International Journal of Education and Practice
2026 Vol. 14, No. 3, pp. 131-142
ISSN(e): 2310-3868
ISSN(p): 2311-6897
DOI: 10.18488/61.v14i3.5039

Mathematics performance of public senior high schools in the Philippines in the new normal

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Article History
Received: 23 February 2023
Revised: 30 March 2026
Accepted: 18 May 2026
Published: 14 July 2026

Keywords
Mathematics performance
New normal
Senior high schools.

ABSTRACT

This study gauged the academic performance in mathematics of public senior high school students in the Philippines as another milieu for promoting better values and meaningful instruction. It employed a descriptive correlational method to gather data on the mathematics performance of Grade 11 public senior high school students in Western Cebu, Philippines. The researchers used a universal sampling comprising 1,148 students. A validated mathematics practice test questionnaire was employed to gather relevant data measuring students' basic general mathematics knowledge. The questionnaire focused only on the competencies in general mathematics. The data gathered were statistically treated using frequencies, simple percentages, weighted means, the Chi-square test of independence, Pearson r, and the t-test. The results show the poor mathematics performance of public senior high schools. The study concluded that the variables like school, type of school completed in junior high school, track enrolled in senior high school, age, average final grade in junior high school, and gender do play a significant role in the attitude and performance in General Mathematics of students. The researchers recommend that a similar study be conducted in a new context, location, and culture, and re-assess and expand the theory used by the researchers, and that the proposed action plan be carried out and monitored.

Contribution/Originality: This study uniquely examines the General Mathematics performance of 1,148 Grade 11 students across Western Cebu, Philippines, bridging the gap between student demographics and performance. Unlike broader studies, it provides a localized, actionable intervention framework tailored to specific school tracks, directly addressing the identified mastery deficits in this region.

1. INTRODUCTION

Mathematics is not only about numbers, letters, variables, equations, computations, and algorithms, but also about understanding and performing the subject. Learners' mathematical performance can be measured based on the skills learned in their previous grade level. Mathematical tools are employed to gauge the learners' level of mathematical attitude that would bring out their performance in general mathematics. Learners must master the necessary skills in mathematics as a prerequisite for college enrollment when choosing their course or career pathway.

Implementing the K-to-12 Mathematics Curriculum Guide in the Philippines through the Department of Education (DepEd) underscores the requirement for students to learn and investigate arithmetic thoroughly and with much profundity because its value goes beyond the classroom and school. Regarding secondary school mathematics,

one should continuously operate on the principle of guilty until proven innocent; every topic must be presumed unnecessary until proven otherwise. Teaching practices in other countries also point to a similar conclusion: something done does not mean it is the only way of doing things. One has to compare and consider, and even if one's practice ultimately turns out to be the better way for your country, it does not imply flawlessness, and these flaws must be addressed.

The researchers, as public school teachers teaching Mathematics for more than 15 years, affirm that the ability of the learners to compute, solve problems, and apply concepts and skills in Mathematics is meager. Consequently, teachers must draw in, encourage, and empower students to achieve the twin goals of Mathematics problem-solving and critical thinking, especially in senior high school, which is the concluding part of primary education.

Ongoing improvements to physical infrastructure and pedagogical resources remain essential for the effective implementation of the prescribed curriculum. Furthermore, a significant challenge in preparing students for the rigors of Senior High School Mathematics is their insufficient mastery of foundational competencies. This lack of prerequisite knowledge often creates a gap that hinders their transition to more advanced mathematical concepts.

The researchers observed that students differ in how they go about learning, thinking, and problem-solving. Some comprehend more when seeing graphs, tables, and figures, while some understand better when reading their lessons or hearing somebody lecturing or doing creative activities in class. They find mathematics a boring subject that needs a lot of time and practice. Students lack mastery of the necessary skills in mathematics when they reach Senior High School, which hinders them from loving and appreciating the subject.

