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Research Article

Student Perception on The Factors Influencing Their Math Performance in Bokod, Benguet, Philippines

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About Article

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ABSTRACT

Proficiency in mathematical literacy requires skills such as numerical reasoning, basic computation, and spatial understanding. This study explored students' perceptions of factors influencing their mathematics performance and examined their relationship with students' Grade Weighted Average (GWA) for School Year 2023–2024. Using descriptive, comparative, and correlational research designs, the study involved 55 students from Nawal Integrated School and Daclan National High School through complete enumeration, with data analyzed using descriptive and inferential statistics. Findings revealed that students from both schools demonstrated a high level of perception of factors affecting their mathematics performance, identifying teachers' attitudes as the most influential, while their own attitudes and perceptions toward mathematics ranked lowest. Demographic variables such as gender, age, grade level, and number of mathematics teachers showed no significant effect on perception levels. Despite variations, both groups attained a very satisfactory level of performance, with no significant difference between the two schools. However, analysis revealed that one perception factor exhibited a significant correlation with students' mathematics performance, suggesting that while overall perception did not strongly predict achievement, specific factors still played a meaningful role. These findings emphasize the importance of identifying which aspects of perception most influence learning outcomes so educators can focus on key areas particularly teacher-related attitudes and classroom engagement to design targeted interventions that foster confidence, motivation, and improved performance in mathematics.

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1. INTRODUCTION

Math sits at the heart of modern life. It underpins science and technology, drives economic growth, and shows up in everyday decisions from budgeting to navigating (ICMI, 2023; Suleiman & Hammed, 2019). Because it connects to so many subjects, most education systems treat math as a foundational skill.

Yet many students still struggle with math and, in some cases, dislike it. Anxiety, shaky vocabulary of mathematical terms, and gaps in prior knowledge can quickly snowball into avoidance (Savaşçı, 2014; Yeh *et al.*, 2019). Teachers and policymakers across countries report the same pattern: math is essential, but too many learners find it difficult or intimidating (Naiker *et al.*, 2020; Sharma *et al.*, 2019).

The pandemic made this harder. Some students benefited from tools like intelligent tutoring systems, but many experienced unfinished learning and lower proficiency, especially in math (Kuhfeld *et al.*, 2022; Peyser *et al.*, 2022; Spitzer & Moeller, 2023). The resulting challenge is twofold: close skill gaps while keeping instruction at grade level.

There's good news. Interventions that build self-efficacy, make math feel relevant, and invite students to think aloud such as inquiry-based lessons and well-differentiated instruction consistently help (Zakariya, 2019, 2022; Aguhayon *et al.*, 2023). Families and teachers agree that math deserves focused improvement efforts (Hughes, 2023).

Why students succeed or struggle rarely comes down to a single cause. External factors (teaching quality, classroom climate, family support) interact with internal ones (interest, study habits, anxiety). Attitudes matter: students who see math as meaningful and believe they can improve tend to perform better (Peteros *et al.*, 2020; Endagamage *et al.*, 2017). Demographic findings are mixed, so it's wiser to respond to learners' actual needs than to generalize by sex or age (Chaman & Callingham, 2013; Giannoulas & Stampoltzis, 2021).

Curriculum and assessment also shape results. Exam-heavy systems can narrow teaching to coverage and test prep, leaving little room for reasoning, problem-solving, or local context (Khan *et al.*, 2017; Chand *et al.*, 2021). When teachers have time, training, materials, and supportive leadership, students are more likely to engage and persist through challenge (Cronhjort *et al.*, 2018; Suan, 2014).

In the Philippines, national and international indicators suggest room to grow in math achievement (Schwab, 2018; Capuno *et al.*, 2019). Local evidence points to familiar culprits: negative attitudes, patchy foundations, and a curriculum-assessment mismatch. Addressing these requires coordinated work on student beliefs, teacher practice, and smart use of technology.

This study focuses on four levers within schools (1) students' attitudes and perceptions, (2) students' perceptions of teachers' attitudes toward math, (3) teaching methods, and (4) the effectiveness and relevance of the math curriculum and tests how they relate to performance in the post-pandemic context. Motivated by recent NAT results (AY 2022–2023) and classroom observations of weak problem-solving, it asks what students actually experience and what they say helps or hinders them.

Findings can guide practical fixes: clearer goals and feedback, low-anxiety practice, tasks tied to real life, and targeted supports for identified gaps. They can also inform teacher evaluation and professional learning shifting attention from coverage to understanding. Ultimately, the aim is simple and human: help students rebuild confidence, see math as useful and learnable, and lift achievement with strategies that fit their classrooms.

1.1. Conceptual framework

Mathematics is an indispensable component of various fields such as architecture, art, computing, engineering, sports, and business, and it plays a vital role in daily life (Hom & Gordon, 2021; Yadav, 2019). Proficiency in mathematical literacy necessitates several abilities, including the capacity to reason with numbers, execute basic mathematical operations, and employ spatial reasoning (ICMI, 2023). According to the European Commission, EACEA, and Eurydice (2022), many students find mathematics challenging to grasp and master. Furthermore, research has shown that students of all ages encounter difficulties in learning mathematics. The present study endeavors to identify the factors of performance among secondary school students in mathematics. Through the administration of a survey questionnaire, the study seeks to elicit data on the level of perception of students on the factors that affect their academic performance and establish their association with their grade weighted average (GWA) in the SY 2023-2024. By examining this relationship, the study endeavors to shed light on the primary drivers of mathematical performance among secondary school students.

Figure 1 illustrates the paradigm of the study's variables, providing a visual representation of the interconnectedness between the input-process variables and the output.

This guide steered the course of the study, delineating the crucial elements. The profile variables serve as intervening variables which involve the students' demographic profile. This invokes the relationships between process variables under a variety of conditions. Whereas, the process variables encapsulate the preliminary factors under scrutiny hinged on the supposition that they are contingent upon the students' math performance. With this, an output is expected which is an intervention plan to improve the students' performance in Math.

To elaborate, the researcher commenced by gathering the profiles of the students and utilizing these profiles to gauge the students' level of perception. These variables are pivotal in elucidating the level of perception on the factors and level of performance of students.

Furthermore, the process variables encompass the primary variable notably the level of perception of students regarding the factors influencing math performance in terms of students attitude and perception toward mathematics, student perception of teachers attitude toward teaching mathematics, teaching methods, and effectiveness and relevance of mathematics curriculum. Moreover, the secondary data on GWA manifest subsequent to the analysis of the factors.

The Grade Weighted Average (GWA) was the metric to be used to assess students' math performance. GWA is the total final grade obtained from the various tasks. Additionally, students in Grades 1–12 are assessed quarterly based on written assignments, performance tasks, and a quarterly assessment that varies in percentage depending on the subject. The Quarterly Grade (QG) is obtained by transmuting the initial

grade that was calculated from these assessments. Nonetheless, 60 is the minimum required for each subject to pass. The report card mentions these 60 marks by converting them to 75. Thus, 60 is the suggested minimum score for both final and quarterly grades. These grades signify different remarks: 90-100 (Outstanding/Passed), 85-89 (Strongly Satisfactory/Passed), 80-84 (Satisfactory/Passed), 75-59 (Fairly Satisfactory/Passed), and below 75 (Did Not Meet Expectations/Failed).

