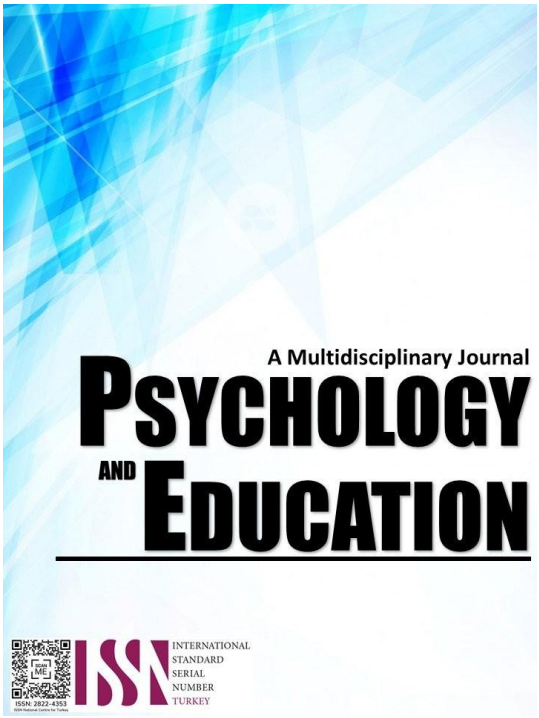
INSTRUCTIONAL PRACTICES OF GRADE 3 TEACHERS IN NUMERACY: BASIS FOR ENHANCING THE NUMERACY PROGRAM



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Research Article

Instructional Practices of Grade 3 Teachers in Numeracy: Basis for Enhancing the Numeracy Program

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Abstract

This study aimed to determine the extent of instructional practices of Grade 3 teachers in numeracy, along with the use of manipulative materials/skills, problem-solving strategies, communicating mathematics ideas, use of instructional strategies, and assessment practices, as well as the significant difference and relationship between the extent of instructional practices of Grade 3 teachers in numeracy and their profile variables. The study utilized a descriptive quantitative research design using a survey questionnaire to determine the extent of instructional practices in numeracy among Grade 3 teachers. The study revealed that majority of the respondents belonged to the age bracket 41 and above that is 32 or 58.2 percent, females dominated that is 49 or 89.1 percent, married 42 or 76.4 percent, earned MA Academic requirements that is 24 or 43.6 percent, have in the teaching service for 16-20 years that is 17 or 30.9 percent attended 1-5 relevant trainings that is 29 or 52.7 percent and conducted 1-3 number of action research in mathematics that is 45 or 81.5 percent. The respondent teachers vary in their profiles, with differences in extreme cases, and a female-dominated group of teachers. The extent of instructional practices of Grade 3 teachers in numeracy obtained a grand overall weighted mean of 4.33, indicative of "Practiced" transmuted rating. The respondent teachers are good enough at applying their instructional practices in numeracy. It can be inferred that the respondent mathematics teachers consistently implement numeracy instructional practices to enhance learners' academic performance in numeracy. Findings revealed no significant differences in the extent of numeracy instructional practices among Grade 3 teachers across most profile variables, except for the highest educational attainment and training attended. Similarly, no significant relationship was observed between instructional practices and profile variables, except for training attended. The recommendations highlighted key areas for improving instructional practices in numeracy. First, the respondent teachers in this study should take the initiative to pursue the highest educational degree at a reputable institution and undergo professional upgrading through training and workshops at different levels. Second, teachers should continuously enhance their numeracy instructional practices to improve learners' academic performance in Mathematics. Third, more appropriate and relevant variables should be explored to determine the best instructional practices in numeracy for benchmarking. Lastly, further research should be conducted to determine the extent of instructional practices of teachers in numeracy from another perspective under the supervision of an accredited graduate school.

Keywords: *instructional practices, mathematics, manipulative materials*

Introduction

Numeracy refers to an individual's capacity to understand, interpret, and apply quantitative information in various real-life situations. It goes beyond basic computation, as it involves logical reasoning, critical thinking, problem-solving, and the ability to communicate numerical information effectively. The development of numeracy is essential in preparing learners for future academic and career opportunities, as well as for personal growth and meaningful participation in an increasingly technology-driven society.

In an increasingly complex world, numeracy proficiency has evolved from an academic skill to a fundamental life competency. Robust numeracy skills are essential for academic achievement across disciplines and for informed decision-making in both personal and professional domains. Despite this importance, significant challenges remain at both global and local levels, as many students continue to struggle with developing the foundational mathematical understanding and reasoning required for educational and lifelong success.

The learning environment established by an educator through their support and encouragement plays a major role in the development of students' numeracy abilities. The instructional method(s) utilized will dictate how well a learner comprehends and performs in mathematics. Effective mathematics instruction includes the effective presentation of mathematical concepts, connections between mathematics and daily life, and an understanding of each student's unique learning style and ability to learn through differentiated approaches.

