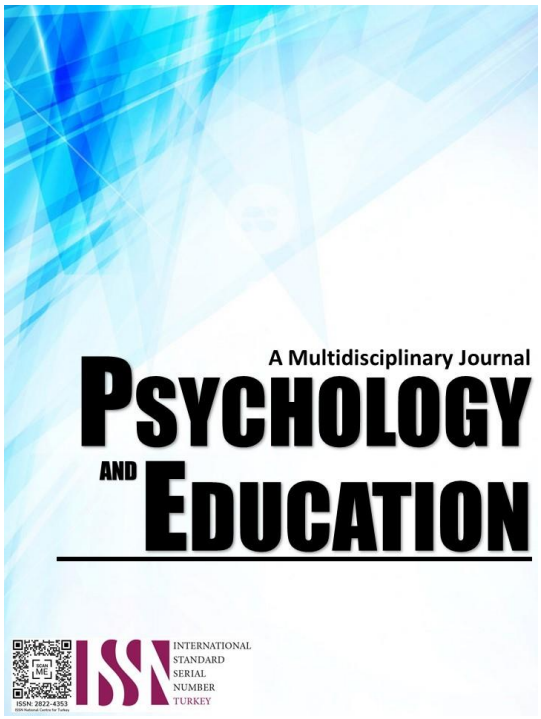
ATTITUDES AND ACADEMIC PERFORMANCE OF GRADE 6 STUDENTS IN LEARNING MATHEMATICS: CONCEPTUAL UNDERSTANDING IN THE CONTEXT OF EDUCATION



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Research Article

Attitudes and Academic Performance of Grade 6 Students in Learning Mathematics: Conceptual Understanding in the Context of Education

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Abstract

A systematic approach to problem solving is one of mathematics' primary goals in order to make it easier to address comparable challenges in a similar manner. Every day, mathematics plays a fundamental role. An increased degree of conceptual understanding in Mathematics can influence higher academic performance. This study aimed to investigate and determine the level of understanding and the students' attitudes towards their academic performance in learning mathematics. The study was conducted in the academic year 2022–2023 at Dimasalang Elementary School in the District of San Luis I, Division of Agusan del Sur, Philippines. This research was to serve as the foundation for developing or establishing a bridge program for incoming sixth graders at the mentioned school. Moreover, the study employed a quantitative approach with descriptive correlational research designed. The participants of the study were composed of students in the abovementioned school; the actual respondents were gathered using the complete enumeration sampling. Based on the findings, the level of conceptual understanding of Grade 6 pupils in learning mathematics, had the overall mean score of 78.13 with a standard deviation of 27.74, which had the descriptive interpretation of approaching. Therein, the average scores of the learners who took the examination ranged from 24 to 43 out of 50-item knowledge test. Thus, the academic performance had a significance value of 0.089. The attitudes pertained with (sig=0.000), while the conceptual understanding obtained with 0.452 significance value. The attitude towards learning mathematics had the greatest degree of influence with beta weights of (0.264), (t=4.123), and p-value of 0.000. Which indicates its significance level at 0.01 level. Moreover, the conceptual understanding of Grade 6 pupils in learning mathematics with beta-weights of (0.216), (t=-3.088), and probability of 0.452. This signifies that the more positive the attitude towards mathematics the stronger is the performance in mathematics. The results of the study would be the basis of what kind of intervention program should be designed and implemented that could improve students conceptual understanding and attitude towards mathematics.

Keywords: *attitudes, academic performance, math, correlation, conceptual understanding*

Introduction

The COVID-19 virus's global impact and implications for numerous sectors of education are tremendous. The government has responded to the use of distance learning particularly on modular distance education by suspending and canceling in-person classes, gatherings, and other school linkages. The pupils have also been greatly impacted by the Philippines' switch to a modular distance education system and an online-based and modular-based distance education system. It is far more challenging in these unpredictable times to become used to the "new normal" of learning. Practice sessions and learning outcomes in a full-fledged distant learning environment (Saro et al., 2022).

There have been worries that learning mathematics outside of the classroom context could impair inquiry-based learning strategies for mathematics in several ways, particularly about mathematics education. First, as mentioned by Sullivan et al. (2020), explicit explanations followed by repeated practice are advantageous for using video technology, particularly instructional videos that may be created in advance and shared through a weblink. In contrast, inquiry-based approaches to learning mathematics call for student-centered, rigorously mathematical debates that are founded on the experiences of the students who will be participating in the discussions. Such post-task discussions offer teachers the chance to draw connections between emerging mathematical ideas, as well as chances for students to pick up tactics from one another (Russo & Hopkins, 2017).