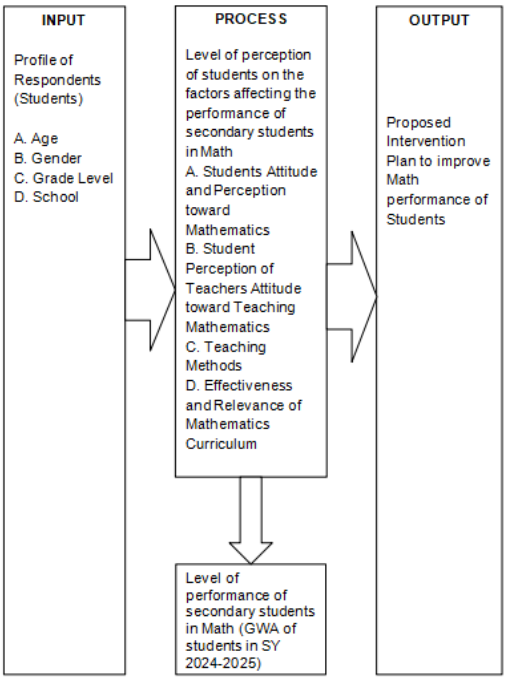

Figure 1. Paradigm of the Study

1.2. Research questions

Generally, this study aims to examine the student perception on the factors affecting their performance in Math. Specifically, it sought to answer the following questions:

i. What is the demographic profiles of the secondary students in terms of:

- Age;
- Gender;
- Grade Level; and
- School?

ii. What is the level of perception of students on the factors affecting their performance in Math according to the following dimensions:

- Students Attitude and Perception toward Mathematics;
- Student Perception of Teachers Attitude toward Teaching Mathematics;
- Teaching Methods; and
- Effectiveness and Relevance of Mathematics Curriculum?

iii. Is there a significant difference in the level of perception of students on the factors affecting their performance in Math when grouped by profile?

iv. What is the level of performance of secondary students in Math?

v. Is there a significant difference in the level of performance of secondary students in Math when grouped by school?

vi. Is there a significant relationship between the level of perception of students on the factors and their level of performance in Math?

vii. What intervention plan is proposed to improve the performance of students in Math?

1.3. Null hypotheses

Based on the problem of the study, the following hypotheses were tested:

i. There is no significant difference in the level of perception of students on the factors affecting their performance in Math when grouped by profile.

ii. There is no significant difference in the level of performance of secondary students in Math when grouped by school.

ii. There is no significant relationship between the level of perception of students on the factors and their level of performance in Math.

2. LITERATURE REVIEW

2.1. Students' attitude and perception toward mathematics

Attitude and perception significantly shape students' engagement and achievement in mathematics. Studies consistently indicate that learners' emotional responses and beliefs about their mathematical capabilities directly influence performance outcomes. For instance, Giannoulas and Stampoltzis (2021) found that students with higher confidence and positive self-concept in mathematics perform better and experience lower anxiety. Similarly, Mazana *et al.* (2019) revealed that students' initial positive disposition toward mathematics declines at higher grade levels due to perceived difficulty and test-driven instruction. Conversely, Vitasari *et al.* (2010) emphasized that mathematics anxiety, often linked to fear of failure, undermines persistence and problem-solving efficiency. In the Philippine context, many learners view mathematics as abstract and irrelevant (de Castro, 2020), indicating a mismatch between learning content and real-life applications. Despite the growing body of international research, few local studies have examined how post-pandemic shifts such as hybrid learning and reduced classroom interaction have reshaped students' attitudes and perceptions of mathematics in the Philippines.

2.2. Teachers' attitude toward teaching mathematics

Teachers' enthusiasm, competence, and relational approach are among the strongest determinants of student motivation and performance. Research by Mazana *et al.* (2019) and Tuimavana and Datt (2017) demonstrated that students' perceptions of teachers' warmth, preparedness, and confidence influence how they emotionally and cognitively engage with math. Etuk *et al.* (2013) further noted that teacher effectiveness reflected through communication, classroom management, and subject mastery predicts positive learning attitudes. Meanwhile, Anyagh *et al.* (2018) found that negative teacher behaviors, such as impatience or lack of encouragement, contribute to learners' math avoidance. In the Philippine context, few studies have explored how teacher attitudes evolved after the pandemic's shift to modular and blended instruction, which may have altered classroom dynamics and teacher-student rapport. This study addresses this gap by investigating how students' perceptions of teachers' attitudes

currently influence mathematics performance.

2.3. Teaching methods

Instructional strategies directly mediate how learners experience mathematics. Traditional teacher-centered methods remain prevalent in many developing countries (Suleiman & Hammed, 2019; Lal, 2016), often limiting critical thinking and collaboration. By contrast, learner-centered and inquiry-based approaches have been shown to improve engagement and understanding (Kafyulilo, 2014; Treesuwan & Tanitteerapan, 2016). The integration of technology and gamified approaches also enhances comprehension and motivation (Hillmayr *et al.*, 2020; Sibimana *et al.*, 2021). In the Philippine context, however, many schools continue to rely on exam-oriented pedagogies due to systemic constraints, large class sizes, and limited digital access. While studies (Arthur *et al.*, 2017; Aguhayon *et al.*, 2023) have emphasized differentiated instruction and remedial interventions to close learning gaps, limited post-pandemic research has assessed whether teachers' methods have adapted to address lingering math skill deficits after prolonged school closures.

2.4. Effectiveness and relevance of the mathematics curriculum

The structure and contextual alignment of the mathematics curriculum play a pivotal role in sustaining interest and competence. Chand *et al.* (2021) and Khan *et al.* (2017) observed that overly theoretical and examination-driven curricula fail to cultivate analytical thinking or real-world problem-solving. Kaya and Kesan (2023) underscored that mathematics instruction should prioritize application and transferability of knowledge to daily life. In developing nations, curricular reforms are often constrained by resource limitations and teacher preparedness (Ali & Jameel, 2016; Dayal & Lingam, 2015). Locally, the Philippine mathematics curriculum under the K–12 and the new MATATAG framework aims to contextualize lessons, yet many students still struggle to see its relevance (Mijares, 2022). Notably, there remains a dearth of empirical studies examining how students perceive curriculum relevance in the post-pandemic era, particularly with the shift toward competency-based and hybrid learning models.

2.5. Identified gaps

Although global and local literature provides insights into each individual factor influencing math performance, few studies holistically analyze how student attitudes, teacher attitudes, instructional methods, and curriculum relevance interact to affect learning outcomes, especially in the post-pandemic Philippine secondary education context. Existing studies often treat these dimensions separately and lack integration that captures their compounded effects on students' motivation and achievement. This research therefore fills a crucial gap by examining the interplay among these four variables in shaping mathematical performance in Benguet secondary schools after pandemic disruptions. The findings aim to contribute to evidence-based strategies for improving mathematics instruction and learner engagement in the new normal of Philippine education.

3. METHODOLOGY

This chapter presented the methods and procedures used in the conduct of the study. This includes the research design, population and locale of the study, data collection instrument and procedure, and the treatment of data.

3.1. Research design

Utilizing a descriptive comparative and correlational research design, the researcher aims to assess the relationship between students' perceptions of various factors and their performance in Mathematics. This particular methodology, as suggested by Curtis *et al.* (2016), is deemed appropriate for extrapolating insights from existing knowledge and data within uniform demographic groups or across diverse populations. It not only identifies the frequency of occurrences but also
clarifies the connections between variables, aptly serving this research's central issue. Conversely, in broad social contexts such as regions, countries, societies, and cultures, comparative analysis is applied to determine and clarify relations among two or more phenomena by giving understandable reasons (Adiyai & Ashton, 2017). In applying this master research design, a questionnaire was employed to explain the study variables.

3.2. Research environment

The research was carried out at Nawal Integrated School and Daclan National High School, both located in the municipality of Bokod, Benguet. Being the researcher's assigned school, Nawal Integrated School provides a unique opportunity for immediate intervention in addressing the problem that has been identified. Nawal Integrated School is a public secondary integrated school in the locality, comprising 5 public secondary schools and 1 private school. These institutions include Daclan National High School, Nawal Integrated School, Ambangeg National High School, Ambuklao National High School, and Bokod National High School. The choice of Nawal Integrated School is strategic inasmuch as the researcher has an affiliation with the school and has noted the stagnation of students' performance in Mathematics in recent years. Additionally, Daclan National High School, a nearby secondary school with grades 7-10, was also included. The heterogeneous student populations of both schools add to the complexity of the subject under study, adding further justification for the choice of these specific locations.