The Department of Education implemented the Early Language, Literacy, and Numeracy (ELLN) Program and the Early Language, Literacy, and Numeracy Assessment (ELLNA), which aim to measure learners' mastery of basic mathematical skills and identify areas for intervention (DepEd, 2015). These assessments provide essential data that guide teachers in improving their instructional practices.

Celemin (2023) found that Grade 3 pupils experience difficulties in basic operations and problem-solving, indicating gaps in foundational mathematical skills. Similarly, results from assessment-based studies highlight the need for improved instructional approaches to address these learning gaps.

The Philippines' poor PISA numeracy results could be due to challenges in students' numeracy skills, evidenced by a low percentage reaching basic proficiency level and stagnant performance in mathematics. The PISA 2022 results show that only around 16% of Filipino students achieved at least Level 2 in mathematical proficiency, suggesting that the majority (84%) remain below the baseline level of numeracy skills. A policy research institution in the Philippines reported that public school teachers commonly perform duties beyond classroom instruction, which may divert their attention from teaching and signal personnel shortages within the education system. Similarly, the PISA results highlight broader challenges in Philippine education, including disorganized implementation processes, lack of coherence, and possible policy confusion. These issues likely hinder effective math education. Factors such as access to technology, the number of books at home, and even basic needs like transportation and food can significantly impact student learning. Public school students, in particular, may face challenges due to these socioeconomic factors that affect their math performance. Misaligned teacher training, not adequately addressing classroom needs, and unappealing learning environments can contribute to poor student performance. Students may also feel helpless in the classroom. Beyond basic computation, PISA assesses the ability to interpret situations mathematically and apply mathematical concepts. The results suggest Filipino students struggle with these higher-order thinking skills essential for navigating complex problems.

Assessment-driven interventions are effective in improving numeracy skills. Miña and Caballes (2023) reported that an 8-Week Learning Recovery Curriculum, based on pretest and post-test assessments, significantly improved learners' numeracy performance. Likewise, Rue, Deseo, and Prodigalidad (2025) found that contextualized instructional materials developed in response to poor assessment results enhanced learners' mastery of mathematical concepts.

Furthermore, classroom-based assessments also support the improvement of instructional practices. Molina, Medallo, and Baluyos (2025) demonstrated that the use of instructional materials such as flashcards, guided by assessment results, significantly improved learners' performance. In addition, Noche et al. emphasized that the assessment tools used in localized numeracy programs effectively enhanced learners' skills through engaging, contextualized instructional strategies.

The effectiveness of teaching strategies directly influences students' ability to develop essential numeracy skills. Instructional practices encompass the specific methods, techniques, and approaches teachers use to deliver mathematics instruction. These practices include lesson structuring, selection of instructional materials, strategies for engaging students in learning, and methods for monitoring and supporting student progress.

Despite the recognized importance of numeracy and effective teaching strategies, researchers still need to examine how teachers implement these practices in actual classroom settings. Research indicates that approaches such as building conceptual understanding, employing purposeful questioning, facilitating meaningful discourse, and incorporating hands-on and visual learning are particularly effective in promoting mathematical reasoning and fluency.

Research has identified several key instructional practices that enhance numeracy achievement. These include employing a range of strategies, such as providing opportunities for students to engage in hands-on activities and mathematical investigations, incorporating visual representations to clarify abstract concepts, and using explicit instruction to build conceptual understanding. Additionally, educators recognize cooperative learning, purposeful questioning, and the facilitation of meaningful mathematical discourse as effective methods for engaging students and deepening their understanding.

Given the critical relationship between instructional practices and student numeracy outcomes, it is essential to analyze the specific instructional approaches teachers currently employ. This study aims to examine prevailing numeracy instruction practices and to identify effective strategies that support the development of learners' numeracy skills while fostering a positive learning environment. Existing research suggests that enhancing students' numeracy skills requires in-depth analysis of teachers' instructional practices. Effective numeracy instruction frequently involves student-centered, practical, and engaging methods, such as collaborative learning, the use of manipulatives, and connecting mathematical concepts to real-world contexts. Conversely, studies indicate that many teachers, particularly in underserved areas, continue to rely on traditional teaching methods, which may result in low student engagement and limited conceptual understanding.

Educational research consistently affirms that instructional methods significantly influence student achievement. Nevertheless, researchers need to conduct further investigation within localized educational contexts to identify the instructional strategies that teachers implement most effectively. The effectiveness and implementation of such practices may vary substantially depending on contextual factors, including curriculum requirements, school conditions, and learners' socioeconomic circumstances.

