas et al., 2024). Many learners remain hesitant to use ICT in learning, often because of low self-confidence, limited motivation, difficulties with troubleshooting, and unfamiliarity with specific ICT tools and programs (Leonardo, 2021 June; Joshi & Shambhu, 2024; Mahawan, 2024). Likewise, performing complex operations that require advanced software and hardware skills undermines learners' self-efficacy and limits opportunities for skill development (Li et al., 2025). So, combining these dimensions into a unified research source not only allows researchers and educators to identify patterns and relationships between self-efficacy and attitudes through engagement with specific ICT tools but also underscores the need for educational interventions that foster equitable opportunities and improved learning outcomes in the Philippine context.

Motivated by these considerations, the researchers conducted this study to assess ICT self-efficacy and attitudes toward the use of ICT for learning among public senior high school learners in the Oquendo Districts, Schools Division of Calbayog City, Samar, Philippines, for the School Year 2025-2026. Specifically, this study sought answer to the following: (1) the profile of respondents in terms of age, gender, strand, availability of gadgets at home and at school, and frequency of use of gadgets; (2) learners' ICT self-efficacy in terms of computer and software skills, internet and online research skills, problem-solving and troubleshooting skills, and digital communication and collaboration; (3) learners' attitude towards the use of ICT in terms of perceived usefulness, enjoyment and interest, confidence in using ICT, and perceived challenges and security; (4) the profile variables that predict the ICT self-efficacy; and (5) the profile variables that predict the attitudes towards the ICT among the public senior high school learners. The study's output was generated based on the findings, focusing on the

proposed ICT intervention program to address concerns about ICT self-efficacy and attitude among public senior high school learners.

Methodology

Research Design

This quantitative study encompasses a descriptive-comparative-correlational research design. Following Creswell's (2014) framework, this design collects numerical data to describe population characteristics, compare two or more groups on selected variables, and examine statistical relationships among variables. This approach is suitable for eliciting rich, detailed data on learners' ICT self-efficacy and attitudes toward using ICT in learning because participants reflected their own perspectives and personal experiences, allowing the researchers to compare differences in responses with participants' profiles when grouped accordingly. At the same time, the researchers linked respondents' responses to the related literature and the study's theoretical and conceptual framework.

Participants and Sampling Technique

The population of this study comprised the Grades 11 and 12 senior high school learners among the five (5) national schools from Oquendo Districts, Division of Calbayog City, namely Oquendo National High School, Tarabucan National High School, Mag-ubay National High School, Pilar Agricultural National High School, and Cabatuan National High School. These schools are in both urban and rural barangays in Samar, Philippines, serving both elementary and secondary levels. These districts have a diverse learner population from various socio-economic backgrounds and are supervised by district supervisors and school principals who coordinate the implementation of educational programs and policies aligned with the Philippine Department of Education's mission. The researchers selected Oquendo District as the research locale not only because of easy access to data gathering but also because of its active implementation of ICT as a component of TLE, specifically ICT and Entrepreneurship.

From the total population of 1,108, the researchers determined 286 respondents as a sufficient sample size for the research context using stratified random sampling, with a 95% confidence level and a 5% margin of error. This distribution ensured representation from every school, reflecting each institution's population. The approach first identified natural clusters, such as public senior high schools or specific sections/grade levels within the chosen district. Then, the researchers used a random number generator to select clusters, ensuring every cluster had an equal chance of inclusion; all selected respondents within the chosen clusters participated in the study.

Research Instrument

The study used a researcher-made instrument, validated by subject experts using the Inter-Rater Reliability Test (IRR) to ensure quality and academic accuracy. A pilot test was then conducted among 30 senior high school learners of Calbayog City National High School, Calbayog 3 District, to test reliability and ensure the instrument accurately measured the intended variables. The instrument trial results were used to determine reliability using Cronbach's alpha. A Cronbach's alpha of 0.839, interpreted as good reliability, indicates that the instrument consistently measures the intended constructs. In other words, the research instrument was deemed reliable and suitable for use in the study without further modification.

In particular, the 40-item survey questionnaire had two parts: Part 1 covered the respondent's profile. Part II assessed senior high school learners' ICT self-efficacy and was divided into four dimensions: computer and software skills, internet and online research skills, problem-solving and troubleshooting skills, and digital communication and collaboration. Each category has five statements anchored on Bandura's Self-Efficacy Theory (Bandura, 1982). Part III assessed learners' attitudes toward using ICT, subdivided into four dimensions: perceived usefulness, enjoyment and interest, confidence in using ICT, and perceived challenges and security. Each category has five statements anchored in the Technology Acceptance Model (Davis et al., 1989) and the Theory of Planned Behavior (Ajzen, 1987). Learners' assessment of each statement was rated on a 4-point Likert Scale (1 = Strongly Disagree; 2=Disagree, 3=Agree; and 4 = Strongly Agree).