3.3. Respondents of the study

The study involved a total of 55 Grade 7–10 students from Daclan National High School (DNHS) and Nawal Integrated School (NIS), with one section per grade level serving as the sampling unit. Multistage random sampling an essential tool in survey research for selecting participants from large and geographically distributed populations (Bhandari, 2023) was used in DNHS. This approach stratifies the population into progressively smaller groups to ensure representativeness and facilitate the selection of sampling units (Kaplan, n.d.). As Arslan (2023) emphasized, multistage sampling is particularly useful when dealing with populations composed of multiple subgroups, as it enhances the accuracy and efficiency of data collection. In contrast, a full enumeration approach was

employed at NIS, following Arnab's (2017) recommendation for studies with small and homogenous populations. This method allowed the inclusion of all students sharing similar characteristics to ensure comprehensive representation. Accordingly, 28 students were drawn from DNHS, and all 27 students from NIS participated in the study. The inclusion criteria required that all participants be enrolled in the 2024–2025 academic year and voluntarily agree to participate. However, it is important to note that the total sample size (N = 55) is relatively small, which may limit the generalizability of the findings and reduce the statistical power of inferential analyses. Future studies are therefore encouraged to include a larger and more diverse sample to strengthen the robustness and external validity of the results.

Table 1 presents the distribution of respondents across the two schools, offering a clear overview of participant demographics

Table 1. Respondents of the study

School	Number of Students
Nawal Integrated School	27
Daclan National High School	28
Total	55

3.4. Data gathering instrument

Employing a modified questionnaire from Chand *et al.*'s (2021) research on the perceived reasons students underperform in mathematics at Ba and Tavua secondary schools, this study is found to be in agreement with past studies and hence remains relevant. The questionnaire was modified to suit the specific context of the present study. The questionnaire was accessed by online scanning and was readily available to the public. The author's consent was sought via email to make any necessary modifications to the questionnaire; however, in the absence of a response, the questionnaire was used as a point of departure. The validity and reliability of the questionnaire were assessed by piloting it with Daclan National High School grade 11 students. According to Jones *et al.* (2013), questionnaires cannot be replaced in effectively assessing large groups.

With three parts, the questionnaire first collected demographic information from students, including age, gender, grade level, school, and Grade Weighted Average (GWA) in Mathematics. The second part asked complex variables that influence the mathematics performance of secondary students in four dimensions: student attitudes and perceptions towards mathematics, teachers' perception towards teaching mathematics, classroom practice, and usefulness and relevance of the mathematics curriculum. The second factor used a 4-point Likert scale that fully measured students' perceptions. Secondary student information on their math GWA for academic year 2023-2024 also complemented survey answers, rendering analysis richer.

3.5. Data collection procedure

During the study, the researcher adhered to a systematic approach. Initially, a formal request letter was sent to the school principal to obtain permission for administering the questionnaire to the identified respondents. Upon receiving the necessary approval, the voluntary participation of the respondents were sought through informed consent, involving their parents or guardians. Informed consent encompasses a comprehensive written document outlining the study's purpose, the voluntary nature of participation, time commitment, intended use of results, the right to withdraw from the study, and the confidentiality of obtained information through data collection methods (Creswell, 2013). The data collection process commenced with personal administration of the questionnaire during their break time and after class hours. A series of questionnaires were distributed to them to complete before to their break. Those who were unable to complete the questionnaire during their break were asked to wait for ten minutes after class to complete it. Following their completion of the surveys, they were retrieved. Data gathering occurred in two settings to ensure respondents can answer accurately. Additionally, measures were implemented to uphold the privacy and anonymity of participants and ensure the utmost confidentiality of the research data.

3.6. Statistical treatment

The gathered data underwent analysis utilizing both descriptive and inferential statistics, including frequency and percentage distribution, mean, f-test and t-test, and Pearson Correlation Coefficient. The means and percentages of each variable were thoroughly assessed and presented in tables.

To examine the initial inquiry concerning the demographic profile data distribution of secondary students based on their age, gender, grade level, and school, the researcher employed frequency and percentage distribution.

To address the secondary inquiry regarding the students' perception of the factors influencing their performance in Math, mean analysis was utilized. This involved the use of a specified rating scale for evaluation.

Table 2. Rating scale for evaluation

Range	Scale	Descriptive Equivalent	Qualitative Description
3.26-4.00	4	Strongly Agree [SA]	Very Highly Perceived
2.51-3.25	3	Agree [A]	Highly Perceived
1.76-2.50	2	Disagree [D]	Least Perceived
1.00-1.75	1	Strongly Disagree[SD]	Not Perceived

Further, the mean was used to address the fourth inquiry regarding the performance of secondary students in Math for the academic year 2023-2024. A designated rating scale was employed for this purpose.

Furthermore, to assess the third and fifth questions in the level of perception of students on the factors affecting their performance in Math when grouped by profile and the significant difference in the level of performance of secondary students in Math when grouped by school, independent f-test and t-test were applied.

All tests were set at the 0.05 level of significance.

Table 3. Scale

Scale Range	Qualitative Description
90-100	Outstanding
85-89	Very Satisfactory
80-84	Satisfactory
76-79	Fairly Satisfactory
Below 75	Did not meet Expectation

Lastly, in examining the significant relationship between the level of perception of students on the factors and their level of performance in Math, Pearson Correlation Coefficients were carried out.

4. RESULTS AND DISCUSSION

The discussions of the results of the study are presented in this chapter. This chapter also includes the presentation of the analysis, interpretations and implications of the study.

4.1. Profile of the respondents

Table 4 presents the profile of the respondent in the two schools of Bokod district. As gleaned on the table, the data indicates that male students constituted the majority of the study participants. Specifically, 12 male students were from DNHS, while 17 were from NIS, with a total frequency of 29 which accounts for 52.73% of the total sample population. On the other hand, female students represented a slightly smaller proportion of the respondents. A total of 26 female students participated in the study, making up 47.27% of the sample.

In terms of age, the majority of the students belonged to the age range of 13 to 14 years, with 24 students from DNHS and 18 from NIS, resulting in a total of 42 students, which accounts for 76.36% of the overall population. This was followed by students in the age range of 15 to 16 years, comprising a total of 8 students or 14.55% and and 5 or 10.00% who were from the age range of 11-12 years old.

In addition, the study predominantly involved Grade 8 students, with a total of 20 participants from DNHS and 12 participants from NIS, with a total frequency of 32 students, which constitutes 58.18% of the respondents; followed by Grade 9 and Grade 10 students, who accounted for a total of 9 participants each group or 18.00%. Meanwhile, both Grade 7 students contributed equally to the study having 5 participants, making up 9.09% of the total respondents.

Table 4. Profile of the secondary students

Profile	DNHS		NIS		Total	
	f	%	f	%	f	%
Gender						
Male	12	21.82	17	30.91	29	52.73
Female	16	29.09	10	18.18	26	47.27
Age						
11-12 years old	1	1.82	4	7.27	5	9.09
13-14 years old	24	43.64	18	32.73	42	76.36
15-16 years old	3	5.45	5	9.09	8	14.55
Grade Level						
Grade 7	1	1.82	4	7.28	5	9.09
Grade 8	20	36.36	12	21.82	32	58.18
Grade 9	3	5.45	6	10.91	9	16.36
Grade 10	4	7.27	5	9.09	9	16.36
Total	28	50.91	27	49.09	55	100.00

Note. f-Frequency; %=Percentage

4.2. Level of perception of students on the factors affecting their performance in math

This section explores the level of perception of students on the factors affecting performance in math. It delves into the students attitude and perception toward mathematics, student perception of teachers attitude toward teaching mathematics teaching methods, and effectiveness and relevance of mathematics curriculum.

4.3. Students attitude and perception toward mathematics

Table 5 presents the level of perception of students on the factors affecting performance in math with regards to students' attitude and perception toward mathematics.

The findings of the study indicated that students in both DNHS and NIS held a high perception that they learn mathematics better with technology as reflected by the highest mean scores for each group, with DNHS students obtained a mean score of

2.68 and NIS students obtained a mean score of 2.59 and yielded an highest overall mean of 2.64. Numerous students expressed that they perceive classical ways of studying math as difficult as abstract, but using technology it gives them dynamic visualizations, instant feedback, and adaptive learning paths. Technology offers to some students applications and web tools such as graphing calculators, video tutorials, and games that enable them to learn advanced concepts at their own speed and make math easier and more effective.