2. THEORETICAL FRAMEWORK

This study is anchored in Mathematical Learning Theory by Atkinson and is supported by Chaos Theory by Poincaré and the Theory of Realistic Mathematics Education by Freudenthal (see Figure 1).

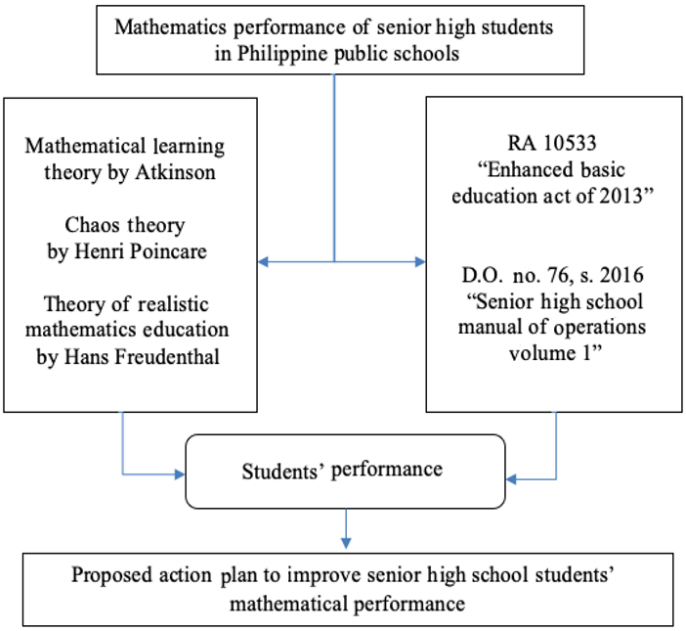

Figure 1. The framework of the study.

Mathematical Learning Theory attempts to depict and clarify conduct in quantitative terms. Crafted by Atkinson (1972) is incredibly fascinating because he applied the numerical learning hypothesis to the plan of a language expression educational program.

Chaos Theory is the field of study in science that reviews the conduct and state of dynamical systems that are profoundly sensitive to initial conditions (Kantz & Schreiber, 2004; Kotyrba, 2015).

The Theory of Realistic Mathematics Education (RME) is a domain-specific instruction theory for mathematics (Barnes, 2005; Gravemeijer, Lehrer, Van Oers, & Verschaffel, 2013). The characteristic of RME is that productive, realistic situations are prominent in learning (Van Den Heuvel-Panhuizen & Drijvers, 2020). These circumstances serve as a hotspot for starting the development of scientific ideas, devices, and methods, and as a setting wherein students can, in a later stage, apply their numerical information, which at that point, bit by bit, has become increasingly formal and general and less setting-specific.

The Philippine Republic Act No. 10533 is an Act that enhances the Philippine Basic Education System by strengthening the primary education curriculum. The issuance of the DepEd Order No. 76, s. 2016, also known as the Senior High School Manual Operation Volume One, emphasizes the opening of the Senior High School classes as a guide to all the school heads to carry out all necessary preparations before the opening of the classes.

Senior High School (SHS) represents the final two years of the K-to-12 system, where students engage in both general core subjects and specialized tracks. The curriculum is specifically designed to cultivate 21st-century skills, preparing graduates for four distinct exits: higher education, middle-level skills development, employment, or entrepreneurship. This holistic approach ensures that students are not only academically prepared but also possess the life and career skills necessary for modern professional environments.

A multilevel analysis of reading and math tests conducted by Arikan, Van De Vijver, and Yagmur (2017) showed that students with higher scores on an index of economic, social, and cultural status attained higher achievement scores at the individual level. At the national level, differences in reading performance could be predicted by Migrant Integration Policy Index (MIPEX) education scores and the human development index of participating nations, but not those in mathematics. Effect sizes revealed a difference for reading and mathematics after accounting for background traits. However, Turkish immigrants' and mainstreamers' scores increased after a similar correction for background variables.