A systematic approach to problem solving is one of mathematics' key goals in order to make it easier to approach comparable issues in the same way. Every day, mathematics plays a crucial role. It is particularly helpful in the fields of physics, computer science, economics, navigation, commerce, and statistics. Students who study mathematics gain a particularly potent set of tools for comprehending and influencing the world. The capacity for abstract thought, logical reasoning, and problem-solving abilities are some of these instruments. The common core standards for mathematics place a strong emphasis on conceptual knowledge as a crucial element of mathematical proficiency (Andamon & Tan, 2018).

It is crucial to understand mathematics as you learn it. Kola (2017) emphasized that students cannot rely

solely on fact memorization to comprehend concepts across a variety of fields. Real knowledge of thoughts and ideas is distinct from the memorization of rules and mastery of computations. In this regard, it is asserted that comprehending mathematics requires not just a conceptual comprehension of the subject matter, but also the capacity to articulate those concepts and the connections that exist between them. Students can demonstrate conceptual knowledge by grasping the concept's underlying meaning. Comparably, conceptual comprehension, according to Ay et al. (2016), boosts students' learning potential and encourages learning in mathematics.

Researchers found that many students still struggle with conceptual understanding, nevertheless. According to Molina (2014), this is because students frequently use short cuts to solve mathematical issues rather than understanding the underlying meaning and concept. According to the same study, if a student has a high degree of conceptual knowledge, they will likewise perform at a high level. In a similar vein, Istikomah (2019) emphasized that learners' higher accomplishment results from their knowledge of the mathematical concept.

The issue might not be a deficiency in intelligence or a difficulty picking up math. Most likely, the issue is that the incorrect study approach results in a lack of mathematical proficiency, which prevents students from resolving issues that call for mathematical abilities, such as conceptual comprehension. Students must master a fresh set of mathematical fundamentals that will help them finish work quickly and come up with innovative solutions to difficulties (Generalao, 2012). Understanding that the equal sign (=) denotes equality, or mathematical equivalent, is another frequent mental blunder. Math is an abstract subject by nature, so students have trouble understanding its ideas and operations. Students frequently believe that it means "put the answers here," (Andamon & Tan, 2018).

They frequently grow afraid of failing the class. They are prone to feeling anxious and uneasy, so it is obvious that they have a math phobia. Considering this major issue in mathematics education, the researcher investigated more studies on conceptual comprehension and understanding (knowledge transfer abilities and thorough understanding of the mathematical language), students' attitudes toward mathematics, and mathematical performance. Its purpose was to improve students' procedural and problem-solving arithmetic skills before examining how it affected their conceptual knowledge as sixth-graders at Dimasalang Elementary School in Agusan del Sur, municipality of San Luis. In order to ascertain whether there is a substantial correlation between students' academic performance and their conceptual understanding and attitudes towards mathematics, the researcher did this study. In order to create a bridge program for incoming sixth graders, the results will be employed.

Research Questions

The study aimed to investigate and determine the level of understanding and the students' attitudes towards their academic performance in learning mathematics. The study was conducted in the academic year 2022–2023 at Dimasalang Elementary School in the District of San Luis I, Division of Agusan del Sur, Philippines. This research was to serve as the foundation for developing or establishing a bridge program for incoming sixth graders at the mentioned school. Specifically, the study sought to answer the following questions:

1. What is the level of conceptual understanding of the Grade 6 pupils in learning mathematics?
2. What is the academic performance of the Grade 6 students in learning mathematics?
3. What is the sixth-grade students' attitude towards learning mathematics?
4. Is there a significant relationship between students' academic performance and their conceptual understanding and attitudes towards mathematics?
5. What intervention and bridge program should be outlined for Dimasalang Elementary School based on the findings of the present study?

Literature Review

This study included a variety of readings, contains appropriate literature and related studies that are suitable for the study, and provided important insights that were very helpful in the construction of the current study. This covers the concepts, difficulties, and challenges that are connected to issues as well as the findings from earlier research that seem relevant and fall within the purview of the study.