This results is similar with Hillmayr *et al.*'s (2020) findings that technology-based learning interventions, such as gamification and interactive software, resulted in increased mathematical performance among students. Furthermore, Bright *et al.* (2024) discovered that using technology in mathematics teaching and learning had a direct impact on student performance. The use of technology in mathematics education can increase students' interest in the subject (Kelley *et al.*, 2020). Technology can assist students in visualizing abstract mathematical concepts, connecting mathematical ideas, and actively engaging with the content (Rashidov, 2020). This can result in enhanced student involvement, enthusiasm, and drive to learn arithmetic. For example, interactive software applications and simulations can provide graphically rich and interactive learning experiences for students, making mathematics more attractive and engaging (Cai *et al.*, 2020). Similarly, gamification of mathematics learning, in which mathematical principles are presented as games, might help pupils learn more effectively and enjoyably. (Sibimana *et al.*, 2021).

On the other hand, students in DNHS and NIS least perceived that mathematics having no relevance to real life as reflected by the lowest mean scores of each group with DNHS obtained a mean score of 1.93 and NIS students obtained a mean score of 1.86 and with the lowest overall mean of 1.90. Students mentioned that they struggle to see how algebraic equations or geometric theorems apply to their daily routines or future aspirations, particularly when instruction focuses solely on abstract theories rather than practical scenarios like budgeting, problem-solving, or technology-based tasks. This makes them frustrated and makes math feel like an academic hurdle rather than a valuable life skill. According to de Castro, 2020) a lack of connection with real life situations could contribute to a lack of student's engagement and motivation toward mathematics, which could potentially hamper the student's perception about the beauty and benefits of mathematics, and how it is a ubiquitous science that can be observed everywhere.

In general, the students perception on factors affecting their performance in math is least with regards to their attitude and perception toward mathematics as evidenced by the overall average mean of 2.21 with DNHS obtained an average mean score 2.21 and NIS obtained an average mean of 2.22. This could be due to the fact that High school learners often underestimate the impact of their attitude and perception towards mathematics on their performance. Many students view math as a difficult and abstract subject, leading to anxiety, lack of motivation, and negative self-beliefs. Furthermore, peer influence, previous experiences, and social prejudices about mathematics can promote a sense that individuals are incapable, exacerbating their aversion to the topic.

Table 5. Level of perception of students on the factors affecting their performance in math in terms of students attitude and perception toward mathematics

Students Attitude and Perception toward Mathematics	DNHS	NIS	Overall	
	Mean	Mean	Mean	Descriptive Equivalent
I have a dislike for mathematics and do not find the subject interesting. {Hindi ko gusto ang matematika at hindi ko mahanap ang asignatura na kawili-wili.}	2.29	2.32	2.31	Least Perceived
I have phobia (fear) for mathematics. {Mayroon akong phobia (takot) sa matematika.}	1.86	2.09	1.98	Least Perceived
Mathematics is normally not counted in my best 4 subjects. {Ang matematika ay karaniwang hindi binibilang sa aking pinakamahusay na 4 na asignatura.}	2.71	2.00	2.36	Least Perceived
I am unable to logically and critically think when working with mathematics. {Hindi ako makapag-isip nang lohikal at kritikal kapag nag aaral sa matematika.}	2.29	2.41	2.35	Least Perceived
I perceive mathematics as a difficult subject to pass. {Nakikita kong mahirap ipasa ang matematika na asignatura.}	2.71	2.55	2.63	Highly Perceived
I perceive mathematics having no relevance to real life. {Nakikita ko ang matematika na walang kaugnayan sa totoong buhay.}	1.57	1.64	1.61	Not Perceived
I lack the foundation (basics) in mathematics. {Kulang ako sa pundasyon (basics) sa matematika.}	2.43	2.32	2.38	Least Perceived
I hardly do any of the class activity and homework assigned. {Halos hindi ako nakakagawa ng anumang gawain sa klase at takdang-aralin na itinalaga.}	1.96	2.27	2.12	Least Perceived

I perceive mathematics containing only arithmetic (numbers, calculations, and computations) with nothing interesting and relevant. {Nakikita ko ang matematika na naglalaman lamang ng aritmetika (mga numero, kalkulasyon, at pag-compute) na walang kawili-wili at nauugnay.}	1.93	1.86	1.90	Least Perceived
I prefer studying other subjects than mathematics. {Mas gusto kong mag-aral ng ibang subject kaysa matematika.}	2.21	2.45	2.33	Least Perceived
I learn mathematics better with technology. {Mas natututo ako ng matematika gamit ang teknolohiya.}	2.68	2.59	2.64	Highly Perceived
I hardly study for mathematics exams. {Halos hindi ako nag-aaral para sa mga pagsusulit sa matematika.}	2.04	2.23	2.14	Least Perceived
I fail most of the mathematics exams. {Bumagsak ako sa karamihan ng mga pagsusulit sa matematika.}	2.21	2.45	2.33	Least Perceived
I do not wish to pursue mathematics, science, engineering, and technology courses in universities. {Hindi ko nais na ituloy ang mga kurso sa matematika, agham, engineering, at teknolohiya sa mga unibersidad.}	2.07	1.86	1.97	Least Perceived
Average Mean	2.21	2.22	2.21	Least Perceived

4.4. Teachers attitude toward teaching mathematics

Table 6 presents the level of perception of students on the factors affecting their performance in math in terms of teachers' attitude toward teaching mathematics.

Based on the result, both DNHS and NIS students demonstrate a very highly perception that mathematics teachers always assist slow learners as indicated by the highest mean scores of each school with DNHS obtained a mean score of 3.50 and NIS obtained a mean score of 3.55 and with the highest overall mean score of 3.53. As mentioned by the students, their math teachers make efforts to provide additional support, such as breaking down complex concepts, offering extra time for practice, and remedial strategies during classroom interactions. Also, during their classroom activities, such as group work where struggling learners are paired with faster learners to help them gain confidence by learning alongside their more advanced peers as they explain concepts to others, deepening their own grasp of the material. For some students, their teacher provides a differentiated instruction wherein separate activities were provided to slow learners and advanced learners. Aguhayon *et al.* (2023) noted that well differentiated instruction of teachers filled in the math learning gaps.

Students in DNHS least perceive that mathematics teachers use games and fun activities and make the class practical, exciting, and enjoyable as reflected by the lowest mean score of 2.57. This school is considered a large school with high student-to-teacher ratios, which limit opportunities for personalized and interactive teaching methods. Moreover, students shared that due to limited classroom resources their access to tools or materials for dynamic, hands-on learning, interactive learning, and experiential activities is inconsistent. Also, due to large class sizes it makes it challenging for their teachers to manage and implement group activities or games effectively, leading to a reliance on traditional lecture-based methods. According to Godfrey *et al.* (2023) that with a big class size, the teachers are unable to sustain effective instruction and consistent grading of the students' work.

In NIS, students least perceive that mathematics teachers never ask where they left the lesson the previous day/class as evidenced by the obtained lowest mean score of 2.23. This could be due to the deeper challenge in managing time and engagement under the constraints of the 45-minute period dictated by the Matatag curriculum. This could stem teacher's pressure to cover extensive content quickly, leaving little room for review or individual student check-ins.

