

Investigating the Correlation Between Influencing Factors Affecting Students' Interest in Learning and Academic Performance in Mathematics

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Abstract. This study aimed to determine the factors influencing pupils' interest in learning Mathematics and differences in pupils' mathematics performance when grouped according to their subject of interest and subject with difficulty. The respondents of the study were the 183 randomly selected Grade VI pupils of the 10 Elementary Schools in Cluster 9 of the Division of Guihulngan City for the school year 2023-2024. The researcher utilized the descriptive correlational survey method and a validated researcher-made questionnaire. The instrument underwent reliability testing using the test-retest method with a gap of two weeks from its initial administration. Results of the test revealed coefficient stability of 0.95 (teaching pedagogy), 0.93 (utilization of learning resources), 0.91 (assessment strategies), and 0.92 (performance task). The researcher adhered to and observed the ethical guidelines outlined by Foundation University's Ethics Committee. Consultation was pursued to ensure the research issue becomes clearly sound, significant, and ethically proper. The following statistical tools were used: percentage and frequency, weighted mean, mean, Kruskal-Wallis H-test, and t-test. The study then revealed that the following factors have a very high influence on pupils' interest in learning Mathematics: (a) Teaching Pedagogy, (b) Utilization of Learning Resources, (c) Assessment Strategies, and (d) Performance Task. Data revealed that pupils' performance in Mathematics based on grades is within the very satisfactory level. Moreover, a significant relationship exists between the earlier factors that influenced pupils' interest in learning Mathematics and their Mathematics performance. Results further showed substantial differences in pupils' Mathematics performance when grouped according to their subject of interest and subject with difficulty. At the same time, pupils' demographic profiles cannot account for the differences in pupils' Mathematics performance.

Keywords: Factors; Influencers; Interest; Mathematics performance.

1.0 Introduction

The Programme for International Student Assessment (PISA) is a worldwide study that conducts a triennial evaluation of pupils' mathematical proficiency on a global scale. The findings from this study indicated that, across 64 countries, a significant 92.0 percent of assessed pupils fell into the lowest mathematics proficiency category, while only 3.3 percent achieved the highest level. In the Asian context, specifically in Thailand, results from the 2007-2009 national examination on mathematics proficiency revealed that most pupils performed unsatisfactorily, necessitating interventions for performance improvement (National Institute of Educational Testing Service, 2017). Additionally, the Trends in International Mathematics and Science Study (TIMSS) (2003) further affirmed

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this pattern, indicating that among 46 participating countries, the Philippines ranked 42nd in pupil achievement. In terms of academic performance, this finding suggests a prevailing issue of mathematics underachievement in various developing nations, particularly in the Philippines.

According to Dowker (as cited in Rahiol, 2020), there is a concerning trend of pupils in elementary school, particularly 11-year-olds, falling behind in Mathematics. Multiple studies have highlighted this issue as consistent and significant. Many pupils need to reach the expected math level for their age. As cited in Math Goodies (2018), pupils with weak mathematical skills find the subject increasingly frustrating and different and begin to develop Math anxiety. When a child develops a solid mathematical foundation, he will discover fun, engaging, and enjoyable math.

Motivation is the key to unlocking a learner's full potential. As the saying suggests, a driven learner is unstoppable. Their desire fuels active engagement, turning them from observers into knowledge-hungry participants. According to Scivicque (2020), children's natural curiosity sparks a desire to dig deeper and find answers to our questions. This curiosity acts like fuel, boosting our focus and helping us select the most interesting information. For information to stick in our long-term memory, especially when it involves complex strategies like monitoring, explaining, and organizing, we need that extra push from motivation.

The underachievement of elementary pupils in Mathematics is a significant issue that needs to be addressed, especially regarding why they fail to meet expectations. Studies on factors influencing pupils' interest in learning mathematics focused more on pupil-related factors. In a local survey conducted by Rozelaar (2023) relative to pupils' numeracy skills, she emphasized pupils' skills and challenges in learning numeracy. The lack of knowledge on teacher-related learning factors is a significant evidence gap for advanced research in this area. Therefore, this study focuses on teachers' competence in teaching pedagogy, utilization of learning resources, assessment strategies, and performance tasks. As a teacher herself, the researcher is desirous of finding out how competent Mathematics teachers are in influencing pupils' interest in Mathematics, particularly in those areas mentioned earlier. Moreover, this study is significant as it will surface the need for teachers to become learning motivators.

