



American Journal of Education and Technology (AJET)

ISSN: 2832-9481 (ONLINE)

VOLUME 5 ISSUE 3 (2026)



PUBLISHED BY
E-PALLI PUBLISHERS, DELAWARE, USA

Teachers' Pedagogical Practices and Pupils' Mathematical Achievement

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Article Information

Received: May 08, 2026

Accepted: July 17, 2026

Published: September 09, 2026

Keywords

*Correlation, Mathematical
Achievement, Pedagogical Practices*

ABSTRACT

This research aimed to describe the level of teachers' pedagogical practices in terms of the use of manipulative materials/skills, problem-solving approach, communicating math ideas, and assessment practices. It sought to determine its impact on pupils' mathematical achievement. The population of this study is Dingras District I which recently conducted a Rapid Mathematics Assessment on Grades 4 to 6 pupils with results showing most pupils who are low proficient in the subject. This shows a gap in learning prompting the need to examine factors that affect these results. This study involved 140 grade six pupils of Dingras District I. Samples were determined using a multi-stage sampling technique, first cluster sampling followed by a stratified random sampling to ensure that enough samples represent the population. An adapted 5-point scale survey questionnaire, answered by the pupils was used to collect data for this study. Consequently, the pupils' grades were collected from their teachers. Pearson r was used to determine the correlation between the variables. Findings revealed that the stated pedagogical practices in teaching mathematics were being used by teachers. The level of use of the practices in the communication of math ideas showed the highest mean, indicating a very high level. The overall level of teachers' pedagogical practices showed to be high which implies that the teachers are competent enough with their pedagogical practices. In terms of pupils' level of mathematical achievement, their mean grade was found to be 86.74, indicating a very satisfactory grade. This entails that they have gained fundamental knowledge, skills and core understanding, and transfers them independently through authentic performance. Looking into the correlation of the variables, it was found out that there is a significant relationship between the variables with overall computed r of 0.3936 which means that there is a high significant relationship between the variables. Since the quality of pedagogical practices is associated with pupils' mathematical achievement, this research findings implies that it is vital for teachers to apply the best practices to ensure high mathematical achievement among learners. Perhaps, taking into consideration the different factors to ensure a better learning experience for learners.

INTRODUCTION

The teaching and learning process is vital in achieving the best education that every learner deserves. Every step in education plays a significant role in the success of each individual. Learners start with their elementary education, where foundational knowledge is built and newly discovered skills are honed. Kapur (2022) emphasized that this education establishes the foundation from where learning and progression of the individuals take place. In relation to this, our current curriculum follows the spiral progression of learning competencies which means that what learners learn in the elementary level is important to achieve success in their secondary and tertiary education. Such foundations have long term effects on their academic journey. Specifically, mathematics education is an important subject matter for everyone because of its implications in many different aspects of life. Mathematics lays the ground for the development of essential skills that are valuable not only in schools but in everyday life. With the evident importance of mathematics education, the newly introduced Matatag K to 10 Mathematics Curriculum emphasized, "the goal of mathematics

education which is to develop mathematically proficient and critical problem-solver learners" (Department of Education, 2023, p. 3). However, many challenges such as math anxiety, low academic performance and prejudice against the subject matter are being faced. This can also be mirrored in how the country performed in the recent Program for International Student Assessment (PISA) in 2022, in which the Philippines had a mean score of 355 for mathematics, ranking 76th out of 81 participating countries (OECD, 2023). Additionally, in 2019, the Philippines joined the Trends in International Mathematics and Science Study where the Philippines was represented by grade 4 pupils. Results also revealed that the Philippines ranked last with a score of 297 in mathematics (Mullis *et al.*, 2020).

According to a recent report by the Senate Committee on Basic Education on April 30, 2025, "approximately 18 million Filipinos who are graduates from the country's basic education system could be functionally illiterate" (EDCOM 2 Communications, 2025). This means that they can read and write but struggle to understand what they read or apply skills in practical situations.

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Additionally, this includes struggling with basic math concepts and problem-solving (Denya, 2025).

Aside from the above-mentioned challenges in terms of mathematics education, the COVID-19 pandemic has also affected many facets of our society which includes our education. A study of Pecjo (2023) on the effect of Covid-19 on the Academic Performance in Mathematics showed that the mathematics skills of learners were developed to a moderate extent only due to home factors, attitude and interest of learners toward mathematics. Locally, a proposed study was presented by Paulino (2020) in improving analytic and computational skills in Ilocos Norte. He cited that the Ilocos Norte Regional School of Fisheries faces problems in the teaching of Mathematics. He also added that the “students’ motivation to solve mathematical problem is low” (p. 2). This is also true to the target population of this study which is the elementary schools in Dingras, Ilocos Norte. Recently, the District of Dingras I conducted a Rapid Mathematics Assessment on Grades 4 to 6 pupils. Results show that most pupils are still emerging which means that they are low proficient in the subject. Particularly, in the 6th grade, most pupils are not proficient. Such findings are important to address as these factors affect the mathematical achievement of students.