Fan, Xu, Cai, He, and Fan (2017) further uncovered that the schoolwork–accomplishment relationship in math/science was more grounded for elementary and secondary school students than for center school students. Additionally, the schoolwork–achievement relationship in math/science was demonstrated to be the most grounded in the examinations, including US understudies, though it was the most vulnerable in the investigations, including Asian students.

Quantitative outcomes and personal discoveries of the investigation of Clark (2015) uncovered that the study participants reacted well to the flipped model of guidance and encountered an expansion in their commitment and correspondence when compared to the customary study hall experience. The understudy members likewise perceived upgrades like training and utilizing class time with the flipped guidance model. Regarding scholarly execution, no critical changes were exhibited between the flipped model of guidance students and those instructed in a current study hall condition.

STEM PBL guidance affected understudy accomplishment in science by both understudy segment foundations and execution levels. Low-performing students demonstrated factually higher development rates on arithmetic scores than upper and center-performing students over the three years. Also, the understudy's ethnicity and financial status were good indicators of scholastic accomplishment. The consequences of the present investigation suggested that STEM PBLs in schools profited from low-performing students to a more remarkable degree and diminished the achievement gap (Han, Capraro, & Capraro, 2015).

The Passolunghi, Caviola, De Agostini, Perin, and Mammarella (2016) discoveries indicated that high Math Anxiety (HMA) students performed poorly in several aspects of academic achievement, but not in reading and writing skills. These students also scored lower on short-term memory and Working Memory (WM) tests compared to children with Low Math Anxiety (LMA). Additionally, regression analysis showed that deficits in inhibitory control and fact retrieval were the most significant factors in classifying children as having HMA or LMA.

Livieris, Drakopoulou, Tampakas, Mikropoulos, and Pintelas (2019) look at and assess the adequacy of two

wrapper techniques for semi-supervised learning calculations for forecasting the students' performance in the last assessments. The first numerical tests demonstrate that the upside of semi-supervised strategies is that the arrangement precision can be improved by using a few marked and numerous unlabeled data to create dependable expectation models.

Recent research emphasizes a holistic approach to math achievement. Arhin (2015) suggests that positive student attitudes should be supported by teachers using performance-oriented instruction. Supporting this, Visser, Juan, and Feza (2015) found that parental education levels are just as influential as school resources in determining student outcomes. Finally, Kiwanuka, Van Damme, Van Den Noortgate, Anumendem, and Namusisi (2015) identified that achievement is a product of multiple layers, with individual student traits, classroom dynamics, and overall school climate acting as significant predictors. Their data explained nearly 84% of the differences seen at the school level, underscoring the importance of a supportive home and school environment in fostering mathematical proficiency.

Discoveries of Zalmon and Wonu (2017) indicated that the number of inhabitants who sat for WASSCE in all arithmetic expanded by 147.76% after 13 years, and that improvement in performance was noteworthy with time. In light of the discoveries, the investigation recommended, among others, that the new instructional practices and systems for science education and learning be supported.

Froiland and Davison (2016) indicate that parental and student expectations, along with peer influence, are critical early predictors of intrinsic math motivation. This internal drive leads to increased enrollment in advanced courses and higher achievement in later high school years. Interestingly, the study concludes that parental expectations carry more weight than student aspirations in determining long-term success and motivation. These results suggest that interventions aimed at improving math performance should focus heavily on the role of parental influence.

The investigation by Murphy (2019) affirms that socio-economic status (SES) is emphatically attached to interest and accomplishment in these subjects and that nonmetropolitan schools will generally perform more ineffectively than urban schools in these regions. It shows that nonmetropolitan schools are less inclined to offer propelled arithmetic subjects than urban schools, and where they do, their students are less likely to pick those choices. This examination uncovers that relationships between arithmetic execution and SES are far more fragile in the nonmetropolitan school population than in the urban school population.