2.0 Methodology

2.1 Research Design

The researcher utilized the descriptive correlational survey method in the sense that it aims to determine the factors influencing pupils' interest in learning mathematics. It is also correlational in that the influencing factors were correlated to pupils' mathematics performance. It is comparative, as pupils' interest in learning Mathematics was compared when grouped according to their profile and Math performance. This method measured the relationship between two variables without the researcher controlling either. It aims to find out whether there is a positive correlation between both variables. This method is considered appropriate in this study because it aims to determine the relationship between the factors influencing pupils' interest in mathematics and their performance.

2.2 Research Locale

The study was conducted in the municipality of Vallehermoso, one of the clusters of Guihulngan City. It is a third-class municipality in the province of Negros Oriental. Vallehermoso has ten elementary schools, two public high schools, and one private high school headed by principals, head teachers, and teacher-in-charge. The study focused on the ten elementary schools: Banban Elementary School, Don Esperidion Villegas Elementary School, Don Julian Dela Viña Memorial Elementary School, Guba Elementary School, Malangsa Elementary School, Malangsa Elementary School-Mampayao Annex, Molobolo Elementary School, Puan Elementary School, Tabon Elementary School, and Vallehermoso Central Elementary School.

2.3 Research Participants

The study participants were the Grade VI pupils of the ten Vallehermoso, Division of Guihulngan City schools, who were subjected to sampling. A sample size of 183 participants was taken from a total of 364, which comprises the Grade VI population during the School Year 2023-2024. The number of participants was distributed

proportionately among the different schools covered in the study. Participants in every school were randomly picked using the list provided by the school.

2.4 Research Instrument

The study used a researcher-made questionnaire. Documentary analysis assessed the pupils' academic performance during the school year 2023-2024. Part I displays the disclosure statement, which proves the students' consent, allowing the researcher to gather data/information about them, provided that confidentiality of data is observed. It also contains the purpose of the study. Parts II and III cover the factors influencing pupils' interest in mathematics. The questionnaire underwent validation and reliability testing. A dry run was conducted using the test-and-retest method with a gap of two weeks from its initial administration to ensure coefficient stability.

For content validity, the researcher sought the assistance of 3 experts who are Master Teachers who are knowledgeable along this line, as well as her adviser, to ensure that the intention of the study was covered. A total of 30 randomly selected pupils from the researchers' school served as the respondents of the dry-run. The result of the reliability test revealed coefficient stability of 0.95 (teaching pedagogy), 0.93 (utilization of learning resources), 0.91 (assessment strategies), and 0.92 (performance task). The experts' suggestions were considered in the refinement of the items in the questionnaire.

2.5 Data Gathering Procedure

The researcher incorporated all the corrections and feedback of the panel members and the research adviser. Then, a letter of request to conduct the study was sent to the Dean of Foundation University Graduate School for recommendation to the school division Superintendent of Guihulngan City. The signed and approved request was presented to the Schools Division Superintendent of Guihulngan City Division and District Supervisor upon the endorsement of the Dean of the Graduate School of Foundation University. Then, the signed and approved letter request was presented to the school principals, head teachers, teachers-in-charge, respective advisers, and subject teachers. Before administering the questionnaire, a consent letter was also sent to the parents for their signature and approval to allow their child to participate in the study. The purpose and importance of the questionnaire and the research itself were explained to the parents. They were informed that the answered questions would not be revealed to anyone and that they would be safely kept for confidentiality. The questionnaire was also retrieved right after the respondents had answered the questions. The results were tallied using MS Excel and were analyzed and interpreted.

2.6 Ethical Considerations

This study kept all information confidential to protect the privacy and dignity of the participants, who were all human subjects. The researcher also avoided any potential risks to the participants. With that, the researcher exercised all relevant ethical considerations throughout the study. To ensure the researcher adhered to the highest ethical standards, following the guidelines established by Foundation University's Ethics Committee. Through consultations, they confirmed that the research question was clear, well-defined, and held significant value. Additionally, the researcher maintained a neutral and objective approach throughout data collection to avoid potential bias or judgment.

3.0 Results and Discussion

Table 1 reveals that the extent of teaching pedagogy's influence on pupils' interest in learning mathematics is "very high," as shown in the average weighted mean of 4.50. Results simply show that pupils are presented in an enjoyable manner, eye-catching, interesting, clear to them, and able to relate to real-life experiences.