Accordingly, this study investigates the current instructional practices of Grade 3 teachers in numeracy in Urdaneta City, Pangasinan. By examining specific practices such as the use of manipulative materials, problem-solving strategies, communication of mathematical ideas, instructional strategies in mathematics, and assessment practices, the study seeks to identify strengths, challenges, and areas for improvement in numeracy education. The findings are expected to enhance understanding of effective teaching practices in this region and inform professional development initiatives aimed at improving numeracy outcomes for all students.

Research Questions

This study aimed to determine the extent of numeracy instructional practices of Grade 3 teachers in SDO Urdaneta City, SY 2025-

2026. Specifically, the present study was conducted to provide answers to the following research inquiries:

1. What are the characteristics of the respondents when grouped according to the following profile variables:
    1.1. age;
    1.2. sex;
    1.3. civil status;
    1.4. highest educational attainment;
    1.5. number of years of teaching experience;
    1.6. number of relevant trainings attended; and
    1.7. number of action research conducted in numeracy?
2. What is the extent of instructional practices of Grade 3 teachers in numeracy:
    2.1. use of manipulative materials/skills;
    2.2. problem-solving strategies;
    2.3. communicating mathematics ideas;
    2.4. use of instructional strategies; and
    2.5. assessment practices?
3. Is there a significant difference in the extent of numeracy instruction across their profile variables?
4. Is there a significant relationship between Grade 3 teachers' numeracy instructional practices and their profile variables?
5. What proposed activities may be developed to enhance the numeracy program in the school?

Methodology

Research Design

The ex post facto research is a type of causal-comparative research. It is a type that looks for the effects that have already happened on an independent variable. The researcher does not manipulate anything; they only observe the past. Researchers typically look for past events or other items that would allow them to establish causal connections when random assignment is impossible. The difference between experimental research and ex post facto research is that in experimental research, the researcher controls or manipulates the variables. In contrast, the variables in ex post facto research are determined by the individuals in the group being studied. Ex post facto research has great potential but cannot provide definitive causal associations due to the possibility of confounding variables (Mwayungu, 2021).

For this research, a descriptive method was applied. The descriptive method focuses on detailing data and characteristics of the population. The objective is to obtain factual, accurate, and systematic data to facilitate the calculation of averages, frequencies, and related statistical measures to address the issues presented in this study. This research aimed to identify the extent of numeracy instructional practices among Grade 3 teachers. The researcher used this method to acquire realistic and valid information on the extent of these instructional practices in numeracy.

Descriptive research methods include gathering and analyzing data to provide a comprehensive account of a population, condition, or phenomenon as it currently exists. This approach employs a range of tools, including surveys, questionnaires, interviews, and observational techniques, to collect qualitative or quantitative data. This method is especially effective for gaining insights into newly explored research areas or for understanding specific contexts (Deckert, 2023).

Surveys are a systematic way to collect data from multiple sources/locations, organizations, or communities. They are typically used to gather information about the state of a community, agency, organization, or institution, in addition to the characteristics, condition(s), or practices of an individual(s) or group(s) of individuals. The most appropriate way to collect information about a group or event is through a descriptive research design, which provides a thorough, detailed account of the characteristics and behaviors of populations and study subjects. Descriptive research allows researchers to observe and collate data on a specific issue/topic, ultimately leading to deeper insight into the problem or topic and providing the foundation for subsequent research (Sercillia, 2023).

This method prioritizes the analysis and interpretation of descriptive data, allowing researchers to present findings through narrative rather than solely through statistical measures. It is particularly advantageous for exploring intricate social phenomena, as it captures the depth of human experiences and perspectives, thereby offering deeper insights into the subject being investigated (Gundrum, 2022). Descriptive research is particularly suitable when the research aims to identify characteristics, frequencies, trends, and categories.

Respondents

The subjects of this study were the seventy-five (75) Grade 3 Mathematics teachers in SDO Urdaneta City for the school year 2025-2026. A total population sampling technique was used since the members of the population were included in the study.

Instrument

The data-gathering instrument for this study was developed as a self-developed questionnaire, with considerable input from experienced Grade 3 teachers, including experts in numeracy instructional practices from the literature. This custom-designed questionnaire focused

on assessing what teachers are doing when teaching numeracy to their students. A group of experts provided input and validated the questionnaire, including one male and one female master teacher, one male and one female principal, two female supervisors, and one female Grade 3 teacher. The experts' suggestions and opinions were incorporated into the finalized questionnaire. The instrument received final approval from the examination committee before being used in the study. The validation process of the questionnaire ensured that each question was written clearly and clearly stated so that those who were taking the questionnaire (the respondents) could understand what was being asked. This helped ensure that participants in the study would find completing the questionnaire easy, thereby allowing for a greater collection of valid and reliable data.

A focus group discussion was also conducted to examine the extent of Grade 3 teachers' numeracy instruction, which can be an insightful way to gather diverse perspectives, identify patterns, and understand the nuances of teaching practices. 5 teachers from the population were selected.