In order to achieve the laid goals in mathematics education and address these underlying concerns, pedagogical practices in the first level of teaching mathematics are crucial. The way a teacher teach reflects on the achievement of the learners- this makes teachers’ pedagogy really important. “Pedagogical practice refers to the methods, approaches, and strategies that educators use to facilitate learning and support students’ intellectual, social, and emotional development” (ProctorEdu, Inc., 2025). A teacher’s pedagogy significantly impacts the lives of learners.

This study aligns with the goals of the ARAL Program-a program launched by the DepEd to strengthen foundational skills in key subject areas, including mathematics, by examining the pedagogical practices employed by Grade 6 mathematics teachers and their relationship to pupils’ mathematical achievement. By identifying which teaching strategies are commonly used and how they correlate with learners’ performance, this research provided localized, evidence-based insights that can inform the design and implementation of learning recovery interventions, particularly in mathematics instruction.

This study, therefore, aimed to describe the level of mathematics teachers’ pedagogical practices and level of pupils’ mathematical achievement. The results offer important insights to educators, which will help in the improvement of mathematics education. Hence, this study sought to answer the following questions:

1. What is the level of pedagogical practices employed by teachers in teaching mathematics as perceived by students in terms of the following:

- Use of manipulative materials/skills

- Problem Solving Approach
- Communicating Mathematics Ideas
- Assessment Practices

2. What is the pupils’ level of mathematical achievement in terms of their grade?

3. Is there a significant relationship between teachers’ pedagogical practices and pupils’ mathematical achievement?

LITERATURE REVIEW

Mathematics Education

To learn about mathematics is an essential part of life. Albert Einstein viewed Mathematics as an indispensable medium for scientific inquiry as it serves as the “bedrock upon which we can comprehend and explain the workings of the universe.” Consequently, Yadav (2019) stated that Mathematics occupies a crucial and unique role in human societies and represents a strategic key in the development of mankind. With these, it can be said that this subject matter allows learners to develop important skills that all learners should have the opportunity to learn.

In the recently launched Matatag Curriculum, the main goals of mathematics education are to develop Filipino learners to become mathematically proficient and critical problem solvers. According to Corrêa & Haslam (2020), mathematical proficiency is a cohesive blend of conceptual understanding, strategical competence, procedural fluency, adaptive reasoning, and productive disposition. Being a problem solver on the other hand is being able to “finding a way out of a difficulty, a way around an obstacle, attaining an aim which was not immediately attainable” (Polya, 1981). These goals are also true from the K-12 Curriculum where it laid the twin goals of mathematics education which is to develop learners who possess critical thinking and problem-solving skills. These skills are important because of its effect in every learner’s life-long success.

To achieve the said goals, it is important to note that mathematics education is crucial. According to Bariso, *et al.* (2021), Mathematics education is the formal teaching and learning of mathematical concepts. He added that this is predominantly done in a formal setting such as schools. Mathematics education as the field of how human minds deal with mathematical ideas and which deals with the way that human beings think about, communicate about or learn to deal with basic patterns (Davis, 1984; Francisco, *et al.*, 2021). In other words, mathematics education encompasses the teaching and learning of mathematics. It also includes the improvement done by curriculum planners by the help of research studies such as this.

In the pursuit of achieving learners’ success, every step of their educational journey is important. Particularly, DepEd (2023) stated that “the successful study of mathematics in Grades 1 to 10 is a key component of Filipino learners’ preparation for life in the 21st century.” It also added that “For full participation in society, learners need to develop sound mathematical knowledge, skills, and understanding for making informed decisions and for

solving problems in a variety of contexts relevant to their daily lives.” Similarly, the National Council of Teachers of Mathematics states that “A strong foundation in mathematics, for each and every student from pre-K–12, is vital to our nation’s economic stability, national security, workforce productivity, and full participation in our democratic society.” As this study has proposed, the elementary mathematics education is placed as a focus.

The elementary level of education is an integral stepping stone of every learner. It is where most children learn to read, where they learn the fundamental concepts of science and mathematics, and where they gain a basic understanding of the world and its history (Walden University, 2025). Particularly, in elementary mathematics color, shapes, number patterns and the basic operations are being taught. As the pupils’ progress into arithmetic operations, they make connections with pattern and number, counting and adding, and these connections set them up for success in future mathematics learning (Lagusker, 2021).