Nicholas, Poladian, Mack, and Wilson (2015) demonstrate that the more elevated arithmetic levels taken in free senior school are reliable indicators of accomplishment in first-year science and arithmetic. Nevertheless, the accomplishment in the top groups of each degree of arithmetic taken in senior auxiliary school can and frequently outflank their companions who study a more significant level of science at school. However, they accomplish a lower result.

The fundamental discoveries of this quantitative research task of Anderton, Hine, and Joyce (2017) were that: the degree of optional arithmetic examined, concentrating on physical science courses at auxiliary school, and the completion of both advanced-level arithmetic and science courses are connected with higher first-year college Grade Point Average (GPA).

Research by Law (2018) highlights that students' performance in mathematics and their occupational goals are primary drivers of the gender divide in advanced science enrollment. The findings imply that closing the gap requires addressing the lack of confidence and lower career interest in science among 15-year-old girls, as these factors, more than innate ability, often dictate future academic choices.

The consequences of the investigation of Thien and Ong (2015) demonstrated that the Index of economic, social, and cultural status (ESCS), arithmetic self-efficacy, and science tension effects affect math execution in Malaysia and Singapore at the individual level. The extent of young men at the school level has no binding effect on arithmetic execution for Malaysian and Singaporean students. ESCS means that the school level positively and critically impacts arithmetic execution in Malaysia, but not in Singapore.

There is a unique least-acquired competency per content subject of General Mathematics and many Strategic Intervention Materials. AniMath is proposed as an intervention material to enable the students to gain proficiency in the least acquired skills. Educators ought to know about the particular essential capabilities of SHS's General Mathematics, and together with instructional leaders, they should ensure that the essential abilities are acquired before showing the new aptitudes to guarantee preparation (Herrera & Dio, 2016).

Coronel and Tan (2019) found that the Self-Blend Approach (SBA) significantly bolstered student achievement and information retention compared to non-SBA techniques. Their analysis also highlighted a meaningful disparity in 21st-century skill acquisition; students in the SBA cohort outperformed the control group in several key domains, including ethics, persistence, teamwork, and effective communication.

Ng (2018) investigated joint proof supporting the advantages of receiving new, versatile objectives near dominance objectives. Relapse investigations found critical communication between professional social and dominance objectives in anticipating more significant positive learning frames of mind and lower surface learning intentions. Bunch examinations affirmed that understudies underwriting professional social objectives, execution approach objectives, and authority objectives in their objective profiles had a versatile pattern of recognition, utilization of procedures, learning thought processes, and grade goal in arithmetic.

Discoveries of the investigation of Huang (2017) show that a first increment joins the augmenting hole marvel in the level of students arriving at the advanced global benchmark and massive development in the impact of family foundation on student performance. In Taiwan, the extending hole wonder usually shows among students of various school passage companions, sexual orientations, and local locations; the occasion happens predominantly inside study halls.

Because of the present review, the Philippines was positioned in the low 70s in the 2018 Program for International Student Assessment (PISA), an international study of 15-year-old students across 79 nations done by the Organization for Economic Co-operation and Development (OECD). The Philippines ranked 79th in per capita income, with a value of 340 compared to the OECD average of 487. Filipino students also scored low in arithmetic and science, with 353 points and 357 points, respectively, against an OECD average of 489 for both subjects.

The consequences of the evaluation program will be used to establish a pattern for global models and benchmark the effectiveness of successful changes in education. The PISA results, along with the researchers own assessments and studies, will assist in organizing, detailing, and programming, the DepEd said. It noted that the PISA results, which reflected students' performance in the National Achievement Test, highlighted the urgency of addressing issues and gaps in achieving quality basic education in the Philippines.

The DepEd propelled a program driven by the DepEd that would actualize forceful changes to improve the quality of essential training. The program would center on four key zones: the survey and refreshing of the K to 12 programs, the improvement of learning offices, upskilling and reskilling of educators and school heads, and the commitment of partners, for example, guardians and guards of students, for help and joint effort. This guarantees that no student gets left behind in any part of the nation. The office likewise called for national inclusion in the program in promoting the nature of fundamental education in the Philippines.