Procedure

Before administering the research instrument, permission was secured from the Schools Division Superintendent and the School Heads.

The researcher personally distributed and administered the questionnaire to all Grade 3 teachers in SDO Urdaneta City. Likewise, the researcher personally retrieved the same questionnaires. The researcher kept the responses and data confidential to ensure the highest degree of objectivity. After retrieving the questionnaires, the researcher selected the five teachers who participated in the 60-minute focus group discussion about their instructional practices in numeracy. The respective Grade 3 teachers and school heads of the institutions were informed and oriented by the researchers regarding the purpose of the study.

Data Analysis

The researcher organized, tabulated, and summarized the collected data accordingly. The questionnaire responses were then processed using appropriate statistical methods to assess the reliability and accuracy of the study's findings.

The following statistical tools were employed to address the study's specific research problems.

To determine the profile of the Grade 3 teachers, namely, age, sex, civil status, highest educational attainment, number of years of teaching experience, number of relevant trainings attended, and number of action research conducted, frequency counts and percentages were used. To determine the extent of Grade 3 teachers' numeracy instructional practices, a weighted average was used. The responses were categorized on a five-point scale with corresponding numerical categories. The choices were classified as "Highly Practiced", "Practiced", "Moderately Practiced", "Slightly Practiced", and "Not Practiced". Literal values A, B, C, D, and E were assigned, respectively.

To answer research question 3, significant differences in the extent of instructional practices of Grade 3 teachers in numeracy and their profile variables, the analysis of variance (ANOVA) was utilized. To answer research question 4, to determine the relationship between the extent of instructional practices of Grade 3 teachers in numeracy and the profile variables, the Coded Pearson Product Correlation was used. To answer research question 5, a proposed program of activities was developed to enhance schools' numeracy programs.

Ethical Considerations

The researcher ensured that ethical precautions and procedures were met. Throughout the entire process of the study, the researcher considered and followed ethical precautions:

The researcher recognized the respondents' autonomy as individuals with the legal entitlement to make their own decisions, including the right to refuse to take part in this study. Respect for persons included the researcher's recognition of the respondents' autonomy, individuality, and privacy, as well as their right to make informed choices about whether to participate in this study. The researcher endeavored to fairly inform the subjects about the benefits and risks of the research. The researcher strictly observed the principles of fairness and transparency. The researcher granted the respondents their right to privacy and the use of free will to determine the time, extent, and general circumstances under which their private information would be shared, with or without assistance. The respondents' right to exercise free will and their right to privacy were respected, and any personal data and private information provided were protected by the researcher with the utmost care and in strict confidence.

Results and Discussion

This section presents the interpretation and the analysis of data.

Profile of the Respondents

The respondent's profile provides background information about the respondent as a subject of the study. Such profile variables were likewise used to describe and analyze the relationship between the level of instructional practices of grade 3 teachers in numeracy and their profile variables.

Table 1 presents the respondents' demographic characteristics.

Table 1. *Profile of the Respondents*

Profile Variables	*Frequency*	*Frequency*	*Percentage*	*Percentage*
Age (in years)				
26-30	5	5	9.1	9.1
31-35	8	8	14.5	14.5
36-40	10	10	18.2	18.2
41-above	32	32	58.2	58.2
Sex				
Male	6	6	10.9	10.9
Female	49	49	89.1	89.1
Civil Status				
Single	12	12	21.8	21.8
Married	42	42	76.4	76.4
Widow/ed	1	1	1.8	1.8
Highest Educational Attainment				
BSEED/BSEEd	4	4	7.3	7.3
MA Units	19	19	34.5	34.5
MA Acad Requirements	24	24	43.6	43.6
MAED	6	6	10.9	10.9
EdD Units	2	2	3.6	3.6
Number of Years of Teaching Experience				
1 – 5	11	11	20.0	20.0
6 – 10	11	11	20.0	20.0
11 – 15	9	9	16.4	16.4
16 – 20	17	17	30.9	30.9
21 – above	7	7	12.7	12.7
Number of Relevant Trainings Attended				
1 – 5	29	29	52.7	52.7
6 – 10	18	18	32.7	32.7
11 – 15	4	4	7.3	7.3
16 – above	4	4	7.3	7.3
Number of Action Research Conducted in Numeracy				
1 – 3	45	45	81.8	81.8
4 or more	10	10	18.2	18.2

Age. Most respondent teachers are aged 41 and above (32, or 58.2 percent), followed by 36-40 (10, or 18.2 percent), 31-35 (8, or 14.5 percent), and 26-30 (5, or 9.1 percent). This suggests that the majority are in their prime teaching years, while younger teachers have opportunities for professional growth by learning from more experienced colleagues.