However, it is not new to us that every endeavor has its own challenges. Mathematics education faces this as well. Both teachers and learners have their own perspective about what and how they deal with such. From a study conducted by Bacong, *et al.* (2023), the challenges that learners have in learning mathematics include having trouble recalling information from previous classes, forgetting information easily, and having trouble understanding mathematical ideas. Because of these, learners tend to give up easily or can develop mathematics anxiety. It can also lead to learners disliking mathematics. This corroborates the study of Aguilar (2021), which found out that “one of the main reasons for learner’s reluctancy toward mathematics is their lack of understanding and self-perception of low content knowledge, which let them to have a negative perception. Learners stated that their negative perception was not new, but instead something they knew since elementary.” It can be inferred then that there is a need in revisiting the factors affecting these learners’ perception. More importantly, the need in securing the best result for learners’ mathematical achievement.

Pedagogical Practices

Pedagogy is defined as the art and science of teaching. It refers to the principles and practices of teaching, including the methods and strategies used by educators to facilitate learning. It involves the study of how to teach effectively, how learners learn, and the best ways to structure learning experiences to promote meaningful and lasting learning (Team Creatrix, 2023). In terms of education, there are different pedagogical practices that teachers employ in their teaching. Though pedagogy provides the theoretical foundation, pedagogical practices are the specific tools and techniques used by teachers to put educational theories into action. According to Kapur (2018), pedagogical practices can be understood as a set of instructional techniques and strategies for acquiring

knowledge, skills, attitudes, and dispositions.

Teaching mathematics has become challenging because of different factors. Some learners when hearing about math have this pre-conceived notion that it is difficult and is complicated-- this leads them to not wanting math even without trying. The curriculum can also be a factor because of the congested competencies. According to the Department of Education, this is one of the reasons of the current reforms resulting to the Matatag Curriculum. Teachers in mathematics uses different practices to help in solving such issues and challenges.

As cited on the study of Furner (2024), he emphasized the importance of employing “best practice” in teaching math like using math manipulatives, cooperative learning, dialogue of math, enquiring and conjecturing, justifying one’s thinking, math journaling, using a problem-solving approach to teaching, interdisciplinary instruction of content, emerging technology, assessment as an integral part of instruction. Moreover, Maloney (2022) also stated that another way of engaging the learners and improving their learning in the subject is by showing empathy and understanding of what is going on in the students’ lives. This has something to do with how a teacher communicates their lesson.

To be specific, one component of mathematics teachers’ pedagogical practices is their skills in using manipulatives. According to Larbi, *et al.* (2016), manipulatives are materials from our own environment that learners can use to learn or form mathematical concepts. This is essential in teaching mathematics as it allows learners to relate more on what they are learning. Research has shown that if learners are able to explore with manipulatives, they have a higher percentage of mastering number sense and will gain more knowledge from utilizing the materials (Jung, *et al.*, 2014). This specific practice is recommended for all grade levels in elementary since it is during this stage that primary stages of knowledge formation take place. This is supported by Piaget’s research on cognitive development, where he stated that children learn concepts through three levels namely: concrete, pictorial, and abstract.

As the heart of mathematics, problem-solving approach is also essential in teaching mathematics. It emphasizes that important mathematics concepts and procedures can be best taught through problem solving tasks or activities which engage learners in thinking about the important mathematical concepts and skills they need to learn (Albay, 2019). It is important too that when math teachers teach problem-solving, they make use of contextualized real-life applications. Based from the theoretical and philosophical bases written in the Matatag Curriculum Guide for Mathematics, it is really encouraged to make use of contextual problems base on the learners’ interest as this improves the learner’s ability to make sense of new situations, build on prior knowledge, and transfer learning (DepEd, 2023).

Communication of ideas is also an integral pedagogical practice. Results from a study of Mursalin, *et al.* (2025), showed that effective communication allows teachers to

create an inclusive learning environment, increase learner interaction, and build higher learning motivation. When learners are engaged in explaining concepts in ideas, this is one factor affecting their mathematical achievement. This corroborates the study of Webb, *et al.* (2014), where it stated that “the level of learner engagement with each other’s ideas and the incidence of learners providing detailed explanations of their problem-solving strategies were positively related to their achievement.”

Lastly, the assessment practices of teachers are also crucial as it measures the achievement of the learners. Assessment enables teachers and learners to draw inferences from the information obtained and act accordingly (Monteiro, *et al.*, 2021). Moreover, Black and Wiliam (2018) stated that such actions may aid in making the necessary improvements to teaching and learning, or simply provide a picture in time of learners’ competence or achievement. In the study of Palma (2026), on differentiated instruction on mathematics achievement, findings affirm the need in developing diversified, domain-sensitive assessment tools to measure and foster different forms of mathematical understanding accurately. With this, it can be said that assessment practices is an integral part in choosing the best practices in teaching.