Table 1. *The extent of influence of teaching pedagogy on pupils' interest in learning Mathematics*

Indicators	w $\bar{x}$	VD
1. I feel that the games are used to present a new lesson.	4.70	VHI
2. I feel that the utilization of audio-visual facilitates learning, such as PowerPoint presentations.	4.60	VHI
3. I feel that the lessons are interesting and useful to me.	4.54	VHI
4. I feel that the drill lesson is conducted as an opener for the new lesson.	4.46	VHI
5. I feel that the objectives of the lesson are clearly explained at the start of each period.	4.36	VHI
6. I understand that the lessons are related and meaningful to real life.	4.34	VHI
Composite mean	4.50	VHI

Nowadays, students require cognitive and practical experiences throughout their mathematics education to be productive 21st-century citizens. The genesis of this statement can be traced back to the writings of John Dewey, who emphasized the importance of educational activities that include "the development of the artistic capacity of any kind, of special scientific ability, of effective citizenship, as well as professional and business occupations ."Abramovich et al. (2019) also advocate for a shift in math education, prioritizing real-world applications across all grade levels. This approach contrasts with the traditional lecture style, emphasizing rote memorization of mathematical formulas and structures. Real-life applications keep concerned people motivated while learning mathematics. This natural motivation can be considered an age-dependent process from natural childhood curiosity in primary school to genuine intellectual curiosity at the tertiary level.

Herbst et al. (2019) cited that teaching requires substantial explicit knowledge (e.g., factual and conceptual mathematical knowledge) and important inferred knowledge. In addition, Cohen (as cited in Herbst et al., 2019) stressed that teaching is a profession of human improvement done during relationships with pupils. He also adds that if widely understood, mathematics plays a key role in shaping how individuals deal with the various spheres of private, social, and civil life. Research studies have found that effective teachers facilitate learning by genuinely caring about their pupils' engagement. Furthermore, Anthony and Walshaw (2019) work at developing interrelationships that create spaces for pupils to develop their mathematical and cultural identities.

In addition, Filgona, Sakiyo, and Gwany (2020) cite that teachers should be knowledgeable in the content areas and pedagogy for which they are responsible; without this, pupils may face difficulty in their learning. The result implies that students are interested in learning Mathematics if they enjoy teaching-learning activities. They feel that learning is just a sort of fun. They enjoy more game-based instruction. A student who is happy doing a learning task tends to be more enthusiastic and participative.

Table 2 exposes the extent of the influence of learning resource utilization on pupils' interest in learning mathematics. Data revealed a "very high influence" when workbooks/textbooks are used in discussion, when PowerPoint presentations are eye-catching, when materials for project development are provided, and when graphs/charts are presented, garnering a $w\bar{x}$ ranging from 4.32-4.37. On the other hand, utilization of OER (Open Educational Resources) and chalk and board presentation were found to have "highly" influenced pupils' interest in learning mathematics, receiving a $w\bar{x}$ of 4.19 and 4.18, respectively. Summing up, varied learning resources influence pupils' interest in learning to a "very high" extent, as indicated in the average $w\bar{x}$ of 4.29.

Table 2. *The extent of influence of utilization of learning resources on pupils' interest in learning Mathematics*

Indicators	$w\bar{x}$	VD
1. I learn more when workbooks/textbooks are used in the discussion.	4.37	VHI
2. I learn more when PowerPoint presentations are eye-catching.	4.34	VHI
3. I learn more when materials for project development are provided.	4.33	VHI
4. I learn more when graphs/charts are presented clearly.	4.32	VHI
5. I learn more when OER (Open Educational Resources), etc., are utilized.	4.19	HI
6. I learn more when chalk and board are utilized to explain the lesson.	4.18	HI
Composite mean	4.29	VHI

Although textbooks are a traditional component in many higher education contexts, their increasing price has led many students to forego purchasing them and some faculty recourse to seek substitutes. One such alternative is open educational resources (OER). Consequently, Hilton (2020) also cites that recent years have seen a dramatic increase in the use of open educational resources (OER). According to Nyirahabimana (2019), instructional materials serve as teaching and learning aids that help students learn effectively to increase their performance. Using instructional materials in teaching and learning mathematics makes learning more manageable, engaging, concrete, enjoyable, and clear in real-life contexts. In the study, Mabagala (2019) reported that many pupils found mathematics difficult, and he recommended using concrete teaching aids. Moreover, Olayinka (2019) cited that pupils are likely to quickly forget what they hear but remember what they have seen, touched, and interacted with.