The Importance of Early Mathematical Exploration

Research has shown that it is crucial for children to start learning about numbers and mathematical concepts as early in their academic careers as possible. The conceptual understanding of mathematics

develops a person's capacity to grasp, relate, and connect numbers, or number sense. Clements and Sarama (2011) found that early arithmetic proficiency is a significant predictor of future academic performance. Since young toddlers have a high capacity for learning, it is crucial to develop these abilities (Frankina, 2021).

The earlier a youngster starts to study and comprehend mathematical material, the greater their academic achievement will be, according to Geary et al. (2017). Their study's findings demonstrate how crucial it is for early infants to have a conceptual understanding of numbers. The role that math anxiety plays in impeding learning is another facet of early mathematics education that is frequently disregarded (Ramirez et al., 2016). Preventing math anxiety from ever occurring is an excellent strategy to treat it. Another reason why it is critical to start fostering pupils' familiarity with numbers early in their academic careers is due to this. It is crucial to ensure that teachers engage students with mathematics in good ways right from the start of their schooling (Frankina, 2021).

Variety of Mathematical Representations

Research indicates that employing a range of representations to explain concepts is crucial when it comes to strategies for fostering deeper and conceptual mathematics comprehension in pupils. The most effective method for enhancing knowledge of arithmetic problems is to combine several representations of the problems (Heinze et al., 2009). Students will acquire a more thorough comprehension of mathematical subjects when they are given several representations of the concepts and may fluidly switch between representations and methods (Heinze et al., 2009). Jansen et al. (2017) identified several tactics, including the use of mathematical language to enhance students' sense-making, the use of visual representations, the use of story problems, and pressuring students for mathematical justifications.

Additionally, Hunt and Little (2014) discovered that it is critical to use lessons that are intended to demonstrate mathematical concepts. Teaching mathematics with visual aids directly contributes to improving student comprehension. The findings of O'Dwyer et al. (2015) research back up the significance of accurate problem representations. Forming the connections between mathematically-related visual, numerical, and symbolic representations is a strategy for enhancing conceptual understanding, which in turn enhances procedural understanding and overall mathematical performance. A specific study by Tzur et al. (2020) that discovered that employing physical movements with manipulatives and representational sketching to help children work through multiplication problems results in improved knowledge and higher performance on assessments serves as an illustration of this. Before and after studying mathematics using various visual representations and with reasoning, the proportion of students who took part in this study who performed at proficient/advanced levels on the yearly state test rose from 58% to 85% (Tzur et al., 2020).

Conceptual Understanding

The information required to handle novel issues and environments must include conceptual understanding. Moreover, conceptual knowledge becomes more crucial as opinions about the facts or practices that are crucial in a world that is becoming more technical. In keeping with this, one set of Principles and Standards for School Mathematics from 2000 highlighted the importance of teaching students to study with understanding in order to prepare them for future challenges (Edulsa, 2022).

Parallel to this, Laswadi et al. (2016) stressed the need of giving students a learning experience that will allow them to make connections to mathematical concepts in order to develop their conceptual understanding. According to Kola (2017), one of the skills that aids students in organizing their knowledge is conceptual understanding. The students might broaden their understanding of mathematical principles and facts with the aid of this aptitude. Students cannot rely on memorization to understand the complex scientific concepts of numerous disciplines, so they should instead have conceptual understanding as opposed to recollection of facts.

In this regard, it has been stated that comprehending mathematics requires not just a comprehension of the fundamental ideas but also the capacity to articulate how those ideas are related. Students have a conceptual comprehension of mathematical concepts when they comprehend the concept's meaning and underlying principle (Edulsa, 2022).

Soyke (2016) emphasized the significance of learning mathematical concepts with understanding and comprehension. Additionally, the conceptual knowledge is also broadly described as the conceptual understanding. (Baroody et al., 2017) explained the implicit understanding of the rules that govern the precise domain and of the relationships between bits of

knowledge, as well as the conceptual understanding of the idea that a student has been in the process of learning and not just taught how to do mathematical problems.

According to Edulsa (2022), conceptual comprehension is typically characterized as having a thorough understanding of the fundamental ideas and how they interact. According to Ay et al. (2016), conceptual understanding has grown in attention in educational research since it has the capacity to engage students in learning and improve learning. Understanding students' preexisting ideas may aid educators in developing instructional strategies that target conceptual understanding. Mwakapenda (2014) stated that understanding is one of the key characteristics linked to achieving educational objectives. Since students must comprehend mathematics conceptually, it is important in school mathematics. In this regard, Korn (2014) stated that it is important to grasp concepts, particularly in mathematics.