Mathematics Achievement

Mathematics achievement represents the knowledge and skills a person has learned in particular areas of mathematics (Shear, 2024). According to Rashid & Singh (2021), mathematical achievement is specifically described as the scores obtained by learners on a mathematics achievement test that evaluate their learning and understanding of grade-specific mathematics syllabus. Additionally, Breit, *et al.* (2025), also stated that it is the “performance outcomes that indicate the extent to which a person has accomplished specific goals that were the focus of activities in instructional environments, specifically in school, college, and university...” Therefore, mathematical achievement is often measured through their grades as it serves as an indicator of how well they performed in their classes.

There are different factors affecting the mathematical achievement of learners. Some of these are their motivation in learning math, their attitude towards the subject, and their study-habits. There are also teacher-related factors like their pedagogical practices, particularly the methods, strategies, and approaches that they use when teaching the subject. From a rapid systematic review conducted by Ayebale, *et al.* (2020), the teaching methods, teachers’ attitude, students’ attitude towards mathematics were noted as key factors in learners’ mathematical achievement. They also added that “parents can exert a positive influence on their children’s mathematical performance, classroom environment, learners’ previous mathematics achievement and gender related factors.”

Given the different factors affecting learners’ mathematical achievement, one manifestation of this is their numerical grades. These grades represent their

summative assessment. Summative assessment refers to the evaluation of students’ learning outcomes at the end of a course to determine their ability to progress to the next level or course (International Encyclopedia of Education, 2023). The purpose of which is to determine the extent of student learning and achievement against established standards or objectives. The result then is reflected on the students’ final grade.

Pedagogical Practices And Learners’ Academic Achievement

There have been researches showing the relationship of pedagogical practices and learners’ achievement. Pedagogical practices are employed by teachers being the facilitator of learning and these practices are a great factor in determining learners’ achievement. As cited in the study of Tomaszewski, *et al.* (2022), it is the teacher-learner relationships and interactions in the classroom that mainly influence learners’ learning experience and outcomes. Additionally, in a study conducted by Sarder & Haider (2023) on the impact of pedagogical practices on academic performance, results showed that there is a significant relationship between pedagogical practices and the course-level performance of university students. The study suggested that enhancing teaching practices can serve as an effective tool for improving academic performance.

Similarly, another research conducted by Edu (2025) revealed that teachers’ instructional strategies significantly influence learners’ academic achievement. He added that the quality of teaching has a profound impact on learners’ academic performance, shaping their ability to understand concepts, apply knowledge, and develop critical thinking skills.

Several factors affect learners’ academic achievement. Specifically, in mathematics, it is important that they possess critical thinking and problem-solving skills. Both are the main goals of our mathematics curriculum. This being said, a well-designed pedagogical approach can foster critical thinking, problem-solving skills, and creativity among students (Main, 2021). However, the opposite can also lead to lack of motivation among learners which greatly affect their academic performance. With this, Main (2021), emphasized that it is important for educators to understand the impact of pedagogy on the learning process and to continuously improve their teaching methods to ensure positive learning outcomes for learners.

Mathematics plays an essential role for individual development and societal progress. It is a valuable tool facilitating essential daily activities across various roles, underscoring its practical applications and continuous use (Edu, *et al.*, 2025). The Philippines’ Mathematics Curriculum and International Standards emphasize mathematical proficiency: conceptual understanding, strategic competence, procedural fluency, adaptive reasoning, and productive disposition (Corrêa & Haslam, 2020). Specifically, elementary mathematics is emphasized

as a critical stage for forming number sense, pattern recognition, and basic operations-foundations for later learning (Lagusker, 2021).

Even with these, research points to persistent barriers such as poor recall of prior learning, conceptual misunderstanding, and math anxiety as found by Bacong *et al.*, (2023) and Aguilar (2021). This calls for the importance of looking into the pedagogical practices that support learning. Effective pedagogy combines theory and practice: manipulatives, cooperative learning, mathematical dialogue, problem-based instruction, formative assessment, and use of technology are recommended as “best practices” (Furner, 2024; Kapur, 2018).

The studies of Tomaszewski, *et al.* (2022), Sarder & Haider (2023), and Edu (2025) report a positive relationship between teachers’ pedagogical practices and student achievement. This implies that teacher quality, instructional strategies, classroom interactions, and the learning environment significantly shape outcomes. With this, educational practices like early interventions that combine manipulatives, contextual problem solving, and structured mathematical talk; integrative formative assessment to inform instruction; and address affective barriers through teacher empathy and communication strategies should be taken into consideration.