Sex. The respondents are predominantly female (49, or 89.1 percent), with 6 males (10.9 percent).

Civil Status. Most respondents are married (42 or 76.4 percent), 12 (21.8 percent) are single, and 1 (1.8 percent) is widowed. Marital status may contribute to a sense of stability and can influence work performance.

Highest Educational Attainment. As shown in the table, a great number of respondent teachers have met their MA academic requirements: 24 (43.6 percent) have completed their MA units, 19 (34.5 percent) have earned their MA units, 6 (10.9 percent) are master's degree holders, and 2 (3.6 percent) have earned their doctoral units. In comparison, 4 or 7.3 percent are baccalaureate degree holder which is the lowest category of this profile. These data imply that the respondents' educational qualifications are high, suggesting that a greater number have advanced degrees. It can be said that educational qualifications are one of the factors in the recruitment or promotion in the practice of a profession or career service.

Number of Years of Teaching Experience. Most respondents have 16-20 years of teaching experience (17 or 30.9 percent), followed by 1-5 years (11 or 20 percent), 6-10 years (11 or 20 percent), 11-15 years (9 or 16.4 percent), and 21 years or more (7 or 12.7 percent). This reflects a workforce with substantial teaching experience, while newer teachers can benefit from the expertise of their more experienced peers.

Number of Relevant Trainings Attended. Of the respondents, 29 (52.7 percent) attended 1-5 trainings, 18 (37.7 percent) attended 6-10, and 4 (7.3 percent) attended 11-15 or more. Continuous professional development is essential in sustaining competence, enhancing expertise, and ensuring the effective performance of professional responsibilities.

Number of Action Research Conducted in Numeracy. Most respondents (45 or 81.8 percent) have conducted 1-3 action research projects in numeracy, while 10 (18.2 percent) have conducted 4 or more. Engaging in research demonstrates professional growth and a commitment to addressing classroom challenges.

Extent of Instructional Practices of Grade 3 Teachers in Numeracy

This section presents the extent of Grade 3 teachers' instructional practices in numeracy, including the use of manipulatives and skills, problem-solving strategies, communication of mathematical ideas, instructional strategies, and assessment practices.

Table 2 presents the extent of instructional practices of Grade 3 teachers in numeracy, along with the use of manipulative materials/skills.

Table 2. *Extent of Instructional Practices of Grade 3 Teachers in Numeracy, Along with the Use of Manipulative Materials/Skills*

Indicators *As a teacher, I*	*WM*	*TR*
1. Encourage the use of electronic technology, such as calculators and any gadgets that could help improve the numeracy skills of the learners.	3.89	P
2. Conduct actual measurements and explore the concepts related to the subject.	4.18	P
3. Present tables and graphs to provide a visual element to assist students' understanding.	4.22	P
4. Provide step-by-step procedures to understand the process of mathematical solutions better.	4.33	P
5. Use various instructional materials such as a geoboard, a meter stick, and simulation devices to hone the mathematical skills of learners further.	4.18	P
6. Demonstrate concepts or ideas in a certain math problem through actual situations and concrete examples.	4.25	P
7. Facilitate hands-on exploration before the guided instruction.	4.25	P
8. Ask open-ended questions to connect the concrete experience to abstract mathematical concepts.	4.33	P
9. Observe student work and listen to their reasoning to assess understanding.	4.31	P
10. integrate manipulatives into problem-centered activities to foster engagement and deeper conceptual connections.	4.25	P
Overall Weighted Mean	4.22	P

Legend: 4.50-5.00- Highly Practiced (HP); 3.50-4.49- Practiced (P); 2.50-3.49- Moderately Practiced (MP); 1.50-2.49- Slightly Practiced (SP); 1.00-1.49- Not Practiced (NP)

The table reveals that the extent of instructional practices of Grade 3 teachers in numeracy, along with the use of manipulative materials/skills, had a weighted mean of 4.22, indicating a transmuted rating of "Practiced". All ten (10) indicators were rated extensively, with weighted means ranging from 3.89 to 4.33. of the ten (10) indicators, item no. 4 "provide step by step procedures to gain a deeper understanding of mathematical problem-solving processes and item no. 8 "ask open-ended questions to connect the concrete experience to abstract mathematical concepts" ranked the highest while item no. 1 "encourage the use of electronic technology such as calculators and any gadgets that could help improve the numeracy skills of the learners" ranked the lowest although rated as "Practiced". This could be interpreted to mean that the respondent teachers prefer asking open-ended questions to connect concrete experience with abstract mathematical concepts and to provide step-by-step procedures to understand the process of mathematical solutions better. Through this process, learners will eventually understand the concepts being taught.