Overall, students in both DNHS and NIS held a high perception on factors affecting their performance in math in terms of teachers' attitude toward teaching mathematics as indicated by the obtained overall average mean of 3.11 with DNHS obtained an average mean of 3.10 and NIS obtained an average mean of 3.11. Students stated that in the classroom, their teachers' enthusiasm, confidence, patience, and belief in their potential ignites their confidence and motivation, making even the most complex math concepts feel approachable. Also, their teacher uses question and answer sessions to focus on their students' attention when presenting the material. For some students, some of their teachers who adopt a growth mindset and actively build rapport transform math from a daunting subject into an opportunity for their personal and academic growth. Umugiraneza (2016) mentioned that teachers' confidence in teaching mathematics relates to their commitment or feeling sure about their ability, qualities or ideas in teaching mathematics. In addition, confidence in teaching mathematics is of specific importance to teachers' practices, and that it is reflected in enjoyment of mathematics for its own sake and produces more confident pupils. On the other hand, the findings of Zhou and Liu (2015) shows that a good teacher-student rapport plays an important role in improving students' academic ability in terms of number and algebra.

4.5. Teaching methods

Table 7 shows that level of perception of students on the

Table 6. Level of perception of students on the factors affecting their performance in math in terms of student perception of teachers attitude toward teaching mathematics

Student Perception of Teachers Attitude toward Teaching Mathematics {Pagdama ng Mag-aaral sa Saloobin ng mga Guro sa Pagtuturo ng Matematika}	**DNHS**	**NIS**	**Overall**	
	Mean	**Mean**	**Mean**	**Descriptive Equivalent**
Mathematics teachers are always punctual to classes. {Ang mga guro sa matematika ay laging nasa oras sa mga klase.}	3.29	3.23	3.26	Very Highly Perceived
Mathematics teachers have very good personal and professional characteristics. Very friendly and very approachable. {Ang mga guro sa matematika ay may napakahusay na personal at propesyonal na mga katangian. Napaka palakaibigan at madaling lapitan.}	3.46	3.18	3.32	Very Highly Perceived
Mathematics teachers give clear and easy to understand explanations. {Ang mga guro sa matematika ay nagbibigay ng malinaw at madaling maunawaan na mga paliwanag.}	3.21	3.45	3.33	Very Highly Perceived
Mathematics teachers always motivate students to learn. {Ang mga guro sa matematika ay palaging nag-uudyok sa mga mag-aaral na matuto.}	3.29	3.55	3.42	Very Highly Perceived
Mathematics teachers always assist slow learners. {Palaging tinutulungan ng mga guro sa matematika ang mga slow learners na mag-aaral.}	3.50	3.55	3.53	Very Highly Perceived
Mathematics teachers relate every lesson to real life to make students understand better. {Iniuugnay ng mga guro sa matematika ang bawat aralin sa totoong buhay upang mas maunawaan ng mga mag-aaral.}	3.18	3.32	3.25	Highly Perceived
Mathematics teachers go prepared for mathematics classes. {Ang mga guro ng matematika ay naghahanda para sa mga klase sa matematika.}	3.00	3.23	3.12	Highly Perceived
Mathematics teachers never ask where he/she left the lesson the previous day/class. {Ang mga guro sa matematika ay hindi kailanman nagtatanong kung saan niya iniwan ang aralin noong nakaraang araw/klase.}	2.64	2.23	2.44	Least Perceived
Mathematics teachers always recap the previous lesson and ends the class with proper summary. {Ang mga guro sa matematika ay palaging nagre-recap sa nakaraang aralin at tinatapos ang klase na may wastong buod.}	3.39	3.27	3.33	Very Highly Perceived
Mathematics teachers cater for all types of learners. {Ang mga guro ng matematika ay isaalang-alang lahat ng uri ng mga mag-aaral.}	2.89	3.09	2.99	Highly Perceived
Mathematics teachers give easy to understand and summarized notes. {Ang mga guro sa matematika ay nagbibigay ng madaling maunawaan at buod ng mga tala.}	3.21	3.09	3.15	Highly Perceived
Mathematics teachers use games and fun activities and make the class practical, exciting, and enjoyable. {Gumagamit ang mga guro ng matematika ng mga laro at nakakatuwang aktibidad at ginagawang praktikal, kapana-panabik, at kasiya-siya ang klase.}	2.57	2.73	2.65	Highly Perceived
Mathematics teachers use technology to teach mathematics lessons. {Ang mga guro ng matematika ay gumagamit ng teknolohiya upang magturo ng mga aralin sa matematika.}	2.68	2.55	2.62	Highly Perceived
Average Mean	3.10	3.11	3.11	Highly Perceived

factors affecting their performance in math in terms of teaching methods.

Based on the result, students in DNHS and NIS highly perceived that the teaching method is teacher centered as reflected by the highest mean scores in which DINHS obtained a mean score of 3.04 and 3.23 in NIS and with the highest overall mean of 3.14. According to students, in teacher-centered classrooms, lessons are often delivered through lectures and rote procedures, leaving

little room for their interaction, inquiry, or collaboration. Many students express a desire for more interactive, student-centered approaches that foster collaboration, hands-on activities, and critical thinking methods that cater to their diverse learning styles and encourage deeper understanding. This approach creates a sense of disconnection among them, making it harder for them to grasp concepts deeply, leading to frustration and diminished confidence in their math abilities.

Meanwhile, DNHS and NIS students ranked least that the teaching method is learner-centered as indicated by the lowest mean score in which DNHS obtained a mean score of 2.86 and 2.64 in NIS and with the lowest overall mean of 2.75. As students mentioned, when their teachers' teaching shifts towards more interactive, collaborative, and student-driven activities, they are better able to relate to the material, leading to higher academic achievement and a more positive attitude toward math. They also expressed that when instruction focuses on their needs, and interests, they feel more motivated to actively participate, ask questions, and apply critical thinking skills, leading to improved comprehension and retention. This approach also builds their confidence, feel supported in their learning process, reducing anxiety around challenging math concepts and encouraging a deeper understanding. Kafyulilo (2014) asserted that the role of the teacher in the learner centered approach is to direct class activities and tasks where students explore and create knowledge through critical thinking. Through this approach, students actively interact not only with each other but also with the teacher in the process of teaching and learning. In addition, a study done by Treesuwan and Tanitteerapan (2016) revealed that learner centered teaching and learning approaches were perceived positively by both teachers and learners. The approach helped teachers and learners to interact well by sharing and making collaborative discussions on different subjects, thus boosting students' confidence in articulating their feelings and sentiments. Most of the teachers today are encouraged in their practices to apply the learner-centered approach; to promote critical thinking, interest, and enjoyment among the learners and also to enable learners to seek help or information from each other while building a sense of oneness, enhancing cooperation and developing communication skills, encouraging interaction between pupils and teachers (Arakaza & Mugabo, 2022).

Generally, students in DNHS and NIS demonstrate high perception on factors affecting their performance in math with regards to teaching methods as evidenced by the overall average mean of 2.94 with DNHS obtained an average mean of 2.95 and NIS obtained an average mean of 2.93. Students shared that it is important for them how the lessons are delivered, especially engaging and relatable teaching approaches like real-world problem-solving, interactive discussions, and step-by-step guidance, as it empowers them to grasp complex concepts with greater confidence. For some students, when their teachers adapt methods to cater their diverse abilities and make math relevant, it transforms the math subject from a source of dread to an exciting challenge, ultimately boosting their performance. Teachers with a positive attitude towards teaching mathematics are more open to experimenting new methods, for adapting teaching methods to the level and learning styles of the students (Asli and Zsoldos-Marchis, 2022). Thus, teachers have to use different teaching methods and approaches that allow students to be active participants with strong motivation and engagement to their own learning (Herrera, 2019).