MATERIALS AND METHODS

Research Design

This study employed a descriptive correlational research design since the purpose of the study is to describe the level of teachers’ pedagogical practices and pupils’ mathematical achievement. This method accurately and systematically describes the current situation in teaching elementary mathematics (McCombes, 2023).

The research is descriptive in nature as it sought to describe the level of elementary teachers’ pedagogical practices in teaching mathematics. It is also correlational as it sought to determine if there is a significant relationship between teachers’ pedagogical practices and pupils’ mathematical achievement.

Since the study aimed to determine a relationship between the variables, quantitative methods were used to analyze and interpret the data that was gathered through the research instrument.

Research Instrument

The data for this study were gathered using an adapted survey questionnaire from the study of Pimentel (2020) titled Teaching Practices in Mathematics and its Impact towards the Interest of the Students: Basis for crafting a coherent Mathematics intervention Program. The questionnaire highlights statements that measure how often these practices are employed by teachers in teaching mathematics. It is divided into 4 parts particularly (1) Use of manipulative materials/skills; (2) Problem-solving approach; (3) Communicating Mathematics Ideas; and

(4) Assessment practices. This survey was answered by Grade 6 pupils as it was based on their observations during their classes. With this, age-appropriateness was considered in the statements from the survey.

To determine the pupils’ mathematical achievement, the pupils’ final grade for the first quarter was used as an indicator. This is the most appropriate as it comprises the written works, performance tasks, and quarterly assessment of the pupils. The DepEd’s grading system for math involves a standards-based approach making it suitable as it comprises the 3 components.

Population and Sampling

The population of this study are Grade 6 pupils from the municipality of Dingras, Ilocos Norte, which is clustered into two elementary school districts: Dingras I and Dingras II. The sample was obtained using a multistage sampling technique. In the first stage, cluster sampling was used to narrow down the population to the Dingras District I. This district comprises 12 elementary schools. In the next stage, stratified random sampling was applied within the selected schools to ensure fair representation of the pupils in the sample.

Data Collection Procedures

The following procedures were followed to ensure that the process is systematic. A letter was sent to the Schools Division of Ilocos Norte asking permission to conduct the study. After approval, another letter addressed to the school principal was sent to ask permission for the conduct of the study in their respective school. With the approval of the school principal, determining the sample respondents came next. Informing the respondents’ teachers with the study followed.

The purpose of the study was presented along with the survey questionnaire that was used as an instrument for the research. The questionnaire consisted a list of statements that were used to measure the pedagogical practices utilized by their teachers. Respondents for the study were grade 6 pupils of the mathematics teachers. With this, the researcher ensured that the pupil-participants were informed about the study by distributing parents’ consent and student assent forms. Their participation was voluntary. The respondents were given 5 to 10 days to answer the survey to ensure that they have enough time answering it. The survey questionnaires were retrieved by the researcher after finishing it.

After this, the grades of the pupils were collected from each of the teacher’s record. In line with this, the researcher ensured that the pupils’ parents were informed about how their children’s grades would be used. The gathered data are kept with utmost confidentiality and are securely stored and used by the researcher. Consequently, personal data and information are stored and accessed by the researcher only. The gathered data were destroyed after the completion of this study. Since the survey questionnaire used paper, the document was shredded

and incinerated. As for the data on the pupils' grade, these were deleted after the completion of the study.

Data Analysis

The data obtained from this study was analyzed using descriptive statistics. In order to interpret the teachers' level of pedagogical practices employed in teaching mathematics, the scale below was used. Similarly, since the pupils' mathematical achievement were based in terms of their quarterly grades, it was interpreted using the grading scale provided by the DepEd Order No. 8 s. 2015

To analyze the relationship between the teachers' pedagogical practices and the pupils' mathematical

achievement, Pearson r was used.

Ethical Considerations

Ethical consideration is of utmost importance in this study. Before the conduct of the study, the researcher went through the University Research Ethics Review Board (URERB) to ensure the validity and ethicality of the study.

Consents from the Division office, as well as from the school principal, were obtained. This includes informing them of the objective and the purpose of the study. Before the conduct of the study, the researcher ensured that the pupils' parents were informed about the nature of the study and the pupils' involvement through the consent and assent forms. In the said forms, information about the researcher and the affiliated institution were provided. The researcher also informed respondents that participation is voluntary and that they can withdraw anytime without any negative consequences.

The researcher ensures adequate confidentiality of the participants by not forcing them to identify themselves. They have the option to state or to not state their name in the survey that was given. The researcher guaranteed confidentiality, respect, and protection for the participants' privacy. The data that were gathered were secured, deleted, and destroyed after the completion of this study. Moreover, the data is only exclusive for the researcher and will not be shared to anyone outside of the study.