Patsiomitou and Kytou (2023) stated that manipulatives provide concrete, tactile experiences by offering physical representations of abstract mathematical concepts. The use of these tools enables students to engage with mathematics through both visual and tactile elements. In addition, manipulatives are used to provide instructional scaffolding for conceptual learning, promote mathematical reasoning, reduce student anxiety, and support the transition from concrete to symbolic representations. Furthermore, Carbonneau et al. (2021) noted that manipulatives transform abstract mathematical concepts into concrete, hands-on experiences crucial for building conceptual understanding. They promote active engagement, reduce math anxiety, and improve retention by providing a physical model students can visualize.

Table 3 shows the extent of instructional practices of Grade 3 teachers in numeracy, along with the problem-solving strategies they use.

Table 3. *Extent of Instructional Practices of Grade 3 Teachers in Numeracy Along Problem-Solving Strategies*

Indicators *As a teacher, I*	*WM*	*TR*
Demonstrate a structured approach to problem-solving: read, devise a plan, solve, and check.	4.27	P
2. introduce and model strategies such as drawing a picture, making a table, or solving a simple problem.	4.29	P
3. Guide students to articulate the problem in their own words, define key terms, and identify information needed to solve it.	4.35	P
4. Encourage students to brainstorm multiple potential solutions.	4.31	P
5. Facilitate collaborative learning, such as "think-pair-share," to promote active engagement and peer learning.	4.36	P
6. Introduce word problems with a variety of structures and solution paths, giving an orderly progression from easy to difficult ones.	4.27	P
7. Use open-ended problems and extended problem-solving projects.	4.25	P
8. Utilize real-life and practical-life problems and applications.	4.33	P
9. Provide figures or drawings that illustrate the problem situation.	4.31	P
10. encourage the actual manipulation of the problem situation.	4.33	P
Overall Weighted Mean	4.31	P

Legend: 4.50-5.00- Highly Practiced (HP); 3.50-4.49- Practiced (P); 2.50-3.49- Moderately Practiced (MP); 1.50-2.49- Slightly Practiced (SP); 1.00-1.49- Not Practiced (NP)

The table shows that the use of problem-solving strategies in numeracy instructional practices had an overall weighted mean of 4.31, indicating a transmuted rating of "Practiced". It is surprising to note that all ten (10) indicators obtained a "Practiced" transmuted rating. This could be interpreted to mean that the respondent teachers are fully aware of the essentials of problem-solving strategies in the teaching-learning process in numeracy, which can be attributed to the structured approach, planning, solving, and checking in problem-solving. These findings suggest that the mathematics teachers believed this numeracy practice builds learners' confidence to participate actively in class discussions, thereby helping them solve mathematical problems with ease.

In this regard, Kilgour et al. (2022) noted that numeracy education involves shifting learners from passive memorization to active mathematical thinking, sense-making, and real-world applications. It transforms mathematics from a set of rigid procedures into a flexible tool for understanding, empowering students to tackle unfamiliar challenges with confidence and persistence.

Moreover, Shin et al. (2024) explicitly explain that using problem-solving strategies fosters conceptual understanding and new rote learning, builds cognitive and metacognitive skills, connects math to reality, and enhances learners' engagement and collaboration.

Table 4 presents the extent of instructional practices of Grade 3 teachers in numeracy and in communicating mathematics ideas.

Table 4. *Extent of Instructional Practices of Grade 3 Teachers in Numeracy, Along with Communicating Mathematics Ideas*

Indicators *As a teacher, I*	*WM*	*TR*
1. Use simple words in instructions and explanations of mathematical concepts.	4.31	P
2. Ask questions to the learners about the things that they want to be clarified in the lesson.	4.29	P
3. Develop critical thinking among learners by asking why and how questions.	4.33	P
4. Encourage class discussion as peer tutoring to assist understanding.	4.27	P
5. Make sure that vocabulary and other unfamiliar words that are new are well defined and explained.	4.31	P
6. Utilize technology to present mathematical ideas.	4.31	P
7. Help learners bridge from concrete to abstract mathematical concepts through the use of diagrams, charts, and abstract symbols.	4.29	P
8. Create a classroom environment where students are comfortable sharing their ideas, asking questions, and engaging in discussions.	4.33	P
9. Link mathematical concepts to practical everyday situations and students' interests to make the learning material more relevant and engaging.	4.36	P
10. Build a strong foundation of conceptual understanding before moving to abstract or procedural knowledge.	4.31	P
Overall Weighted Mean	4.31	P

Legend: 4.50-5.00- Highly Practiced (HP); 3.50-4.49- Practiced (P); 2.50-3.49- Moderately Practiced (MP); 1.50-2.49- Slightly Practiced (SP); 1.00-1.49- Not Practiced (NP)

The table indicates that the extent of numeracy instructional practices among Grade 3 teachers, particularly in communicating mathematical ideas, obtained an overall weighted mean of 4.31, corresponding to a transmuted rating of "Practiced." All ten (10) indicators received the same transmuted rating of "Practiced," with weighted means ranging from 4.27 to 4.36. This could be interpreted to mean that the respondent teachers are fully aware on the importance of communicating mathematics ideas as their practice in numeracy by using simple words in instructions and explanations of mathematical concepts, develop critical thinking among learners by asking why and how questions, utilizing technology to present mathematical ideas and building a strong foundation of conceptual understanding before moving to abstract on procedural knowledge and link mathematical concepts to practical everyday situations.