Being proficient in learning mathematics requires having a solid conceptual understanding of the subject. Additionally, it is a crucial part of the knowledge required to handle novel situations and difficulties, especially as opinions about the procedures or facts that are necessary in an increasingly technological society change. Therefore, it is crucial for students to learn with knowledge in order to equip them to handle any challenges they may encounter in the future. In this regard, Molina (2014) argued that efficiency, rather than mathematical proficiency, results from relying solely on algorithms and procedures and emphasizing short cuts. This is true because students often use short cuts to get their answers when they do not understand the process. As pupils move up in grade level, it becomes harder for them to comprehend increasingly challenging subjects (Egtob et al., 2022).

Lasfar (2010) noted that Mathematics is a science that develops explicitly another kind of sciences. Algebra, measurement, geometry, trigonometry, and calculus are just a few examples of the various aspects of mathematics that cannot be ignored. Thus, Mathematics become an integral component of modern sciences. Lasfar added that regardless of a person's religion or cultural background, mathematics is the only universal language that is used by many people. Nobody plus one is equal to two regardless with what country is used in and what language is articulated. She also added that only few individuals who can speak more than one tongue but all of us can be educated in the mutual language of Mathematics. In this relation, Mokhtar et al. (2012) highlighted that interest, role of the teacher, peers and attitude greatly influences students' performance in Mathematics. In a similar vein, Acharya (2017) said that, in order to increase the pass rate, students, instructors, and parents all need to play crucial roles as major players and providers of a healthy environment.

Teaching and Learning in the Distance Education Due to Pandemic

The effects of teaching and learning during the pandemic have been addressed in studies from the United States (Hamilton et al., 2020; Reich et al., 2020). To learn more about their professional experiences during the pandemic, Reich et al. (2020) spoke with 40 teachers from various school sectors across the United States. Three key difficulties for teachers were noted by the study. According to USA TODAY and Ipsos (2020), many parents (60%) and teachers (86%) were concerned about how their pupils were doing academically while participating in remote learning. According to Hamilton et al. (2020), teachers reported having a tougher time working remotely (83%) and thought that pupils were falling behind because of home learning (76%). Also, just 12% of teachers reported covering all or almost all the coursework they would have covered had face-to-face learning persisted, and the authors voiced concerns regarding students' preparation for the next grade level.

Students from underprivileged backgrounds are likely to be more at risk of falling behind during remote learning, as was already mentioned. Results from PISA in 2018 (Thomson, 2020) compared the home educational experiences of 15-year-old Australians from low and high socioeconomic status (SES). While 88% of 15- year-olds disclosed having a quiet place to study at home, this varied from 78% for low SES to 96% for privileged students. Similarly, 84% of disadvantaged students reported they had a home computer to use for school activities as compared to 99% for affluent students. Those certain evidence did not take into consideration whether parents and children were now working or learning at home, and therefore putting excessive pressure on students and their families to make a deal access to potentially limited devices in the home. Further, parent values and convictions around the use of technology at home, or students' 'screen time', may add to the complexity of availability to devices.

Methodology

This study employed a quantitative approach with descriptive correlational research designed. The study used three (3) sets of questionnaire which are the questions relating to the conceptual understanding and attitudes of the students as well as the academic performance of the pupils in the abovementioned school, also, the study's findings will be utilized to create possible intervention program that could be used in the said school and to modify in the district of San Luis. The purpose of correlational design is to determine whether there is a significant relationship between students' academic performance and their conceptual understanding and attitudes towards mathematics. This research utilized a quantitative method of research, which explicitly attests to the degree of relationship that certainly exists between the two or more variables. Thus, this method tried to analyze whether an increase or decrease in one variable corresponds to an increase or even a decrease in the set or other variables (Creswell, 2012).

The research respondents of the study were the Grade 6 pupils at Dimasalang Elementary School in the District of San Luis I, Division of Agusan del Sur, Philippines. The study was conducted in the academic year of 2022-2023 for the purpose of attaining the main goal of the study to investigate and determine the level of understanding and the students' attitudes towards their academic performance in learning mathematics. The participants of the study were composed of students in the abovementioned school; the actual respondents were gathered using the complete enumeration sampling.