RESULTS AND DISCUSSION

Teachers' Pedagogical Practices in Teaching Mathematics

Table 1: Descriptive Interpretation of Mean Range (Teacher's Pedagogical Practices)

Mean Range	Descriptive Interpretation
4.50 – 5.00	Very High
3.50 – 4.49	High
2.50 – 3.49	Moderately High
1.50 – 2.49	Low
1.00 – 1.49	Very Low

Table 2: Descriptive Interpretation of Pupil's Grades

Grading Scale	Descriptive Interpretation
90 – 100	Outstanding
85 – 89	Very Satisfactory
80 – 84	Satisfactory
75 – 79	Fairly Satisfactory
70 and below	Poor/Failed

Table 3: Pedagogical practices

	Mean	Descriptive Interpretation
Use of Manipulative Materials/skills		
1. My math teacher uses electronic technology such as projector, television and any gadgets in our classes.	4.34	High
2. My math teacher allows us to conduct actual measurements and explore concepts related to the subject.	4.29	High
3. My math teacher uses tables and graphs to provide visual elements to assist students' understanding.	4.22	High
4. My math teacher provides step-by-step procedures for pupils to better understand the process of mathematical solutions.	4.74	Very High
5. My math teacher employs various instructional materials such as geo-board, meter stick, and many other devices that can be used to demonstrate concepts or ideas in a certain math problem.	4.09	High
Composite Mean	4.34	High
Problem-Solving Approach		
1. My math teacher introduces word problems using different ways of solving, giving orderly starting from easy to difficult one.	4.82	Very High
2. My math teacher uses open-ended problems.	4.19	High
3. My math teacher uses real-life and practical life problems and applications.	4.19	High

4.	My math teacher provides figures and drawings that illustrate the problem situation.	4.21	High
5.	My math teacher guides us in solving specially when we are having difficulties.	4.67	Very High
Composite Mean		4.42	Very High
Communicating Math Ideas			
1.	My math teacher uses simple words in explaining and giving instructions.	4.69	Very High
2.	My math teacher encourages us to ask questions if we want to clarify something with the lesson.	4.54	Very High
3.	My math teacher asks “why” and “how” questions.	4.54	Very High
4.	My math teacher encourages class discussion as peer tutoring to assist understanding.	4.28	High
5.	My math teacher makes sure that vocabularies and other unfamiliar words that are new to us are well defined and explained.	4.50	Very High
Composite Mean		4.51	Very High
Assessment Practices			
1.	My math teacher conducts written exam, such as periodical exam, summative test, and quizzes.	4.61	Very High
2.	My math teacher gives us assignments which are done individually or by group.	4.12	High
3.	My math teacher conducts oral recitations to assess understanding.	4.74	Very High
4.	My math teacher gives hands-on activities, puzzles and games as a practice.	3.79	High
Composite Mean		4.32	High
Overall Mean		4.40	High

Legend: 4.50 - 5.00 (Very High); 3.50-4.49 (High); 2.50-3.49 (Moderately High); 1.50-2.49 (Low); 1.00-1.49 (Very Low)

Table 3 shows the level of mathematics teachers' pedagogical practices as perceived by grade 6 pupils. The first section refers to the use of manipulative materials/skills. From that, it appears that the level of the use of electronic technology (4.34) is “high”. This is also true for practices such as allowing pupils to conduct actual measurements and explore related concepts (4.29); using tables and graphs to provide visual elements (4.22); and employing various instructional materials that can be used to demonstrate concepts or ideas in certain math problem (4.09). This implies that teachers' level in using these pedagogical practices follow the trends as technological advances in the teaching and learning field continues to emerge. Moreover, in terms of providing step-by-step procedures for pupils to better understand the process of mathematical solution, its level of use appears to be “very high”. This shows that their mathematics teachers consider this as an integral part in their teaching processes. The second section summarizes the result in determining the level of the use of problem-solving approaches. With a mean of 4.82, it appears that math teachers introduce word problems using different ways of solving. Consequently, in terms of teachers' guidance for pupils in solving, it shows that the mean is 4.67. Based on the calculated means, it appears that both practices are important for teachers as their means gives as descriptive interpretation

as “very high”. According to the Woodward, *et al.* (2018), “students who learn how to use multiple problem-solving strategies are able to approach problems with greater ease and flexibility in finding solutions.” They also added that teachers then should demonstrate that problems can be solved in multiple ways, which supports the result of this research. When it comes to using open-ended problems (4.19); using real-life and practical life problems and applications (4.19); and providing figures and drawings to illustrate problem situation (4.21), it appears that the level of the use of these strategies is “high” when teaching mathematics. These practices are important as well, especially that the Department of Education emphasized in the Matatag Curriculum the importance of using contextualized examples.