These studies and literature are deemed necessary for formulating variables concerning the mathematics performance of senior high school students in Western Cebu, Philippines.

2.1. Objectives of the Study

This research determined the mathematics performance of Grade 11 public senior high school students in Western Cebu, Philippines, as the basis for proposing an action plan for teachers and learners. Specifically, it determined: 1) the profile of the respondents concerning age, gender, average final grade in Grade 10 mathematics, type of junior high school completed, and track enrolled in the senior high program; 2) the performance of the respondents in general mathematics; 3) the significance of the relationship between the profile of the respondents and

their mathematical attitudes and performance in general mathematics; 4) the significance of the difference in mathematical attitude and performance in general mathematics.

3. METHODOLOGY

This study used a descriptive correlational method to determine the mathematics performance of Grade 11 public senior high school students in Western Cebu, Philippines. It was conducted at Buanoy National High School with 643 respondents, Nangka National High School with 248 respondents, and Jose Chona Jo Memorial National High School with 257 respondents. There were 1,148 total respondents in the study who were chosen using universal sampling. These public high schools are located in Balamban, Cebu, Philippines.

This study used a mathematics practice test questionnaire to gather relevant data measuring students' basic general mathematics knowledge. The questionnaire focused only on competencies in general mathematics, such as functions, rational functions, and exponential functions, which were already discussed in their junior high school mathematics. The next part gathered data on the respondents' profiles, including their age, gender, average final grade in Grade 10 mathematics, type of junior high school completed, and track enrollment in the senior high program.

The survey tool was given to each of the respondents selected. A good time was given to the latter as the researcher facilitated the questionnaire distribution. On the other hand, each student was encouraged to rate the extent of the observable behavior they experienced and perceived towards the subject or their teachers. This study recognized some limitations. Some students may be subjective by not rating the item truthfully for personal reasons. This instance was, however, acknowledged by the researcher. The focus of this study was to determine the significant relationship between the students' profiles, such as age, gender, average final grade in math in their junior high school, type of school completed, and the specific track enrolled in the senior high school, towards their mathematical performance. There could be possible variables that affect a student's performance in mathematics that were not looked into in this study.

The data were analyzed using descriptive statistical tools to find the percentage and the weighted mean. The Chi-square test of independence and the Analysis of Variance (ANOVA) were used to determine the significance relationships and the differences between the variables, respectively. The t-test was used to find the level of significant correlation against the .05 level of significance.

The researchers utilized informed consent in seeking the approval of the Schools Division Superintendent to conduct a study on all Grade 11 senior high school students of Buanoy National High School, Nangka National High School, and Jose Chona Jo Memorial National High School, and the respondents' approval to partake in this scientific study specifically in the variables for age, gender, grades in Grade 10 mathematics, and the like.

This study aims to guarantee the individual's right to privacy. The entire technical and legal framework gathered by the researcher ensures that the respondents' data are safe from unforeseen, unintended, or malicious use. A data protection strategy is used to ensure the accuracy of the data.

4. RESULTS AND DISCUSSION

4.1. Profile of the Respondents

Table 1 shows the profile of the research subjects as regards the variables in the statement of the problem, namely, age, gender, average final grade in Math in their junior high school, type of high school completed, and the chosen track the respondents enrolled in their senior high school.

Table 1. Profile of the respondents.