The research instrument employed in the present study consisted of two parts. The part I pertained to the academic background and achievement of the students' respondents; and the part II of the questionnaire was the researcher-made test questionnaire. The proponent made test questionnaire consisted of a 50-item knowledge multiple choice covering the topics in learning mathematics in Grade 6 at Dimasalang Elementary School in the District of San Luis I, Division of Agusan del Sur, Philippines was utilized in the present study. Furthermore, the researcher was presented to the group of validators and experts for comments and suggestions on the said test questionnaires. This test questionnaire was properly administered to the Grade 6 pupils of Dimasalang Elementary School for item analysis, validity, and reliability.

For the procedure, the collection of the data was conducted last November 2022, in the academic year of 2022-2023, at the abovementioned school. The respondents were Grade 6 pupils in Dimasalang. The researcher secured approval or permission from the school principal to conduct the study. The reason why the researcher chose the said school, since the researcher was assigned there and teaching the subject in Math. The test questionnaire was validated carefully based on the standard procedure designed at the abovementioned school. The descriptive statistics utilizing the means and percentages were employed to determine the performance in learning mathematics of the involved pupils. For students' attitudes towards mathematics, the mean was utilized. The Pearson correlation analysis was used to determine the relationships between the variables. The results and findings were greatly analyzed using SPSS software and Microsoft excel and resulted to a Cronbach's alpha value of 0.892, which certainly indicates as a reliable and valid test questionnaire.

Bryan and Bell (2007), researcher will comply with the following ethical considerations while handling the ethical concerns portion of a study project, thesis, or any other research exertion. To begin with, the subject matter must never suffer any kind of pain or damage at the hands of the researcher. The respondents will also be aware of the study, and before being selected as a respondent, they will be requested for their full consent. Likewise, the research participants' privacy and identities would be retained. There must never be any overgeneralization or false representation of the research's intentions or goals. Any type of leanings will also be avoided in order to eliminate any potential ethical concerns. Researcher will conduct individuals honestly and repudiate bias.

Results and Discussion

The study has been conducted to scrutinize the level of understanding and the students' attitudes towards their academic performance in learning mathematics. The study was conducted in the academic year 2022–2023 at Dimasalang Elementary School in the District of San Luis I, Division of Agusan del Sur, Philippines. This research was to serve as the foundation for developing or establishing a bridge program for incoming sixth graders at the mentioned school. Specifically, the study sought to answer the following questions: (1) What is the level of conceptual understanding of Grade 6 pupils in learning mathematics? (2) What is the academic performance of Grade 6 students in learning mathematics? (3) What

is the sixth-graders attitude towards learning mathematics? (4) Is there a significant relationship between students' academic performance and their conceptual understanding and attitudes towards mathematics? (5) What intervention and bridge program should be outlined for Dimasalang Elementary School based on the findings of the present study? The study was tabulated based on the main objectives of the present research as well as utilized with the correct statistical procedure.

Table 1. *Level of Conceptual Understanding of Grade 6 Pupils in Learning Mathematics*

Indicators	*Mean Score*	*SD*	*Percentage (%)*	*Descriptive Interpretation*
(1) Language in Learning Mathematics	14.52	4.52	29.04	Developing
(2) Skills and Transferring Knowledge	16.59	5.97	33.18	Developing
(3) Comprehension of Fundamental Concepts in Mathematics	19.20	7.10	38.40	Approaching
(4) Inclusive Conceptual Understanding	27.82	10.15	55.64	Approaching
Overall	78.13	27.74	39.07	Approaching

Table 1 shows the level of conceptual understanding of Grade 6 pupils in learning mathematics. Based on the findings, the overall mean score was 78.13 with a standard deviation of 27.74, which had the descriptive interpretation of approaching. This means that the level of conceptual understanding of the students is quite developing and that turns into approaching the proficiency of the concepts that were involved in Grade 6 topics in learning mathematics. As per the result, the language in learning mathematics (m=14.52; SD of 4.52), the skills and transferring knowledge (m=16.59; SD of 5.97); the comprehension of fundamental concepts in mathematics (m=19.20; SD of 7.10), and the inclusive conceptual understanding (m=27.82; SD of 10.15).