When it comes to communicating math ideas, the third section shows that the level of the use of simple words in explaining and giving instruction (4.69) is “very high”. This is also true in encouraging their pupils to ask questions for clarifications (4.54); teachers asking “why” and “how” questions; and teachers making sure that vocabularies and unfamiliar words are well-defined and explained (4.54). One statement, however, pertaining to encouragement of class discussion as peer tutoring to assist understanding, appears to have a “high” level of use, with a mean of 4.28-not too far from the means of

the other practices related to communicating math ideas. This signifies that the level of teachers' use of these pedagogical practices is plausible. This result corroborates to the recommendation on the study of Rohid, *et al.* (2019), which emphasized that teachers should stimulate the students' mathematical communication skills through creative and innovative learning activities.

Classroom assessment is a major component of education. It is an ongoing process of identifying, gathering, organizing, and interpreting quantitative and qualitative information about what learners know and can do (DepEd, 2015). The fourth section shows the teachers' level in terms of their assessment practices. Based on the data, it appears that teachers' level in conducting written exam such as periodical exam, summative test, and quizzes (4.61) is "very high". This implies that teachers take into consideration the different types of assessment. For instance, giving quizzes for formative assessment, and the periodical exam and summative exams which are integral in the computation of their grades. It also shows that teachers encourage oral recitation with a mean of 4.74 having a descriptive interpretation as "very high". Other assessment practices involve teachers giving assignments which are done individually and by group. With a mean of 4.12, the level of its use is "high" signifying that teachers take into account the importance of assessment as learning where students practice on their own. The last assessment practices show the teachers' level in giving hands-on activities, puzzles and games as a practice. The calculated mean appeared to be 3.79, which showed to be the lowest mean among the other practices, though it

still signifies a level that is also "high". The research gap showed pupils who are low proficient in mathematics, perhaps this could be something that affects their achievement, which implies that this practice for teachers may be improved in classrooms. This is supported by the study of Tran (2025) which found out that hands-on activities are helpful in improving learners' engagement and motivation.

Of the four specific pedagogical practices, communicating mathematics ideas has the highest composite mean which is 4.51 with a descriptive interpretation of "very high". This is followed by level of the problem-solving approaches with a composite mean of 4.42 that is still "very high", then the use of manipulative materials/skills with a composite mean of 4.34, and lastly is the level of teachers' assessment practices with a composite mean of 4.32. The last two have a "high" level of use in their mathematics classes. Overall, the mean of these pedagogical practices is 4.40 showing that the level of the use of the stated pedagogical practices is "high". These results imply that the mathematics teachers within the scope of this study are competent enough in using the stated pedagogical practices. There are factors that they are considering in order to bridge gaps in teaching mathematics. As stated in the study of Parreño, *et al.* (2023) on the teaching practices of outstanding math teachers, "teachers must have the knowledge about new, innovative teaching methods, which can lead to educational achievements" (p. 8)—this is not only applicable for those outstanding ones but also to every teacher.

Table 4: Pupils' mathematical achievement

Grading Scale	Frequency	Percentage	Interpretation
90 – 100	42	30.00	Outstanding
85 - 89	59	42.14	Very Satisfactory
80 - 84	32	22.86	Satisfactory
75 - 79	7	5.00	Fairly Satisfactory
74 and below	0	0.00	Poor/Failed
Mean Grade	86.74	-	Very Satisfactory

Pupils' Level of Mathematical Achievement

Table 4 shows the grade 6 pupils' level of mathematical achievement based on their grades for the first quarter. Based on the data, 30% (42) of the total respondents have an outstanding grade in math. This means that their level exceeds the core requirements particularly in terms of their knowledge, skills and understanding. It also entails that they can transfer these skills automatically and flexibly through authentic performance tasks. Of the total respondents, 42.14% (59) have a very satisfactory grade. Most of the respondents fall to this level. This means that most of them possess the fundamental knowledge and skills, and core understandings for the subject and can transfer them independently. For the satisfactory level, 22.86% (32) of the total respondents fall to this level. This emphasize that they have already

developed the fundamental knowledge and skills and core understanding but needs little guidance for transferring these through authentic performance tasks. On the other hand, 5% (7) of the students are in the fairly satisfactory level. This means that they possess only the minimum knowledge and skills and core understanding, and needs help for the performance of authentic tasks. To represent the grade of the pupil respondents, the overall mean grade was computed. From the data, it appears that the pupils' mean grade is 86.74. This means that the current level of the pupils' mathematical achievement is very satisfactory. According to DepEd Memo No. 158, s. 2011, this level indicates that pupils gained fundamental knowledge, skills and core understanding, and transfers them independently through authentic performance (p. 7).