Data Gathering Procedure and Analysis

Upon approval from the Philippine Department of Education (DepEd) regional and local offices, the researchers personally distributed the survey questionnaires to the respondents, following the ethical considerations outlined

in the study. The researchers analyzed the collected data using IBM SPSS version 27. To determine the distribution of the gathered data, the researchers conducted a normality test using the Kolmogorov-Smirnov test, which yielded a significance value of 0.001 (less than the 0.05 threshold), indicating that the data are not normally distributed. This has important implications for data analysis, as it suggests that non-parametric statistical methods may be more appropriate when analyzing the dataset. Furthermore, for descriptive statistics, frequency and percentage, weighted mean, and standard deviation were used. For inferential statistics, linear analysis was used to test whether profile variables predict ICT self-efficacy and attitudes among senior high school learners, since the variables under investigation represent discrete groups, such as respondents' profiles when grouped by age, gender, academic strand, and frequency of gadget use. Finally, the analysis goes beyond the implications of the theories anchored in this study by providing empirical evidence on how the variables and demographic factors relate to ICT-related beliefs, which can inform educational interventions and policy reforms to support more equitable ICT innovations in schools.

Ethical Considerations

Throughout this research, researchers followed ethical standards for conducting the study. Researchers obtained informed consent from students and parents or guardians before participation, and participation was completely voluntary and based on a full understanding of the study aims and methods. They were informed of their right to withdraw at any time without consequence. The research team compiled responses and saved them in a single password-protected database accessible only to the team. The team removed all identifiable information, such as names and demographic data, so the data remained highly confidential. Because individuals could not be identified, the data were reported only in aggregate. These measures were implemented to protect against possible risks and ensure the dignity of all who took part in the study.

Results and Discussion

Profile of Public Senior High School Learners

Table 1. *Profile of Respondents in Terms of Age, Gender, Strand and Frequency of Use of Gadgets (n=286)*

Profile	Frequency	Percentage
Age Category		
16 to 17 yrs	211	73.78%
18 to 19 yrs	68	23.78%
20 yrs and above	7	2.45%
Total	286	100.0%
Average:	17	SD: 0.758
Gender Category		
Male	82	28.70%
Female	190	66.40%
LBTQ	11	3.80%
Rather not to say	3	1.00%
Total	286	100.0%
Strand		
STEM	40	14.00%
HUMMS	47	16.40%
ABM	41	14.30%
GAS	119	41.60%
TVL	39	13.60%
Total	286	100.0%
Frequency of Use of Gadgets		
Less than 1 hr.	14	4.90%
1 to 3 hrs.	88	30.80%
4 to 5 hrs.	67	23.40%
More than 5 hrs.	117	40.90%
Total	286	100.0%
Average	4-5 hrs.	SD: 0.957

In this phase, Table 1 presents the respondents' profile by age, gender, strand, and frequency of gadget use. It shows that the 286 respondents are overwhelmingly adolescents (average age = 17, $SD = 0.758$). Most participants were aged 16–17 years (73.78%), followed by 18–19 years (23.78%) and > 20 years (2.45%). By gender, 66.4% (190 of the total population) were female, while males represented a lower proportion at 28.70% (82). A small

percentage belonged to LGBTQ+ (3.8% or 11), and 3 (1.0%) respondents preferred not to disclose their gender. In terms of strand, 41.6% (119) belonged to the General Academic Strand (GAS), compared with HUMSS at 16.4% (47), while ABM accounted for 14.3%. A large fraction of respondents (40.9% or 117) use gadgets more than five hours/day, and about 23.4% (67) use them for 4–5 hours/day. The average daily usage time of 4–5 hours shows a stable trend of intermediate-to-high gadget use among learners.

The results suggest that the respondents are mostly young, predominantly female senior high school students with heavy gadget usage and enrolled in the General Academic Strand (GAS). Learners' focus on GAS suggests broader academic exposure rather than specialized technical strands, which may explain high results in basic ICT skills. In comparison, these findings align with studies on the socio-economic gap worsened by differences in home ICT resources due to the cost of ICT tools (Alabi et al., 2025) and contribute to educational inequality. In fact, the Philippine Department of Education (DepEd) Computerization Program has been pouring a lot of funds for the last few decades into making ICT available to public schools, hoping that it will open doors towards opportunities not only for mere communications and collaboration but rather as an equalizing force to meet academic requirements or learning activities (DepEd, 2023).