Table 7. Level of perception of students on the factors affecting their performance in math in terms of teaching methods

Teaching Methods	DNHS	NIS	Overall	
	Mean	Mean	Mean	Descriptive Equivalent
Teacher-centered method {1. Pamamaraang nakasentro sa guro} -Teachers do most of the talking and students passively listen, teachers explain everything about the topic, teachers answer almost all questions, 0% or very little contribution from students. {Ginagawa ng mga guro ang karamihan sa pakikipag-usap at ang mga mag-aaral ay pasibong nakikinig, ipinapaliwanag ng mga guro ang lahat tungkol sa paksa, sinasagot ng mga guro ang halos lahat ng mga tanong, 0% o napakakaunting kontribusyon ng mga mag-aaral.}	3.04	3.23	3.14	Highly Perceived
Interactive lecture method {2. Interactive lecture method}-Teachers actively engage all students in the learning process by regular teacher-student interaction, student-student interaction, audio-visual aids, and hands on demonstrations{Aktibong hinihikayat ng mga guro ang lahat ng mag-aaral sa proseso ng pag-aaral sa pamamagitan ng regular na interaksyon ng guro-mag-aaral, interaksyon ng mag-aaral-mag-aaral, mga audio-visual aid, at mga hands on na demonstrasyon}	2.89	3.18	3.04	Highly Perceived
Collaborative learning method {3. Collaborative na paraan ng pagkatuto}-Teachers encourage group work to solve problems, discuss worksheets and papers, teachers invite other math teachers to teach few lessons, have audio-visual lectures on the same topic{Hinihikayat ng mga guro ang pangkatang gawain upang malutas ang mga problema, talakayin ang mga worksheet at papel, inaanyayahan ng mga guro ang ibang guro sa matematika na magturo ng ilang mga aralin, magkaroon ng mga audio-visual na lektura sa parehong paksa}	3.00	2.68	2.84	Highly Perceived

Learner-centered method {4. Paraang nakasentro sa mag-aaral} -Teachers assist the learning process as a guide, teachers put students interest first, students are asked how they want to learn, what pace they want to learn, how they will assess their own learning, teachers prepare worksheets according to students' abilities {Tumutulong ang mga guro sa proseso ng pagkatuto bilang gabay, inuuna ng mga guro ang interes ng mga mag-aaral, tatanungin ang mga mag-aaral kung paano nila gustong matuto, kung anong bilis ang gusto nilang matutunan, kung paano nila tatasahin ang kanilang sariling pagkatuto, naghahanda ang mga guro ng worksheet ayon sa kakayahan ng mga mag-aaral}	2.86	2.64	2.75	Highly Perceived
Average Mean	2.95	2.93	2.94	Highly Perceived

4.6. Effectiveness and relevance of mathematics curriculum

Table 8 displays the level of perception of students on the factors affecting their performance in terms of effectiveness and relevance of mathematics curriculum.

As gleaned on the table, students in both DNHS and NIS highly perceived that mathematics textbooks are dominated by arithmetic (deals with numbers, calculations, computations) as reflected by the obtained highest mean scores in each group with DNHS obtained a mean score of 2.93 and NIS obtained mean score 3.05 and with the overall highest mean score of 2.99. This could be due to the way lessons are structured, often focusing heavily on step-by-step procedures and routine problem-solving and repetitive exposure to calculations and number-focused exercises. For many students, this can lead to their narrow view of mathematics as merely computations, overshadowing its broader, creative aspects like geometry, algebra, or data analysis. On the contrary, DNHS students least perceived that mathematics curriculum is not relevant and does not prepare for real-life situations as indicated by the lowest mean score of 2.00. Many students shared that they find the curriculum overly theoretical, emphasizing abstract concepts that feel detached from their everyday experiences and future goals. They find they're taught to follow formulas without understanding the "why" behind them, leaving little room for their creativity or deeper engagement with the material. Some students also express frustration when they encounter math topics that seem disconnected from real-world situations, like balancing a budget, calculating interest rates, or making financial decisions. Furthermore, the fast-paced nature of the curriculum makes it difficult for some students to keep up, leading to frustration and a sense of failure, especially when they don't see how the concepts build toward practical outcomes.

Furthermore, mathematics teachers spend very less time on each topic due to lengthy/broad content which was ranked least among NIS students as indicated by the lowest mean score of 2.14. Students mentioned that, due to fast-paced lessons that cover numerous concepts within limited periods, it leaves them feeling rushed and unable to fully grasp each topic. Many students experience frustration as they struggle to keep up with the depth of content and the speed at which it's delivered, making it difficult for them to engage deeply with the material. Teachers mentioned the combination of time constraints, coupled with the pressure to finish the syllabus.

Overall, in DNHS and NIS, the students' perception on the factors affecting their performance is high with regards to effectiveness and relevance of mathematics curriculum as evidenced by the computed overall average mean of 2.57 with DNHS obtained an average mean of 2.43 and NIS obtained an average mean of 2.71. As shared by the students, when they find the math content relatable to their everyday lives, it fosters their deeper connection, boosting their motivation and interest. Conversely, a lack of real-world applications or outdated teaching methods lead them to frustration and disengagement. Additionally, for some students, they value clear, supportive instruction that adapts to their diverse learning needs, provide effective strategies, while consistent feedback and opportunities for hands-on practice empower them to build confidence in their problem-solving abilities. Kaya and Kesan (2023) mentioned that enabling individuals to use the information they acquired in real-life is among the critical outputs of mathematics teaching. Because students' ability to associate the information they learn with events in daily life is closely related to how much they can make sense of the knowledge they have acquired and how permanent the data is. In order to achieve long-term development of student achievement in mathematical literacy, there is a need to identify and develop effective mathematics instruction and to align collaboration at the classroom, school, and school board levels. In all their interactions, educators should be able to use strategies and resources that enable effective communication and inclusion for as many people as possible, to the greatest extent possible (Vodickova *et al.*, 2023).

Table 8. Level of perception of students on the factors affecting their performance in math in terms of effectiveness and relevance of mathematics curriculum

Effectiveness and Relevance of Mathematics Curriculum {Pagkabisa at Kaugnayan ng Kurikulum ng Matematika}	DNHS	NIS	Overall	
	Mean	Mean	Mean	Descriptive Equivalent
Mathematics curriculum focuses only on exams (exam-driven). {Nakatuon lamang ang kurikulum sa matematika sa mga pagsusulit (exam-driven).}	2.46	2.77	2.62	Highly Perceived
Mathematics curriculum is not relevant and does not prepare for real-life situations. {Ang kurikulum ng matematika ay hindi nauugnay at hindi naghahanda para sa mga sitwasyon sa totoong buhay.}	2.00	2.59	2.30	Least Perceived
Mathematics curriculum is broad and lengthy compared to other subjects. {Malawak at mahaba ang kurikulum ng matematika kumpara sa ibang asignatura.}	2.71	2.86	2.79	Highly Perceived
Mathematics textbooks are dominated by arithmetic (deals with numbers, calculations, computations). {Ang mga aklat-aralin sa matematika ay pinangungunahan ng aritmetika (mga deal sa mga numero, kalkulasyon, pagkalkula).}	2.93	3.05	2.99	Highly Perceived
Mathematics curriculum focuses on product (performance in exams) instead of process (learning and understanding). {Ang kurikulum ng matematika ay nakatuon sa produkto (pagganap sa mga pagsusulit) sa halip na proseso (pag-aaral at pag-unawa).}	2.46	2.86	2.66	Highly Perceived
Mathematics textbooks do not contain real-life examples and activities. {Ang mga aklat-aralin sa matematika ay hindi naglalaman ng mga halimbawa at aktibidad sa totoong buhay.}	2.25	2.36	2.31	Least Perceived
Mathematics textbooks are noncontextualized (notes, examples, and exercises). {Ang mga aklat-aralin sa matematika ay hindi naka-contextualize (mga tala, halimbawa, at pagsasanay)}	2.50	2.77	2.64	Highly Perceived
Mathematics teachers have difficult in completing the mathematics coverage within the timeframe. {Ang mga guro ng matematika ay nahihirapang kumpletuhin ang saklaw ng matematika sa loob ng takdang panahon.}	2.36	3.09	2.73	Highly Perceived
Mathematics teachers spend very less time on each topic due to lengthy/broad content. {Ang mga guro sa matematika ay gumugugol ng napakakaunting oras sa bawat paksa dahil sa mahaba/malawak na nilalaman.}	2.54	2.14	2.34	Least Perceived
Mathematics teachers do not spend enough time on revision and remedial. {Ang mga guro sa matematika ay hindi gumugugol ng sapat na oras sa rebisyon at remedial.}	2.21	2.55	2.38	Least Perceived
Mathematics curriculum is irrelevant to the students who wish to do further studies in other fields apart from maths, science, and technology disciplines. {Ang kurikulum ng matematika ay walang kaugnayan sa mga mag-aaral na gustong gumawa ng karagdagang pag-aaral sa iba pang larangan bukod sa mga disiplina sa matematika, agham, at teknolohiya.}	2.14	2.50	2.32	Least Perceived
Internal assessments/field work/projects should be part of mathematics curriculum to understand mathematics better. {Ang mga panloob na pagtatasa/field work/proyekto ay dapat maging bahagi ng kurikulum ng matematika upang mas maunawaan ang matematika.}	2.57	2.95	2.76	Highly Perceived
Average Mean	2.43	2.71	2.57	Highly Perceived

4.7. Summary on the level of perception of students on the factors affecting their performance in math

Table 9 presents the summary on the level of perception of students on the factors affecting their performance in math considering the students attitude and perception toward mathematics, teachers attitude toward teaching mathematics, teaching methods, and effectiveness and relevance of mathematics curriculum.