According to JukiÄ (2019), teachers' ability to perceive and mobilize existing resources to create productive instructional episodes in the classroom is vital to learning. To a certain extent, this ability is dependent on the curricular resource used. Despite the emergence of various educational resources, textbooks continue to reign

supreme in math classrooms. This teacher, however, does not simply rely on the textbook content. The teacher strategically utilizes it, adapting and improvising lessons to fit her students' needs. Recognizing the textbook's strengths and limitations, the teacher transforms it into a springboard for creating diverse learning opportunities. This approach ensures the textbook serves as a valuable tool, not a rigid script, in the teaching practices. The result implies that strategic instructional devices should be utilized to arouse pupils' interest and curiosity in Mathematics. The result shows that students are more of a visual learner as they are more interested when lessons are presented in visual aids such as PowerPoint presentations, charts, graphs, and other forms of visual aids.

Table 3 reflects the extent of influence of assessment strategies on pupils' interest in learning mathematics. Results revealed a "very high" influence of assessment strategies on pupils' interest with a $w\bar{x}$ of 4.36. The result revealed a "very high" influence, as indicated in the $w\bar{x}$ of 4.40. Data manifest that pupils are very highly interested in learning when test papers are available, problem-solving tasks are familiar to them, assignments can be done within a time frame, performance tasks apply to everyday life, and tasks or work given are within their ability, all receiving very high $w\bar{x}$ ranging from 3.30-3.40.

Table 3. *Extent of influence of assessment strategies on pupils' interest in learning Mathematics*

Indicators	$w\bar{x}$	VD
1. I feel that materials in Math assessments, such as test papers, are always available.	4.40	VHI
2. I feel that problem-solving tasks are similar to what I do in class.	4.38	VHI
3. I feel that the assessment given can be done within a time frame.	4.37	VHI
4. I feel that the performance tasks assigned are useful in everyday life.	4.34	VHI
5. I feel that whatever task or work is given is within my ability.	4.30	VHI
Composite mean	4.36	VHI

Summing up, assessment strategies have a "very high" influence on pupils' interest in Mathematics, as indicated by the high average $w\bar{x}$ of 4.36. According to Haryanti and Saputra (2019), one of the important components of the educational system that measure success and performance is assessment. Various assessment methods throughout math instruction are key to positive learning outcomes. This approach involves ongoing feedback and assessments, not just at the end. This continuous feedback loop helps teachers pinpoint precisely where pupils are in their learning journey. Teachers can adjust their teaching strategies by identifying areas that need more focus. This two-way communication also empowers pupils. Timely feedback allows them to take an active role in their learning by guiding their efforts toward improvement.

Mathematics is one of the fields that has an important role in 21st-century thinking because it involves logical and systematic thinking to solve problems. This means mathematical competencies need to be developed through learning and integrated into knowledge, skills, and attitudes. When learning has facilitated the development of 21st-century mathematical competencies, the assessment must also be able to photograph it (Ketterlin-Geller & Yovanoff, 2019). Vidyastuti, Mahfud, and Darmayanti et al. (2022) emphasized the importance of assessment in the learning process, which can be a benchmark for improving the quality of education. Assessment allows the assessor to interpret pupils' growth and progress regarding the goals and conditions set out in the curriculum. Moreover, Sah et al. (2023) stressed the importance of assessment in an effective teaching-learning activity. This implies that a valid and reliable assessment is needed to measure the results and impact of learning.

According to Even and Watson (cited by Suurtam et al., 2019), assessing pupils' learning is multi-faceted. Making sense of pupils' mathematical thinking through pupil explanations, strategies, and mathematical behaviors is much more complex than might be anticipated and can often challenge teachers' thinking about mathematics and mathematics teaching and learning. The result may further imply that making math assessments relevant to everyday life engages students and helps them see the practical applications of their learning. When pupils understand how math connects to real-life situations, they are more motivated to learn and apply their skills. Knowing they can tackle these real-world challenges boosts their confidence and self-efficacy in math.