Highfield and Cooper (2022) stressed that communicating mathematics ideas is essential for developing numeracy because it transforms math from passive calculation into active reasoning, fostering deeper conceptual understanding and confidence. It allows learners to articulate, validate, and apply mathematical concepts in real-world contexts, bridging the gap between abstract symbols and practical everyday problem-solving. Through communicating mathematical ideas, learners can deepen understanding and retention, provide insights into thinking, build confidence and equity, foster social interaction and collaboration, use diverse representations, and ensure real-world application.

Table 5 presents the extent of instructional practices of Grade 3 teachers in numeracy, along with the use of instructional strategies.

Table 5. *Extent of Instructional Practices of Grade 3 Teachers in Numeracy, Along with the Use of Instructional Strategies*

Indicators *As a teacher, I*	*WM*	*TR*
1. Differentiate instruction to meet the diverse needs of learners.	4.33	P
2. Build a strong foundation for future learning by prioritizing a deep understanding of mathematical concepts over mere note memorization.	4.29	P
3. Assign tasks that require students to think critically and solve problems.	4.33	P
4. Reinforce concepts through homework assignments to strengthen understanding of the lessons.	4.33	P
5. Use cooperative learning strategies by allowing learners to learn from one another.	4.36	P
6. Pose purposeful questions to promote students' thinking and reasoning to help them make	4.33	P

connections between different ideas.		
7. Implement tasks promoting reasoning and problem-solving to develop learners' critical thinking.	4.33	P
8. Encourage learners to verbalize their thought processes and communicate their mathematical ideas.	4.33	P
9. Build procedural fluency from conceptual understanding to ensure learners have a strong grasp of concepts before introducing or practicing procedures.	4.35	P
10. encourage learners to verbalize their thought processes and communicate their mathematical ideas.	4.35	P
Overall Weighted Mean	4.33	P

Legend: 4.50-5.00- Highly Practiced (HP); 3.50-4.49- Practiced (P); 2.50-3.49- Moderately Practiced (MP); 1.50-2.49- Slightly Practiced (SP); 1.00-1.49- Not Practiced (NP)

The table shows that the extent of instructional practices of Grade 3 teachers in numeracy, along with the use of instructional strategies, had an overall weighted mean of 4.33, indicating a transmuted rating of "Practiced," as indicated by the respondents. All ten (10) indicators received a transmuted rating of "Practiced," with weighted means ranging from 4.29 to 4.36. This could be interpreted to mean that the respondent teachers are keen on using instructional strategies in numeracy, as such, they can build a strong foundation for future learning by prioritizing deep understanding of mathematical concepts over mere rote memorization and reinforcing concepts through homework assignments to strengthen understanding of the lessons. Aside from these, they also use cooperative learning strategies by allowing learners to learn from one another, implementing tasks that promote reasoning and problem-solving to develop learners' critical thinking, and encouraging learners to verbalize their thought processes and communicate their mathematical ideas.

In this regard, Moyer-Packenham et al. (2020) stressed that using instructional strategies in numeracy is vital for transforming abstract mathematical concepts into concrete understanding, boosting student engagement, and improving problem-solving skills. Effective techniques, such as manipulatives, visual aids, real-world contexts, and differentiated instruction, help close learning gaps and foster a positive, confident attitude toward mathematics. Further, using instructional strategies in numeracy develops a concrete understanding that helps students visualize math concepts, moving from abstract ideas to concrete understanding; improves engagement and retention; differentiates learning; develops critical thinking; and fosters a positive math mindset.

Table 6 shows the extent of instructional practices of Grade 3 teachers in numeracy, along with assessment practices.