Table 2. *Profile of Respondents in Terms of Availability of Gadgets at Home and at School (n=286)*

ICT Equipment	Availability at Home		Availability at School	
	Frequency	Percentage	Frequency	Percentage
Smart TV	0	0.0%	286	100.0%
Smart phone	286	100.0%	0	0.0%
Tablet	49	17.10%	152	53.10%
Laptop	114	39.90%	286	100.0%
Desktop	20	7.00%	253	88.50%
Digital camera	43	15.00%	198	69.20%
Smart watch	68	23.80%	0	0.0%
Digital notebook	15	5.20%	2	0.70%
Projector	0	0.0%	253	99.30%

Moreover, Table 2 shows the respondents' profile in terms of gadget availability at home and at school. It shows that all 286, or 100%, of respondents reported having smartphones at home, but limited ownership of other gadgets, such as a digital notebook, which 94.8%, or 271, of respondents reported. Laptop access also reached 39.9% (114), while other gadgets showed lower availability: smartwatches at 2.8% (68), tablets at 17.1% (49), and digital cameras at 15.0% (4). The same table shows the frequency and percentage distribution of the profile in terms of the availability of functional ICT equipment at school, which demonstrates a high level of ICT readiness. In contrast, only 53.1% (152 respondents) said tablets are available, indicating that adoption is still not widespread in Oquendo Districts.

The gadget-use frequency results show that most respondents use gadgets for hours every day, indicating that more than two-thirds have lengthy usage, pushing them toward technology. In addition, smartphones are common at home because people cannot be separated from this technology for communication and digital activities. On the other hand, the high presence of smart TVs and laptops in school settings suggests that public schools have invested heavily in better teaching tools that support ICT-flourishing learning. Thus, the results highlight the need for policymakers to act, including supporting shared devices at home to improve access to educational resources. In relation to the Technology Acceptance Model (TAM), one of the most widely used frameworks explaining technology use, it shows that actual technology use depends on a user's intention, which is driven by perceived ease of use (PEOU). Therefore, efforts to address these gaps will help all learners fully use ICT for better academic performance and 21st-century skills, in line with the digitalization goals of public education in the Philippines (DepEd, 2023).

On the ICT Self-Efficacy of Public Senior High School Learners

Results on the comparison of the mean and standard deviation of ICT self-efficacy of public senior high school learners among the four dimensions are presented in Table 3. The overall mean score of 3.18 ($SD = 0.441$), interpreted as "High," indicates that senior high school learners generally possess a high level of ICT self-efficacy. Among the four dimensions, Digital Communication and Collaboration ($\bar{x} = 3.34$, $SD = 0.581$) and Internet and Online Research Skills ($\bar{x} = 3.32$, $SD = 0.530$) obtained the highest mean ratings, both described as "Very High" ICT self-efficacy. These results suggest that learners feel confident using the internet for research, communication,

and collaborative academic activities. Online and unified learning environments heavily support their skills. On the contrary, Computer and Software Skills ($\bar{x} = 3.20$, $SD = 0.498$) and Problem-solving and Troubleshooting Skills ($\bar{x} = 2.77$, $SD = 0.587$) only reached the “High” level of ICT self-efficacy, which indicates adequate but not advanced skills in handling basic computer operations and resolving technical issues. Thus, the relatively lower troubleshooting rating suggests students rely more on others for technical assistance than on their own problem-solving skills.

Table 3. Mean and Standard Deviation on the ICT Self-efficacy of Public Senior High School Learners

Dimensions	$\bar{x}$	SD	Description
A. Computer and Software Skills	3.20	0.498	High
B. Internet and Online Research Skills	3.32	0.530	Very High
C. Problem-solving and Troubleshooting Skills	2.77	0.587	High
D. Digital Communication and Collaboration	3.34	0.581	Very High
Overall	3.18	0.441	High

Legend: 3.26-4.00 – Very High; 2.51- 3.25 – High; 1.76 – 2.50 – Low; 1.00 – 1.75 – Very Low

Relate the results to Ulfert-Blank & Schmidt's (2022) concept of troubleshooting skills, which refers to the ability to identify and solve technical or operational problems, such as computer errors, software issues, or internet connection issues, using different methods. This suggests that if senior high school learners develop sufficient problem-solving and troubleshooting skills, they may be able to manage learning interruptions such as internet problems, software failures, and system crashes and reduce learning difficulties. Simply put, UNESCO (2024) explains that digital communication and collaboration fit well with digital self-efficacy, as these skills improve learners’ confidence, participation, and ability to adjust in digital environments.