Table 4 shows that pupils enjoy learning mathematics when they are in groups, utilizing rubrics to assess performance, when they are aware of their performance, when performance tasks are given regularly, and sometimes when tasks are done individually. All receive very high $w\bar{x}$, ranging from 4.40 to 4.52.

Table 4. *Extent of influence of performance task on pupils' interest in learning Mathematics*

Indicators	$w\bar{x}$	VD
1. I enjoy it when a performance task is done by the group.	4.52	VHI
2. I enjoy when rubrics are utilized to evaluate the performance of the result.	4.50	VHI
3. I enjoy it when pupils are made aware of their performance task.	4.48	VHI
4. I enjoy when performance tasks are given regularly.	4.45	VHI
5. I enjoy it when performance tasks are done individually.	4.40	VHI
Composite mean	4.47	VHI

Amerstorfer and Münster-Kistner (2021) noted that despite the increased individual autonomy and self-regulation, pupils still work together as a team. They set group targets, which can be achieved by synchronizing the efforts of individuals. All pupils fulfill important tasks in their specific roles, generating a sense of co-dependency and togetherness. The pupils identify the learning objectives they wish to pursue and follow a prescribed chain of actions to achieve these goals (Amerstorfer, 2020). Mercer and Dörnyei (2020) added that having clear guidelines and transparent learning objectives, accompanied by an outline of possible steps to complete the task, can facilitate the learning process and pupils' engagement. The result implies that pupils are interested in learning Mathematics if they do Math activities in groups. However, if possible, pupils shall also be given autonomy in working performance tasks to evaluate individual performance. Pupils will also be allowed to assess their learning through rubrics.

Table 5 summarizes the extent of influence of the following factors on pupils' interest in learning mathematics. Data show a "very high" extent of influence of the different factors on pupils' interest in learning Mathematics, as shown in the average weighted mean of 4.41. Specifically, a "very high influence" is reflected in teaching pedagogy ($w\bar{x} = 4.50$), utilization of learning resources ($w\bar{x} = 4.29$), assessment strategies ($w\bar{x} = 4.36$), and performance task ($w\bar{x} = 4.47$). These factors have a significant impact on students' interest in learning mathematics. The result implies that when these aspects are effectively utilized, students will become more engaged, motivated, and interested in Mathematics.

Table 5. *Summary table as to the extent of influence of the following factors on pupils' interest in learning Mathematics*

Indicators	$w\bar{x}$	VD
1. Teaching Pedagogy	4.50	VHI
2. Utilization of Learning Materials	4.29	VHI
3. Assessment Strategies	4.36	VHI
4. Performance Tasks	4.47	VHI
Composite mean	4.41	VHI

According to Vogt et al.'s study (2020), mathematical learning opportunities that are challenging, appropriate, and adaptive to the heterogeneous needs of young children, as well as suitable learning materials, are needed. These educational materials have the potential for good teaching and learning support. Mazana et al. (2019) also affirm in their study that pupils' learning and performance in mathematics are affected by several factors, including pupils' attitudes towards the subject, teachers' instructional practices, and school environment.

Langoban (2020) concluded that though there are a lot more underlying reasons that cause the pupils' learning of Mathematics, there are three most evident emerging themes that summarize the causes of this difficulty: the delivery of instruction by the teacher/instructor, learners' ability and experiences; and school environment and facilities. Many students develop strong feelings about math, either positive or negative. These attitudes are often heavily influenced by their teachers. A skilled math teacher can turn a student's initial dislike of math around, fostering a love for the subject and a sense of accomplishment in mastering challenging concepts. Conversely, a teacher who struggles to explain concepts clearly or makes the learning process overly stressful can solidify a pupil's dislike for math, potentially hindering their future engagement with the subject. Math teachers are crucial in shaping their pupils' mathematical journeys. These findings imply that educators and educational institutions should prioritize and focus on enhancing teaching pedagogy, utilizing learning resources, implementing effective assessment strategies, and incorporating performance tasks in mathematics education. By doing so, they can significantly influence pupils' interest in learning mathematics.

Table 6 presents pupils' performance in mathematics based on grades. Five grading scales range from 90-100, 85-89, 80-84, 75-79, and below 75. Each grading scale is associated with a verbal rating describing the performance

level. The table also shows the frequency (represented by f) and percentage of pupils falling into each grade category. In the “outstanding” rating, grades between 90 and 100, with 69 pupils, accounting for 37.70% of the total. In the “very satisfactory” rating, grades between 85 and 89, with 74 pupils, account for 40.44% of the total. In the “satisfactory” rating, grades between 80 and 84, with 40 pupils, accounting for 21.86 of the total. In the “fairly satisfactory” and “did not meet expectations” rating, no pupils fall into this grade category. Overall, the majority of pupils fall into the “Outstanding” and “Very Satisfactory” categories, indicating a high level of performance in mathematics among the sampled pupils.