Teachers' Pedagogical Practices and Pupils' Mathematical Achievement

Table 5 shows the relationship between teachers' pedagogical practices and pupils' mathematical

achievement. To determine the relationship of the variables, Pearson's correlation (r) was calculated. Based on the table, in the test between the use of manipulative skills/materials and the mathematical achievement of

Table 5: Correlation of pedagogical practices and mathematical achievement

Variables	r	p-value
Use of Manipulative Skills/Materials	0.2849**	0.001
Problem-Solving Approaches	0.3354**	0.000
Communication of Math Ideas	0.4316**	0.000
Assessment Practices	0.2029*	0.016
OVERALL	0.3936**	0.000

** Significant at 0.01 probability level

the pupils, the computed r is 0.2849 signifying a positive correlation. With a p-value of 0.001, there is a significant association between the variables at 0.01 level of significance. Consequently, in the test between the use of problem-solving approaches and the pupils' mathematical achievement, the computed r is 0.3354. There is again a positive correlation and is showing a significant relationship at 0.01 level of significant. This is also true between the test on the communication of math ideas and pupils' mathematical achievement. With a computed r of 0.4316, there is a positive correlation, showing a significant relationship between the variables. The last variable is the test between the teachers' assessment practices and pupils' mathematical achievement. The computed r is 0.2029, which is still a positive correlation and showing a significant relationship at 0.05 level of significance. Computing the overall relationship of the pedagogical practices and the pupils' mathematical achievement, it showed that there is a positive correlation with a computed r of 0.3936. The p-value is 0.000 signifying that the result is highly significant. These findings imply that the stated pedagogical practices are some of the factors which can significantly influence the mathematical achievement of pupils.

CONCLUSION

This study aimed to find out the level of mathematics teachers' pedagogical practices as perceived by their pupils. There are four main sections which were investigated. First is the use of manipulatives materials/skills which showed a high level of use; second is the use of particular problem-solving approaches which showed a very high level; third is the communication of mathematics ideas which also showed a very high level; and lastly is the use of particular assessment practices which showed a high level of use. This study also aimed to find out the current level of the pupils' mathematical achievement through their grades. With a mean of 86.74, it showed that their grades are very satisfactory. Looking into the relationship of these variables, it showed that they have a significant relationship. These results indicate that the grades of the pupils are affected by their teachers' pedagogical practices. This is supported by previous researches such

as the study conducted by Sarder and Haider (2023) and Edu (2025) about the impacts of pedagogical practices on academic achievement. Both studies found out that there is a significant relationship between the variables. Edu (2025) restated that quality teaching helps in "shaping their (learners) ability to understand concepts, apply knowledge, and develop critical thinking skills" (p. 302). Since the results of this study showed that there is a significant relationship between teachers' pedagogical practices and pupils' mathematical achievement, it is recommended that teachers should strive to use the best methods and practices in teaching mathematics. Considering the current trends, teachers must continue to learn using technological advances, particularly manipulative materials and skills to aid in teaching mathematics. Furthermore, it is also recommended that teachers should use different problem-solving approaches to meet the needs of every learner. Communication is also important in the teaching and learning process. Hence, the researcher recommends that teachers should also include learners during discussion. Lastly, the best assessment practices should also be observed as this determines the progress of learners. Several researches indicate that effective mathematics instruction necessitates a variety of pedagogical techniques customized to specific topics (Arroyo, 2025). With this, adapting the best practices can lead teachers to better understand their learners and give them what they need to ensure that learning takes place. This study focused on the elementary level, particularly grade six pupils. With this, future researchers may explore if the findings also apply in other grade levels of the basic education. Therefore, since the quality of pedagogical practices is associated with pupils' mathematical achievement, it is just right to ensure that teachers use the best practices.

Acknowledgements

The researcher would like to express her deepest gratitude to the Heavenly Father for providing her strength, knowledge, heavenly wisdom, and perseverance throughout the conduct of this study. The researcher's motivation rooted in the faith that it is through God that she can do all things because there is Him who gives

strength.

The researcher also thanks the Mariano Marcos State University – Graduate School for giving this opportunity, for all the guidance and help it provided. Also, to the University Research Ethics Review Board, who thoroughly examined this paper before its conduct and for giving the best suggestions to make this paper better. She also extends her heartfelt gratitude to the Schools Division of Ilocos Norte for allowing the conduct of this study. Special thanks to the grade six pupils who took part, their parents, and their teachers who guided them in the process.

Also, to her research adviser who motivated her in pursuing this study, Dr. Edrian D. Saraos, the researcher is in deep gratitude for his patience, guidance, and for offering his expertise to refine this study.

To her family, who continuously showed their support, and to other individuals who have extended their assistance in any way, the researcher extends her sincerest gratitude. You are part of her motivation in accomplishing this study. This research would not materialize without these individuals.

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