Among the dimensions, students in DNHS and NIS demonstrate high perception with regards to teachers' attitude toward teaching mathematics as factors affecting their performance in math. This is evidenced by the computed average mean scores of each group with DNHS obtained a mean score of 3.10 and 3.11 in NIS and with the highest overall average mean of 3.11. In the classroom, students mentioned that when their teachers display enthusiasm, patience, and a growth mindset, it fosters a positive learning environment that encourages them to engage more deeply with mathematical concepts, while those who appear disinterested or unresponsive significantly impact their interest and success in math. High school students also stated that when their teachers approach math with confidence and make the subject relevant, they are more likely to acquire a real interest, feel empowered to handle difficult problems, and ultimately enjoy math lessons. Tabuk (2018) results revealed that the prospective teachers had a positive attitude towards teaching mathematics. Moreover, Blazar and Kraft (2017) found that teachers' teaching practices, emotional support and classroom organization influenced students' attitudes and self-confidence in mathematics thereby making mathematics class enjoyable to them. Thus, teachers' attitude and behaviour are equally important for students' mathematics achievement. Teachers' positive attitude towards mathematics will motivate students to form a positive attitude towards the subject to learn it and achieve better in the subject while teachers' negative attitude could be responsible for students' low mathematics achievement (Abhilasha *et al.*, 2022).

Contrariwise, they demonstrated least perception in terms of students' attitude and perception toward mathematics as reflected by the computed average mean score of 2.21 in DNHS and 2.22 in NIS and with the overall average mean score of 2.21. This could be due to the challenging nature of the math subject, which leads to feelings of frustration and self-doubt. Many students experience a lack of confidence while addressing arithmetic tasks, particularly those involving complicated ideas. Students also expressed dissatisfaction with the subject due to a lack of engaging materials such as interactive tools, real-world problem-solving activities, and technology-based learning.

In general, the level of perception of students on the factors affecting their performance in math is high in terms of students attitude and perception toward mathematics, teachers attitude toward teaching mathematics, teaching methods, and effectiveness and relevance of mathematics curriculum as reflected by the average mean score of 2.71 in which DNHS obtained an average mean of 2.67 and 2.74 in NIS. This suggests that mathematics student performance is not merely a matter of figures, it's an intricate relationship between attitudes, instructional quality, and curriculum saliency which responds to their genuine aspirations. Students report that what they feel about mathematics largely depends on whether or not they believe in themselves and the relevance of arithmetic in practical problems. They also highlight the way in which a passionate and enthusiastic teacher can foster a love of numbers, while rigid or disconnected teaching methods may actually fuel frustration and an effective math program. Abhilasha *et al.* (2022) findings have indicated that mathematics achievement of students is determined by many factors including students' attitude towards mathematics which is shaped by several factors like classroom teaching methods, school support system, the common social perceptions about the usefulness of mathematics besides classroom teaching methods, school support system, parental involvement in child's mathematics learning, mathematics teachers' attitudes in teaching mathematics etc.

Table 9. Summary on the level of perception of students on the factors affecting their performance in math

Dimension	DNHS	NIS	Overall	
	Mean	Mean	Mean	Descriptive Equivalent
Students Attitude and Perception toward Mathematics	2.21	2.22	2.21	Least Perceived
Teachers Attitude toward Teaching Mathematics	3.10	3.11	3.11	Highly Perceived
Teaching Methods	2.95	2.93	2.94	Highly Perceived
Effectiveness and Relevance of Mathematics Curriculum	2.43	2.71	2.57	Highly Perceived
Average Mean	2.67	2.74	2.71	Highly Perceived

4.8. Significant difference in the level of perception of students on the factors affecting their performance in math when grouped by profile

Table 10 presents the significant difference in the level of perception of students on the factors affecting their performance when grouped by profile.

As observed, the computed p-values of 0.49, 0.85, 0.87 and 0.31 indicate that there is no significant difference in the level of perception of students on the factors affecting their performance when grouped by gender, age, and grade level. Thus, the null hypothesis is accepted at a 0.05 level of significance. This implies that regardless of gender, age, and grade level, the perception of students on the factors affecting their performance is at a similar level. Teenagers in high school usually struggle with typical issues like the complexity of math, quality of teaching, peer pressure, and short study time due to extracurricular activities. This observation serves to underscore the notion that their struggles are less demographic and more systemic or environmental within the school environment. It suggests a call for schools to emphasize the development of inclusive, supportive, and active math classrooms that connect with all students, focusing on relevant pedagogies, engaging activities, and support tailored to common issues rather than discrete interventions based on individual profiles.

Table 10. T-test and f-test results on the significant difference in the level of perception of students on the factors affecting their performance in math when grouped by profile

Profile	Mean	Level	t-value/ f-value	p-value	Remark	Decision
Gender						
Male	2.62	HP	0.70	0.49	Not Significant	Accept H_o
Female	2.67	HP				
Age						
11-12 years old	2.70	HP	0.16	0.85	Not Significant	Accept H_o
13-14 years old	2.65	HP				
15-16 years old	2.60	HP				
Grade Level						
Grade 7	2.72	HP	0.24	0.87	Not Significant	Accept H_o
Grade 8	2.62	HP				
Grade 9	2.68	HP				
Grade 10	2.68	HP				

**p-value is significant at 0.05 level*

4.9. Level of performance of secondary students in math

Table 11 presents the level of performance of secondary students in Math DNHS and NIS in Bokod district.

The findings revealed that DNHS students achieved a very satisfactory performance in math as indicated by the computed mean performance of 86.04. On the other hand, NIS students demonstrated a satisfactory performance in math as reflected by the computed mean performance of 84.32. This may be a result of the strategic teaching practices, availability of supportive resources, and students' own experiences of perseverance and cooperation. Most students reported that cooperative and engaging teachers create a good learning environment, making even difficult subjects easier to understand. Also, some students explained that the extracurricular diversity that is offered in their school offers them a place where they can learn about what they love and improve their skills, hence gaining more confidence and better school performance. The peer study groups and group projects were cited by some students as very important, enabling them to work together on difficult issues and share strengths. Rono *et al.* (2020) relayed that pedagogical approaches offer an array of real-world methods for supporting the building of mathematics skills among students. Also, Alrajeh and Shindel (2020), illustrate that instructional support had the most prevailing influence on student engagement.

Overall, the level of performance of secondary students in math is very satisfactory with the computed overall average mean of 85.18. This implies that the highschool students demonstrated a strong grasp and attention of the mathematical concepts and problem-solving skills. Also, students shared that their teachers were able to support, guide and direct them on getting knowledge, simplify complex concepts, use diverse teaching strategies to address different learning styles, and foster a growth mindset that encourages perseverance and performance. This achievement highlights the students' ability to overcome common challenges, such as math anxiety, distractions, and limited resources, through resilience, peer collaboration, and practical problem-solving. According to Herrera (2019), it is the essential role of the teachers to guide and direct the students on getting knowledge, thus right ground on methods, strategies and techniques must be considered in giving a comprehensive environment which causes to arouse the interest and challenge the students to the higher level of learning mathematics. Also, he mentioned that students' perception of teacher support have a direct effect on their interest and motivation, and teachers' expectation of students' achievement influences the way they behave toward their students and thus can affect students' motivation, self-perceptions, and academic performance.