Table 6. *Pupils' performance in Mathematics based on grades*

Grade	Verbal Rating	f	%
90 – 100	Outstanding	69	37.70
85 – 89	Very Satisfactory	74	40.44
80 – 84	Satisfactory	40	21.86
75 – 79	Fairly Satisfactory	0	-
Below 75	Did not meet Expectations	0	-
Average Grade		87.62	

Improvements and reforms in educational systems are often thought of as institutional top-down changes that must be consistent to be effective. System and nationwide programs are often directed at increasing school participation, providing easier access to education, and promoting quality instruction. In developing countries, the systemwide reforms often increase the likelihood of school participation but do not always have apparent positive effects on student achievement, measured through grades or test scores. Interventions that address education quality have mixed outcomes, with some programs increasing students’ knowledge, earnings, and achievement while others cannot attain this goal (Trinidad, 2020).

Table 7 illustrates the relationship between the extent to which the factors mentioned earlier influence pupils’ interest in mathematics and their Mathematics performance. Results of the test revealed a significant relationship between the two aforementioned variables as signified by the obtained value of r for teaching pedagogy (0.3227), utilization of learning resources (0.1952), assessment strategies (0.2399) and performance task (0.2356), values of which are more significant compared to its tabular value of 0.1946, at 0.05 level of significance, with 181 degrees of freedom. Hence, the null hypothesis formulated, which states that no significant relationship exists between the influencing factors and pupils’ mathematics performance, is rejected.

Table 7. *Relationship between variables and their Mathematics performance*

Variables	r	Decision Rule	Remarks
Teaching Pedagogy	0.32	Reject H_{01}	Significant
Utilization of Learning Resources	0.19	Reject H_{01}	Significant
Assessment Strategies	0.23	Reject H_{01}	Significant
Performance Task	0.23	Reject H_{01}	Significant

To synthesize, teaching pedagogy, utilization of learning resources, assessment strategies, and performance tasks significantly impact pupils' interest in learning mathematics, which in turn influences their math performance. In short, the four variables are determinants of pupils' performance in Mathematics. As cited by Shahrill and Clarke (2019), pupils need to be asked what teaching methods they find most helpful, and teachers should also understand why pupils prefer these methods. Teachers should also see how pupils feel about the class and how well they learn math. Meanwhile, a study by Pepin and Grave (2019) emphasized that learning resources likewise influence many aspects of their work. These resources influence how teacher plan their lessons, navigate the curriculum, and ultimately deliver instruction in the classroom. They also affect the type of tasks students engage with and how the teachers structure both the teaching and learning process. Resources significantly impact several key aspects of math education, with students being the ultimate beneficiaries.

As to the assessment strategies, Szabo et al. (2020) argued that by asking appropriate questions, teachers can help pupils build up their goal-oriented strategies for problem-solving. Additionally, Albay and Eisma (2021) suggest that the demands of the 21st-century learning environment should be considered, as it is a substantial challenge for teachers to equip pupils with appropriate competencies. The role of teachers needs to go beyond simply delivering facts and figures; instead, they should focus on unlocking students/ potential by implementing effective instructional methods.

Table 8 tests significant differences in pupils' mathematics performance grouped according to their profile. Results of the test disclosed that pupils' profile in terms of sex, school location, and availability of educational gadgets could not account for the difference in pupils' performance as manifested in the obtained p-value for sex (0.304); school location (0.984); and availability of educational gadgets (0.984), values of which are more significant compared to its level of significance (0.05). Data failed to reject the null hypothesis, which states that no significant difference exists in pupils' performance in mathematics, which does not differ significantly regardless of their profile.