Profile		Buanoy National High School (NHS) (n = 643)		Jose Chona Jo Memorial National High School (MNHS) (n = 257)		Nangka National High School (NHS) (n = 248)		Overall (N = 1148)	
		f	%	f	%	f	%	f	%
A.	Age (In years)								
	14 - 16	222	34.53	54	21.01	87	35.08	363	31.62
	17 - 19	393	61.12	182	70.82	150	60.48	725	63.15
	20 and above	28	4.35	21	8.17	11	4.44	60	5.23
	Mean :	17.07		17.56		17.03		17.17	
	St. dev:	1.22		1.45		1.21		1.29	
B.	Gender								
	Female	365	56.77	134	52.14	140	56.45	639	55.66
	Male	278	43.23	123	47.86	108	43.55	509	44.34
C.	Average final grade in math								
	90 - 100 (Outstanding)	302	46.97	25	9.73	93	37.50	420	36.59
	85 - 89 (Very satisfactory)	275	42.77	57	22.18	74	29.84	406	35.37
	80 - 84 (Satisfactory)	42	6.53	79	30.74	54	21.77	175	15.24
	75 - 79 (Fairly satisfactorily)	24	3.73	96	37.35	27	10.89	147	12.80
	Mean:	89.30		82.20		87.11		87.23	
	St. dev:	4.59		5.07		5.67		5.70	
D.	Type of high school								
	Private	24	3.73	3	1.17	6	2.42	33	2.87
	Public	619	96.27	254	98.83	242	97.58	1115	97.13
E.	Track enrolled								
	Acad – ABM (Accountancy, Business, and Management)	91	14.15	-	--	29	11.69	120	10.45
	Acad – GAS (General Academic Strand)	-	--	141	54.86	-	--	141	12.28
	Acad – HUMSS (Humanities and Social Sciences)	260	40.44	-	--	132	52.23	392	34.15
	Acad – STEM (Science, Technology, Engineering, and Mathematics)	91	14.15	-	--	38	15.32	129	11.24
	Arts & design	49	7.62	-	--	-	--	49	4.27
	TVL (Technical-Vocational-Livelihood) – HE (Home Economics)	55	8.55	-	--	31	12.50	86	7.49
	TVL – IA (Industrial Arts)	97	15.09	116	45.14	18	7.26	231	20.12

Among the 1,148 total respondents, 643 are from Buanoy National High School, 257 are from Jose Chona Jo Memorial National High School, and 248 are from Nangka National High School.

The overall mean of the profile respondents for the three public senior high schools in Balamban, Cebu, in terms of age, was 17.17 years old, and most of the respondents' ages fell within the interval between 17 and 19 years old. The majority of the respondents were females. The final average grade of the respondents got the highest percentage of the respondents' grades fell in the range between 90 and 100, with a descriptive rating of outstanding, which comprised 36.59% of the total respondents, while only a few got an average in the interval between 75 and 79, as reasonably satisfactory, which was 12.80% of the total respondents. Also, it shows that the total respondents completed their junior high school in private high schools (2.87%) and public high schools (97.13%).

The study revealed that the type of school completed in junior high school, track enrolled in senior high school,

age, average final grade in junior high school, and gender had a significant relationship with the mathematics attitude and performance of the respondents. The variables like school, track enrolled, average final grade, and gender had a significant difference in mathematics attitude, while the type of school and age showed no significant difference in mathematics attitudes of the respondents.

4.2. Mathematics Performance in General Mathematics

Regardless of their preferred career path or learning strand, General Mathematics is one of the core subjects designed for Grade 11 Senior High School Students (Aged 16 or 17). Eighty hours must be spent teaching each subject per semester. Business mathematics, logic, and topics related to exponential, logarithmic, and rational functions are all covered in general mathematics.

The current K–12 mathematics framework utilizes a spiral curriculum that spans from Kindergarten through Grade 10. Because of this pedagogical design, students entering Senior High School (SHS) General Mathematics have already encountered several core concepts during their Junior High School years. This curricular overlap provides a strategic advantage, allowing educators to scaffold new learning by intentionally building upon the foundational knowledge students have already acquired.

Table 2 shows the mathematics performance in general mathematics of the three identified senior high schools. The questionnaire covers only the topics on rational and exponential functions and other necessary competencies in junior high school mathematics for 30 items to be answered for 60-90 minutes.

Table 2. The respondents' mathematics performance in general mathematics by school.