Table 11. Level of performance of secondary students in math

	Mean	Descriptive Equivalent
Daclan National High School	86.04	Very Satisfactory
Nawal Integrated School	84.32	Satisfactory
Average Mean	85.18	Very Satisfactory

4.10. Significant difference in the level of performance of secondary students in math when grouped by school

Table 12 displays the significant difference in the level of performance of secondary students in math when grouped by school.

Based on the result, the computed p-value of 0.31 attests that there is no significant difference in the level of performance of secondary students in math when grouped by school. Therefore, the null hypothesis is accepted at a o.05 level of significance. This indicates that the level of performance of secondary students in math is similar across the two schools. This shows that while curriculum, teaching strategies, and available resources may vary, the overall performance in math

is shaped by deeper, more universal elements such as students' motivation, study habits, and family support.

For high school students, they emphasize that the key to excelling in math lies within their own efforts, collaborative learning with peers, and leveraging the support of teachers, rather than relying solely on the prestige or facilities of their institution. It's a powerful reminder that every student, regardless of their school, holds the potential to thrive with the right mindset and resources.

Table 12. T-test and f-test results on the significant difference in level of performance of secondary students in math when grouped by zone

	Mean	Level	f-value	p-value	Remark	Decision
DNHS	2.61	HP	1.03	0.31	Not Significant	Accept Ho
NIS	2.69	HP				

4.11. Significant relationship between the level of perception of students on the factors and level of performance in math

Table 13 presents the significant relationship between the level of perception of students on the factors and level of performance in math.

In DNHS, the result revealed that there is a significant relationship between the level of perception of students on the factors with regards to students attitude and perception toward mathematics and the their performance in math as proven by the significant p-value of 0.04 and Pearson Product Moment Coefficients of Correlation (r) of 0.38 indicating a small significant relationship. Therefore, the null hypothesis was rejected at a 0.05 level of significance. This implies that the level of perception of students' attitude and perception toward mathematics affect their performance in math. This could be attributed to a combination of cognitive, emotional, and environmental factors that shape their learning experiences. When students perceive math as engaging and achievable, they are more likely to invest time and effort in understanding complex concepts, leading to improved performance. Additionally, supportive classroom environments that foster a growth mindset, where mistakes are viewed as learning opportunities, enhance students' willingness to tackle math problems with enthusiasm.

On the other hand, there is no significant relationship between the level of perception of students on the factors as to teachers' attitude toward teaching mathematics, teaching methods, and effectiveness and relevance of mathematics curriculum and the their performance in math as indicated by the computed p-values of 0.78, 0.57, and 0.97 and Pearson Product Moment Coefficients of Correlation (r) of 0.06, 0.11, and 0.01 which attests a slight relationship. Hence, the null hypothesis is accepted at a 0.05 level of significance. This implies that the level of perception of students on the factors as to teachers' attitude toward teaching mathematics, teaching methods, and effectiveness and relevance of mathematics curriculum does not affect their performance in math. While students' perceptions are undoubtedly influenced by their teachers' behaviors, teaching approaches, and curriculum design, performance is multifaceted and cannot solely hinge on these variables. Moreover, students' perceptions might not fully reflect the complexities of instructional strategies and curriculum content, leading to a disconnect between what students think is relevant and their actual academic achievements.

In NIS, the result revealed that there is no significant difference on the level of perception of students on the factors with regards to students attitude and perception toward mathematics, teachers' attitude toward teaching mathematics, teaching methods, and effectiveness and relevance of mathematics curriculum and the students performance in math as indicated by the computed p-values of 0.76, 0.91, 1.00 and 0.69 and Pearson Product Moment Coefficients of Correlation (r) of 0.06, 0.02, and 0.02 and 0.08 which attests a slight relationship. Therefore, the null hypothesis is accepted at a 0.05 level of significance. This shows that the level of perception of students on the factors as to teachers' attitude toward teaching mathematics, teaching methods, and effectiveness and relevance of mathematics curriculum does not affect their performance in math. This suggests that while these factors are undeniably important, their influence on student outcomes may be more subtle or interdependent than initially expected. Students' performance in mathematics could be shaped not only by their individual attitude or the teaching methods but also by how these elements align or reinforce each other.

Table 13. Pearson correlation coefficient results on the significant relationship between the level of perception of students on the factors and their level of performance in math

	Mean	Level	f-value	p-value	Remark	Decision
Students Attitude and Perception toward Mathematics	2.21	LP	0.38	0.04	Significant	Reject H_o
Performance	86.04	VS				
Student Perception of Teachers Attitude toward Teaching Mathematics	3.10	HP	0.06	0.78	Not Significant	Accept H_o
Performance	86.04	VS				

Teaching Methods	2.95	HP	0.11	0.57	Not Significant	Accept H_o
Performance	86.04	VS				
Effectiveness and Relevance of Mathematics Curriculum	2.43	LP	0.01	0.97	Not Significant	Accept H_o
Performance	86.04	VS				
NIS						
Students Attitude and Perception toward Mathematics	2.22	LP	0.06	0.76	Not Significant	Accept H_o
Performance	84.32	S				
Student Perception of Teachers Attitude toward Teaching Mathematics	3.11	HP	0.02	0.91	Not Significant	Accept H_o
Performance	84.32	S				
Teaching Methods	2.93	HP	0.00	1.00	Not Significant	Accept H_o
Performance	84.32	S				
Effectiveness and Relevance of Mathematics Curriculum	2.71	HP	0.08	0.69	Not Significant	Accept H_o
Performance	84.32	S				

**p-value is significant at the 0.05 level*

5. CONCLUSION

i. The study reveals a clear demographic trend among participants,with a significant male majority, a focus on younger age groups (13-14 years), and a predominance of Grade 8 students.

ii. Students from both DNHS and NIS demonstrate high perception of the factors affecting their performance in math. Specifically, they exhibit a high perception of teachers' attitudes while the lowest perception comes from students regarding their own attitude and perception toward math.

iii. Regardless of gender, age, grade level and number of math teachers in the school, highschool students share a similar level of perception on the factors affecting their performance in math.

iv. High School students in DNHS and NIS demonstrate a very satisfactory level of performance.

v. Across the two schools, the level of performance of secondary students in math is similar.

vi. The level of perception of students on the factors does not affect their level of performance in math.

vii. The proposed intervention is essential in order to improve the performance of students in Math.

RECOMMENDATIONS

i. In the future, researchers might look at a wider range of demographic profiles to better understand the results.

ii. To counter the high perception of teachers' attitudes affecting students' performance, both DNHS and NIS must institute frequent professional development workshops aimed at developing positive and supportive teacher-student relationships. Teachers can attend workshops that enhance effective communication techniques and rapport building, leading to a more interactive and supportive learning environment for students.

iii. Schools must incorporate self-directed learning techniques into the curriculum. This can involve providing interactive math apps, self-directed learning modules, or peer tutoring programs that motivate students to own their learning and build a more positive attitude towards math.

iv. Schools must capitalize on the performance as foundation by establishing ongoing professional development opportunities for teachers to hone their instructional methods, focusing on practical application and real-world math problem-solving.

v. Implement cooperative math exercises throughout DNHS and NIS to commemorate the convergence of performance levels. They can be team-based competitions, web-based math contests, or cooperative problem-solving activities where students from both institutions engage and learn from each other, improving their overall performance and feeling of community.

vi. Regular perception surveys must be carried out in schools to gain a better understanding of the attitudes of students towards mathematics. The findings can inform targeted interventions that address any discrepancies between perception and performance so that strategies are tailored to the needs of the students.

vii. The intervention proposed can be funded in an effort to enhance the performance of students in Math.

viii. Subsequent researchers can carry out longitudinal studies to monitor changes in performance and perception over time and investigate the effects of particular interventions to enhance math outcomes.

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