Table 8. *Test on significant difference in pupils' Mathematics performance grouped according to their profile*

Variables	n	$\bar{x}$	t	df	p-value	Decision Rule	Remarks
Sex							
Male	77	87.8	1.03	181	0.30	Fail to	No Significant Difference
Female	106	87.3				Reject H_0	
Ave.		87.6					
School Location							
Highland	65	87.6	0.02	181	0.98	Fail to	No Significant Difference
Lowland	118	87.6				Reject H_0	
Ave.		87.6					
Availability of Educational Gadgets							
With	146	87.8	0.012	181	0.98	Fail to	No Significant Difference
Without	37	87.4				Reject H_0	
Ave.		87.6					

This finding concurs with the study of Peteros et al. (2020), which concluded that male and female pupils have the same level of self-concept when it comes to learning mathematics. As to school location, the study of Hertz and Levine affirmed that school location cannot account for the differences in pupils' mathematics performance between pupils from highland and lowland, which does not differ significantly. As regards educational gadgets, the study of Ajayi (as cited by Ichekuku, 2021) supports the finding that educational gadgets cannot account for the difference in pupils' Math performance. Pupils with or without gadgets performed almost the same. To synthesize, the profile of pupils in terms of sex, school location, and availability of gadgets cannot account for the differences in pupils' performance in Mathematics.

Table 9 presents the test results on significant differences in pupils' Mathematics performance grouped according to their profile in terms of subject of interest and subject with difficulty. Data show that the subject of interest can account for the differences in pupils' mathematics performance, as signified by the p-value of 0.0001, the value of which is less than the significance level of 0.05. Thus, the null hypothesis (H_0) is rejected, indicating a significant difference in pupils' Mathematics performance when grouped according to their subject of interest. As can be seen from the table, pupils who have an interest in science perform better in mathematics.

Table 9. *Test on significant differences in pupils' Mathematics performance grouped according to their profile in terms of subject of interest and subject with difficulty*

Variables	n	$\bar{x}$	H	df	p-value	Decision Rule	Remarks
Subject of Interest							
English	46	87.4	40.7	3	0.0001	Reject H_{01}	Significantly Different
Math	52	85.9					
Science	48	90.6					
Filipino	37	86.5					
Ave.		87.6					
Subject with Difficulty							
English	31	88.2	10.9	3	0.0122	Reject H_{01}	Significantly Different
Math	85	86.4					
Science	43	88.4					
Filipino	24	87.2					
Ave.		87.6					

Meanwhile, when pupils were grouped according to the subject they considered problematic, the result yielded a p-value of 0.0122, less than the significance level of 0.05. Thus, the null hypothesis is rejected, indicating a significant difference in pupils' mathematics performance. The result warrants the rejection of the null hypothesis (H_0), which states that no significant difference exists in pupils' Mathematics performance when grouped

according to the subject with difficulty. A thorough perusal of the data would show that pupils who claimed Mathematics as their complex subject also have lower Mathematics performance. From the data presented, it is very obvious that a greater percentage of the pupils find difficulty in learning Mathematics. Filipino was found to be the subject for the pupils. Overall, the results suggest significant differences in Mathematics performance when grouped according to pupils' subject of interest and perceived subject with difficulty.

Simamora and Saragih (2019) highlight the importance of a student's mental state in learning math. This includes students' self-efficacy, which refers to their belief in their abilities to succeed in math across different situations and challenges. Strong self-efficacy can influence a student's motivation, how effectively they tackle problems, and their resilience in the face of difficulties. Conversely, low self-efficacy can lead to students giving up easily, becoming discouraged, and even experiencing math-related stress or anxiety. Meanwhile, Yeh et al. (2019) cited that Mathematics is an abstract subject; hence, it causes many pupils to lose interest, thus resulting in low achievement. Summer (2020) also cited that apart from an abstraction of mathematics causing low interest in pupils, experiencing anxiety about learning mathematics also has contributed to disliking the subject.

4.0 Conclusion

Pupils are motivated to learn Mathematics if the factors that interest them are incorporated into the teaching-learning process, such as interesting and enjoyable teaching pedagogy, visually attractive instructional materials, authentic assessment strategies that will measure their learning progress in class, and using collaborative learning strategy in doing performance tasks. As revealed in the result, however, many pupils claimed Mathematics to be their subject with difficulty. Interest is a key factor in improving the teaching and learning of mathematics. Students' attitudes towards math are shaped by their interest in the subject. Those with a positive attitude enjoy learning math and are likelier to work hard and perform well. Conversely, students who lack interest in math are likelier to skip classes and struggle with the subject.

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

This research has no conflict of interest of any sort as far as this study is concerned.

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9.0 References

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