Raw scores	Description	Buanoy NHS (n = 643)		Jose Chona Jo MNHS (n = 257)		Nangka NHS (n = 248)		Overall (N = 1148)	
		f	%	f	%	f	%	f	%
0-5	Poor	57	8.86	34	13.23	24	9.68	115	10.02
6-11	Fair	372	57.85	153	59.53	112	45.16	637	55.49
12-17	Good	182	28.30	65	25.29	103	41.53	350	30.49
18-23	Very good	32	4.98	5	1.95	9	3.63	46	4.01
24-30	Excellent	0	0.00	0	0.00	0	0.00	0	0.00

Based on the frequency of scores, Buanoy National High School has the highest percentage of 57.85% of the raw score under the interval of 6-11, having a Fair description, followed by the raw scores in the interval of 12-17 for 28.30% with Good as the descriptive equivalent, 8.86% under 0-5 interval of raw scores which is weak and only 4.98% who got 18-23 which is indicated as Very Good.

The same trend applies to Jose Chona Jo Memorial National High School's raw scores from 6-11 (Fair), ranked 1st with 59.53%, 12-17(Good), ranked 2nd with 25.29%, 0-5 (Poor), ranked 3rd with 13.23%, and 4th is between 18-23 (Very Good) with1.95% only.

Likewise, Nangka National High School got the highest percentage of 45.16 under raw scores between 6-11 (Fair), followed by 12-17 (Good) with 41.53%, 0-5 (Poor) with 9.68%, and 18-23 (Very Good) with 3.63%.

Statistically, the overall mathematical performance of the respondents in general mathematics is fair, with the highest percentage of 55.49%, and nobody got 24-30, raw scores who are excellent in the subject. This means that students in the big schools in public senior high schools in Balamban District need a better foundation or mastery of the subject.

All subjects are essential for learners and educators, but mathematics education serves a general purpose of the school to develop human beings mentally, physically, and emotionally. It makes people creative and responsible. Mathematics education enables learners to meet society's demands for an adequately qualified and flexible workforce.

Capuno et al. (2019) found that the use of instructional media contributes to academic performance. They added that technology could not work, but the learning would be meaningful if a teacher with skills and knowledge used it.

It is the teacher's strategy to manipulate or transform technology for the students to learn efficiently.

4.3. Test of the Significance of the Relationship

The Chi-Square Test was used to determine the significance of the relationship between mathematics attitude, performance, and the profile of respondents from three public senior high schools. As shown in Table 3, the computed Chi-square value for Math attitudes and performance indicates a high degree of correlation concerning the degrees of freedom (df), but the critical value was lower than the computed Chi-square. This suggests a significant relationship between Mathematics Attitude and Mathematics Performance of the respondents.

Table 3. The significance of the relationship between the profile of the respondents and their mathematics performance.

Variables	Computed chi-square	df	Critical value	Significance	Results
A. Math performance					
School	27.227	6	12.592	Significant	Ho rejected
Type of school	37.108	3	7.815	Significant	Ho rejected
Track enrolled	346.096	18	28.869	Significant	Ho rejected
Age	19.360	6	12.592	Significant	Ho rejected
Average final grade	286.533	9	16.919	Significant	Ho rejected
Gender	25.425	3	7.815	Significant	Ho rejected

As seen in Table 3, the type of school completed in junior high school, track enrolled in senior high school, age, average final grade in junior high school, and gender have a significant relationship with the mathematics attitude and performance of the respondents.

According to Yenilmez, Girginer, and Uzun (2007), there is a clear disparity in anxiety levels based on academic standing, with lower-achieving math students reporting more distress than those with moderate or high success. This may indicate that poor past performance creates a fear of recurring failure, though it is equally possible that high anxiety levels serve as a barrier to success. Notably, improved mathematics achievement is often accompanied by a more positive student attitude. In addition to these internal factors, external environments also influence student interests; James and Richards (2003) found that boys in single-sex schools are more likely to develop a lasting engagement with the humanities, influencing both their academic and professional trajectories.