According to the study by Andamon and Tan (2018), stated that there are issues and problems of the students in learning mathematics in the language and fundamental concepts of understanding. Thus, this affirms that language difficulties of the learners were aligned on the vocabulary of mathematics, comprehension on the recognition of words and numbers (Sandoval, 2009). The capacity to conceptualize enables a person to make sense of the massive amount of information they process every day. Students who are taught to generate conceptual challenges in a variety of disciplines will be better at solving abstract reasoning problems, applying their knowledge to novel situations, and creating connections between related pieces of knowledge (Egtob et al., 2022).

Table 2. *Academic Performance of Grade 6 Pupils in Learning Mathematics*

Actual Scores	*Frequency (n)*	*Percentage (%)*	*Mean Score*	*Descriptive Interpretation*	*Adjectival Interpretation*
Ranging from 24 to 43	20	100	79.10	Approaching to Proficiency	Moderate

Based on the results, the academic performance of Grade 6 pupils in learning mathematics was greatly posted in the above table. Table 2 presents that the average scores of the learners who took the examination ranged from 24 to 43 out of 50-item knowledge test questionnaire provided by the researcher. There were 20 (100%) respondents who participated in the assessment with a mean score of 79.10 based on gathered results from the examination. This meant that descriptive interpretation was approaching proficiency. The outcome is in line with the results of the Programme for International Student Assessment (PISA) in 2019. Based on the study, out of the 79 participating countries, the Philippines had the lowest reading and comprehension rating and the foremost score in math and science. Additionally, it is in line with the findings of the 2008 Trends in International Mathematics Science and Study (TIMSS), which showed that the Philippines positioned 23rd from out 25 countries in the region for Grade V Mathematical concepts.

Consequently, they be more effective when assessed and will have improved learning outcomes. Future educators have a duty to accept these research results and teach mathematics for real conceptual understanding rather than just to produce formula-memorizing children. The secret to creating more successful learners is to foster students' exuberance for and curiosity about mathematics while allowing them to begin to understand using a variety of representational techniques (Jensen et al., 2017).

The outcome is supported by the research of Korn (2014), who found that memorizing mathematical theorems or manipulating numbers without a thorough understanding of the concept and ideas is nearly impossible for pupils to do. This is because reading and understanding rules is not the same as having true knowledge of mathematical concepts and ideas. This is since many pupils adopt alternatives when solving mathematical problems rather than understanding the idea (Molina, 2014; Korn, 2014; Frankina, 2021). The results of the students' assessments for the two grading

periods show a negative difference when compared to the analysis of previous study by Castillano (2018). Along with, highlighted the low performance of pupils in Mathematics. These provide convincing evidence of the poor mathematics performance of Filipino students.

Table 3. *Students' Attitude Towards Learning Mathematics*

Indicators	*Mean*	*SD*	*Verbal Interpretation*	*Qualitative Interpretation*
(1) Learning mathematics in a simple approach to comprehending the notions of the problems.	3.75	0.89	Agree	Positive
(2) Adapting new pattern of mathematics that could augment words and numbers identification by the teaching and learning.	3.44	0.97	Neutral	Uncertain
(3) Developing and expanding math subject matters to generate students who seem to be highly competitive.	3.10	0.85	Neutral	Uncertain
Overall	3.43	0.90	Neutral	Uncertain

The overall mean of 3.43 with a standard deviation of 0.32, which can be described as "neutral." This meant that the students were certainly uncertain. This implied that the attitude towards learning mathematics was sometimes fair. As to highlight the findings, the indicator 1, "Learning mathematics in a simple approach to comprehending the notions of the problems," which had a mean of 3.75 with a standard deviation of 0.89, with a "positive" result based on qualitative interpretation. The second indicator, "Adapting new patterns of mathematics that could augment words and numbers identification by teaching and learning," got a weighted mean (m=3.44) with a standard deviation of 0.97. Lastly, the "Developing and expanding math subject matters to generate students who seem to be highly competitive," had a mean of 3.10 with an SD of 0.85, which can be described as "neutral" or uncertain.

The result neither correlates nor contradicts with the study of Villaver (2014) that had proven the relational implications of attitude to education. Positive and negative attitude vary their significance towards learning. Proficiency may improve or diminish depending on the degree of influence attitude had on the student. Moreover, the study of Prado (2022) confirms on this topic stating, teachers, parents, and the educational personnel should make additional efforts to strengthen and expand the students' study practices and so establish a good attitudes towards Mathematics.