This finding aligns with Leonardo’s (2021 June) claim that Filipino students with greater ICT self-efficacy are better suited to thrive in digital learning environments and overcome technological obstacles with determination, which is increasingly important given the widening gap in many Philippine schools. In other words, the findings suggest that senior high school students have functional ICT self-efficacy, particularly in internet use and digital collaboration, meaning that technology is integrated into their everyday learning. Their lack of confidence in advanced computer tasks and technical problem-solving indicates the need for ICT skills training. This will be enhanced by emphasizing these aspects as the right decision for senior high school students to progress from simple technology use to more advanced digital skills essential for 21st-century learning and future jobs (Joshi & Shambhu, 2024).

On the Attitude Towards the Use of ICT Among Public Senior High School Learners

Table 4. Mean and Standard Deviation on the Attitude Towards the Use of ICT of Public Senior High School Learners

Dimensions	$\bar{x}$	SD	Description
Perceived Usefulness	3.35	0.525	Strongly Favorable
Enjoyment and Interest	3.39	0.542	Strongly Favorable
Confidence in Using ICT	3.16	0.543	Favorable
Perceived Challenges and Security	3.06	0.508	Favorable
Overall	3.27	0.440	Strongly Favorable

Legend: 3.26-4.00 - Strongly Favorable Attitude; 2.51- 3.25 – Favorable Attitude; 1.76 – 2.50 – Unfavorable Attitude; 1.00 – 1.75 – Strongly Unfavorable Attitude

Based on Table 4, senior high school learners show a strongly positive overall attitude toward ICT use, with an overall mean of $\bar{x} = 3.27$ ($SD = 0.440$), interpreted as "Strongly Favorable," reflecting high acceptance and motivation for ICT in learning. Among the four dimensions, Enjoyment & Interest ($\bar{x} = 3.39$; $SD = 0.542$) and Perceived Usefulness ($\bar{x} = 3.35$; $SD = 0.525$) both scored "Strongly Favorable," showing that learners understand ICT as very advantageous for effective studying while also enjoying it and finding it interesting. The other dimensions are also in the "Favorable" range, such as Confidence in Using ICT ($\bar{x} = 3.16$, $SD = 0.543$), which reflects average confidence in using ICT tools, but also shows awareness of technical issues and risks, such as Perceived Challenges and Security ($\bar{x} = 3.06$, $SD = 0.508$). This pattern indicates that enjoyment and usefulness motivations lead to high levels of ICT endorsement, while confidence and challenge perceptions are relatively low, suggesting that skills-based training addressing ICT security concerns can support sustained, independent use. =

This result indicates that senior high school students have a relatively weak relationship between ICT use and increases in productivity, class participation, and interaction. This also relates to Abduglanie et al. (2025), who examined the link between technological resources and senior high school students' engagement and found that ICT was associated with strong enjoyment and interest among seniors, which consequently has positive implications for learning. Accordingly, the results balance the advantages and disadvantages of using ICT, consistent with research showing that students tend to view integrated technology positively but remain cautious about security risks and access to inaccurate information (Leonardo, 2021 June). In other words, this work supports the purpose of the current study on the utilization of ICT knowledge and experience in data privacy as well as determination skills against false information.

On the Profile Variables that Predict the ICT Self-Efficacy Among Public Senior High School Learners

Table 5. Linear Analysis among Profile Variables that Predict the ICT Self-efficacy of Public Senior High School Learners

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	3.521	0.165		21.392	0.000
Age	-.016	0.034	-.027	-.464	0.643
Gender	-.055	0.046	-.070	-1.195	0.233
Strand	-.083	0.020	-.239	-4.041	0.000*
Frequency of use of gadgets	.021	0.027	0.045	0.755	0.451

Table 5 displays the linear analysis among profile variables that predict the ICT self-efficacy of public senior high school learners. When all profile variables are held constant, the regression equation's constant is 3.521, the model's baseline predicted level of ICT self-efficacy. Of the predictor variables, Strand was the only profile variable that significantly influenced ICT self-efficacy. It showed a standardized coefficient of $\beta = -0.239$, $t = -4.041$, and $p < .001$. This negative beta coefficient implies that certain Strands of study, likely those with less emphasis on ICT, were associated with lower ICT self-efficacy. Meanwhile, Age ($p=.643$), Gender ($p=.233$), and Frequency of Use of Gadgets ($p=.451$) were not significant predictors. These results suggest that ICT self-efficacy among senior high school learners is generally the same regardless of age or gender.