In effect, according to Peteros, Columna, Etcuban, Almerino, and Almerino (2019), many students perform poorly in Mathematics. Similarly, the proportion of low-performing students in Mathematics relative to the total student population is a key factor in the quality of Mathematics instruction. Regarding science education, it seems challenging for students to adapt to the subject due to their learning attitudes. Overall, students' outlook on Mathematics is highly negative. Despite teachers being receptive and friendly, most students dislike numbers. This attitude impacts their learning experience and overall performance in the subject.

Educators require quality training in the field of Mathematics that would assist them in arousing students' self-confidence, interest, and attitude for an interactive class discussion. Therefore, it is crucial for teachers to assess students' attitudes towards engaging with and learning Mathematics. This would serve as a plan to help each student embrace the subject effectively.

4.4. Test of the Significance of the Difference

The Analysis of Variance was used to determine the significance of the difference in mathematics performance when grouped by its profile (see Table 4).

Table 4. The significance of the difference in mathematics performance when grouped by its profile.

Math performance when grouped by	F-value	P-value	Significance	Result
School	7.92	0.000	Significant	Ho rejected
Type of school	19.30	0.000	Significant	Ho rejected
Track enrolled	62.48	0.000	Significant	Ho rejected
Age	3.65	0.000	Significant	Ho rejected
Average final grade	26.03	0.000	Significant	Ho rejected
Gender	32.21	0.000	Significant	Ho rejected

Table 4 shows the significance of the difference in mathematics performance when grouped by its profile. The findings show that the F-value is more significant than the P-value, which is zero. The school, type of school completed in the junior high school, track enrolled in the senior high school, age, average final grade in math in junior high school, and gender have a significant difference in mathematics performance of Buanoy National High School, Jose Chona Jo Memorial National High School and Nangka National High School, Balamban, Cebu when grouped by its profile.

Results of the study of Ma and Xu (2004) indicated that, over the whole of junior and senior secondary school, earlier low science accomplishments were permanently identified with later high arithmetic nervousness. However, earlier high math tension was barely identified with later low arithmetic accomplishment. Science accomplishment was more dependably stable from year to year than arithmetic nervousness. There were measurably huge sexual orientation contrasts in the causal relationship between arithmetic nervousness and scientific accomplishment. Earlier low science accomplishment is necessarily identified with later high arithmetic nervousness for young men over the whole junior and senior secondary school, yet young ladies at the primary change focus, as it were. Science nervousness was more consistently stable from year to year among young women than among young men.

5. CONCLUSION

Based on the findings of the study, it is concluded that variables such as school, type of school completed in junior high school, track enrolled in senior high school, age, average final grade in junior high school, and gender do play a significant role in students' attitude and performance in General Mathematics. Other variables could also influence students' attitude and performance in General Mathematics.

6. RECOMMENDATIONS

Inasmuch as the results of this study strongly support theories concerning the poor mathematics performance of public senior high schools in Balamban District, Cebu, the researchers hope that DepEd, school administrators, teachers, and learners will consider this study and realize the action plan made to improve mathematics performance. Teachers should intensify all the existing programs or activities like math clubbing, math challenge competitions, and other pedagogies related to math to encourage students to be more interested in mathematics.

It is also recommended that future researchers conduct similar research in a new context, location, and culture, and reassess and expand the theory used by the researchers.

Funding: Cebu Technological University gave funding support for publication.
Institutional Review Board Statement: The study involved minimal risk and followed ethical guidelines for social science fieldwork. Formal approval from an Institutional Review Board was not required under the policies of Cebu Technological University, Philippines. Informed verbal assent was obtained from all participants, and all data were anonymized to protect participant confidentiality.
Transparency: The authors state that the manuscript is honest, truthful, and transparent, that no key aspects of the investigation have been omitted, and that any differences from the study as planned have been clarified. This study followed all writing ethics.
Competing Interests: The authors declare that they have no competing interests.
Authors' Contributions: All authors contributed equally to the conception and design of the study. All authors have read and agreed to the published version of the manuscript.

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