Table 4. *Significant Relationship Between Students' Academic Performance and Their Conceptual Understanding and Attitudes Towards Mathematics*

Variables	*Unstandardized Coefficients*		*Standardized Coefficients*	*T*	*Sig.*
	B	*Std. Error*	*Beta*		
Academic Performance	10.029	5.882	0.751	1.340	0.089
Attitudes	6.456	2.375	0.264	4.123	0.000
Conceptual Understanding	1.119	0.356	0.216	-3.088	0.452
Overall	17.604	8.613	1.231	2.375	0.541

Table 4 presents the significant relationship between students' academic performance and their conceptual understanding and attitudes towards mathematics. Based on the findings, academic performance had a significance value of 0.089. The attitudes pertained with (sig=0.000), while the conceptual understanding obtained with 0.452 significance value. The attitude towards learning mathematics had the greatest degree of influence with beta weights of (0.264), (t=4.123), and p-value of 0.000. Which indicates its significance level at 0.01 level. Moreover, the conceptual understanding of Grade 6 pupils in learning mathematics with beta-weights of (0.216), (t=-3.088), and probability of 0.452.

That conceptual understanding influence mathematical performance but then researcher found that students who have higher conceptual understanding undertake well in mathematics while students who have lesser conceptual knowledge have poor outcomes in mathematics, which is a distinct case in this study since participants have low metacognitive awareness in mathematics it is presumably because the majority of respondent were located at the unfortunate place where learners do not have depth conceptual understanding (Villaver, 2014).

Conclusion

The study has been conducted to scrutinize the level of understanding and the students' attitudes towards their academic performance in learning mathematics. The study was conducted in the academic year 2022–2023 at Dimasalang Elementary School in the District of San Luis I, Division of Agusan del Sur, Philippines. The study employed a quantitative approach with descriptive correlational research designed. Based on the findings, the level of conceptual understanding of Grade 6 pupils in learning mathematics, had the overall mean score was 78.13 with a standard deviation of 27.74, which had the descriptive

interpretation of approaching. This means that the level of conceptual understanding of the students is quite developing and that turns into approaching the proficiency of the concepts that were involved in Grade 6 topics in learning mathematics. Furthermore, the average scores of the learners who took the examination ranged from 24 to 43 out of 50-item knowledge test questionnaire provided by the researcher.

There were 20 (100%) respondents who participated in the assessment with a mean score of 79.10 based on gathered results from the examination. This meant that descriptive interpretation was approaching proficiency. Nonetheless, the significant relationship between students' academic performance and their conceptual understanding and attitudes towards mathematics. Based on the findings, academic performance had a significance value of 0.089. The attitudes pertained with (sig=0.000), while the conceptual understanding obtained with 0.452 significance value. The attitude towards learning mathematics had the greatest degree of influence with beta weights of (0.264), (t=4.123), and p-value of 0.000. Which indicates its significance level at 0.01 level. Moreover, the conceptual understanding of Grade 6 pupils in learning mathematics with beta-weights of (0.216), (t=-3.088), and probability of 0.452.

Thus, the conceptual understanding influence mathematical performance found that students who have higher conceptual understanding undertake well in mathematics while students who have lesser conceptual knowledge have poor outcomes in mathematics. This signifies that the more positive the attitude towards mathematics the stronger is the performance in mathematics. Mathematics teacher are advised to continuously examine the students' level of performance in mathematical to see whether scores rise or deteriorate in fundamental understanding specifically the transmitting knowledge and the comprehension of mathematics language. The study recommends teachers that they might consider to assess not only the level of their students' performance, but also the conceptual comprehension in mathematics.

The operational capabilities in mathematics specifically decision making can be easier solved if there is a depth grasp in the concept of the setting. Advisers in charged are recommended to inculcate a positive mindset toward math as it can enhance significantly in their performance towards that topic since it was observed that attitude was highly correlated to mathematics performance. It also proposed that teachers and parents may evaluate the attitude of pupils towards mathematics. If feasible, they should encourage them to appreciate the topic so that learners always have good approach to mathematics. Teachers are advised to keep track and always give strength on how to achieve the underlying concepts in mathematics as it can promote students' profound knowledge and improve problem solving in mathematics.

Furthermore, the Department of Education (DepEd) might consider the findings of the present study to explicitly recheck or revisit the grading system in mathematics and develop or design with more comprehensive subject matters that help students' performance in learning mathematics. Lastly, the results of the study would be the basis of what kind of intervention program should be designed and implemented that could improve students conceptual understanding and attitude towards mathematics.

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