The results highlight the need to review the ICT programs in public senior high schools by providing more subject-specific technology integration. Since strands can predict ICT self-efficacy, schools should ensure that all strands, not only STEM or TVL, are given enough ICT-related learning activities. In addition, the lack of significant effects from other profile variables, such as age, gender, and frequency of gadget use, suggests that teacher-led instruction matters more than learners' background in developing ICT self-efficacy. The finding that academic strand is the only factor that strongly affects ICT self-efficacy among senior high school learners is like Ye et al. (2022), who found that learners in ICT-related strands, such as STEM or TVL, are more likely to experience ICT self-efficacy. Because of this, public schools and policymakers should focus on improving teachers' ICT skills, adding real-life digital activities to lessons, and ensuring that all learners, regardless of strand, have equal opportunities to use ICT.

On the Profile Variables that Predict the Attitude Towards ICT Among Public Senior High School Learners

Table 6. Linear Analysis Among Profile Variables that Predict the Attitude Towards the Use of ICT of Public Senior High School Learners

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	3.449	0.166		20.837	0.000
Age	-.007	0.034	-.012	-.198	0.843
Gender	-.074	0.046	-.094	-1.604	0.110
Strand	-.058	0.021	-.167	-2.807	0.004*
Frequency of use of gadgets	0.052	0.028	0.112	1.871	0.062

Linear analysis was used to test how selected profile variables such as Age, Gender, Strand, and Frequency of Use of Gadgets predicted learners' attitude toward ICT. The model indicates a relatively high baseline attitude score with a constant of 3.449. However, only one of the four predictor variables systematically predicts attitude

towards ICT: academic Strand ($\beta=-0.167$, $t=-2.807$, $p=0.004$). Age ($p=0.843$), Gender ($p=0.110$), and Frequency of Use of Gadgets ($p=0.062$) do not reach statistical significance at the 0.05 level.

Among the four predictor variables, Strand systematically predicts attitudes toward ICT. This suggests that some Strands, especially those with less embedded ICT use in their curriculum, tend to have lower attitudes toward ICT than more technology-oriented programs. The research suggests that Strand is a key leverage point for improving students' attitudes toward ICT since the academic strand is a significant predictor of ICT attitudes. This finding is also supported by Sayaf et al. (2022), which explains that how lessons are designed and how often technology is used in different subjects can affect students' attitudes toward ICT. When ICT is included in students' learning activities, they are more likely to develop positive views and become more willing to use technology. The importance of the academic strand also suggests that programs meant to improve ICT attitudes should focus more on strands less related to technology. Ramzan et al. (2023) support this idea, stating that such approaches can improve learners' attitudes and skills while also giving equal digital learning opportunities. This idea is also connected to the Technology Acceptance Theory (TAM), which explains that when ICT is used in meaningful learning tasks, learners see it as useful and develop more positive attitudes toward it (Feng et al., 2023). In simple terms, schools should not depend only on STEM or other technology-focused strands when using ICT. Instead, all strands should include ICT in real-life, subject-related activities to help students better appreciate and use technology.

Conclusion

As public senior high schools in the Philippines strive to meet Sustainable Development Goal 4 through digital transformation, the findings show that public schools must not only provide access to technology but also build students' ICT self-efficacy through scaffolding and practice opportunities in a supportive environment. Furthermore, to promote social value and relevance, the results highlight the importance of developing learners' ICT Self-efficacy to foster positive attitudes toward ICT that support social value by promoting digital citizenship and responsible use of technology. High scores in curiosity and excitement about lessons, assignments, and projects show that ICT increases student engagement and active participation in class activities, suggesting that learners' attitudes are driven by strong confidence in using digital tools independently. This study's findings also contribute to nation-building by equipping learners with critical digital skills, motivation, and confidence to participate fully in the 21st-century knowledge economy. When learners become ICT proficient and develop positive dispositions toward technology use, they can apply these skills to solve local and national problems, thereby contributing to socio-economic development.

Lastly, it is important to disseminate the results of this study to improve educational practices and broader policies by providing insight into how ICT efficacy and attitudes influence learner engagement, and how these engagements affect their outcomes. Thus, the fundamental outcome provides insights to educators, policymakers, and educational leaders not only in the research locale but also at the national level, considering ICT self-efficacy as an important antecedent of learners' readiness to adopt new teaching and learning tools, such as blended and online learning tools that are currently in high demand in the modern education landscape.

Contributions of Authors

Author 1: Proposal writing, conceptualization, research conduct, data gathering, data analysis, and manuscript finalization.

Author 2: Provided academic guidance and consultation throughout the conduct of the study.

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Conflict of Interests

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