Table 6. *Extent of Instructional Practices of Grade 3 Teachers in Numeracy Along with Assessment Practices*

Indicators *As a teacher, I*	*WM*	*TR*
1. Observe students' facial expressions and monitor their work during lessons to check understanding in real time.	4.31	P
2. Analyze homework assignments and students' in-class responses to identify areas of difficulty.	4.29	P
3. Collect dated work samples to track a student's growth and understanding over time.	4.33	P
4. Use written tests and quizzes to evaluate student knowledge after a unit study.	4.31	P
5. Interact with learners to assess their problem-solving processes and conceptual understanding.	4.33	P
6. require learners to apply knowledge, think critically, and collaborate to assess their problem-solving processes and conceptual understanding.	4.35	P
7. Demonstrate the use of mathematical knowledge and skills effectively in performing real-world tasks.	4.35	P
8. Encourage learners to explain their mathematical reasoning, showing their thought process.	4.33	P
9. Provide clear feedback to students and parents for improving learning outcomes.	4.35	P
10. support learning growth, not just to assign grades using assessment tools.	4.31	P
Overall Weighted Mean	4.32	P

Legend: 4.50-5.00- Highly Practiced (HP); 3.50-4.49- Practiced (P); 2.50-3.49- Moderately Practiced (MP); 1.50-2.49- Slightly Practiced (SP); 1.00-1.49- Not Practiced (NP)

The table shows that the overall weighted mean for the extent of instructional practices of Grade 3 teachers in numeracy, along with assessment practices, was 4.32, indicative of a "Practiced" transmuted rating, as reported by the respondent teachers. It is also surprising to note that all ten (10) indicators received a transmuted rating of "Practiced," with weighted means ranging from 4.29 to 4.35. This could be interpreted to mean that the respondent teachers are mindful of their numeracy assessment practices. They do this by observing learners' facial expressions and monitor their work during lessons to check understanding in real time, analyze homework assignments and students in class responses to identify areas of difficulty, collect dated work samples to track a students growth and understanding over time, use written tests and quizzes to evaluate student knowledge after a unit study, conduct interactions with learners to assess their problem solving processes and conceptual understanding, provide clear feedback to students and parents for improving learning outcomes and support learning growth not just to assign grades using assessment.

Assessment practices described by Anthony and Hunter (2022) indicate that evidence of a student's learning (what they know) provides the teacher with an opportunity to restructure instruction promptly (through feedback) and to assist in the development of a more advanced understanding of mathematical concepts rather than rote memorization. Through this process, assessment practices support the identification of students' current levels of progress and the diagnosis of student misconceptions, as well as providing direction to students in applying their numeracy skills to solve real-world problems. Accordingly, assessment practices are used to compile a comprehensive view of a student's numeracy expertise by collecting data from multiple sources. This process is typically called data triangulation. Additionally, assessment practices help develop learners as more independent learners; learners are encouraged to be more self-regulated and engage in reflective learning.

Table 7 provides a consolidated summary of the extent of numeracy instructional practices implementation among Grade 3 teachers.

Table 7. *Overall Summary of the Extent of Instructional Practices of Grade 3 Teachers in Numeracy*

Indicators As a teacher, I	*WM*	*TR*
1. Use of Manipulative Materials/Skills	4.22	P
2. Problem-Solving Strategies	4.31	P
3. Communicating Mathematics Ideas	4.31	P
4. Use of Instructional Strategies	4.33	P
5. Assessment Practices	4.32	P
Grand Overall Weighted Mean	4.30	P

Legend: 4.50-5.00- Highly Practiced (HP); 3.50-4.49- Practiced (P); 2.50-3.49- Moderately Practiced (MP); 1.50-2.49- Slightly Practiced (SP); 1.00-1.49- Not Practiced (NP)

The table shows that the GOWM for the extent of instructional practices of Grade 3 teachers in numeracy was 4.30, indicative of a "Practiced" transmuted rating. It is interesting to note that the use of instructional strategies received the highest rank, with an OWM of 4.33, indicative of a "Practiced" transmuted rating. These findings suggest that the respondent teachers support learning growth not only for assigning grades but also through the use of assessment tools. In general, the respondent mathematics teachers effectively apply numeracy instructional practices to improve learners' academic performance.

Summary for Mean Difference in the Extent of Instructional Practices of Grade 3 Teachers in Numeracy

Relative to the problems of this study, which sought to determine the extent of instructional practices of Grade 3 teachers in numeracy across their profile variables, the Analysis of Variance (ANOVA) was computed, and the results are presented as F-values with their corresponding significance levels. This was done to provide a more in-depth analysis of the data gathered in this study, in which respondents' profiles were compared with their numeracy instructional practices.

Table 8. *Mean Difference in the Extent of Instructional Practices of Grade 3 Teachers in Numeracy Across the Profile Variables*

Profile Variable	*Use of Manipulative Materials/Skills*	*Use of Manipulative Materials/Skills*	*Problem-Solving Strategies*	*Problem-Solving Strategies*	*Communicating Mathematics Ideas*	*Communicating Mathematics Ideas*	*Communicating Mathematics Ideas*	*Use of Instructional Strategies*	*Use of Instructional Strategies*	*Assessment Practices*	*Assessment Practices*
Profile Variable	*F-value*	*Sig*	*F-value*	*Sig*	*Sig*	*F-value*	*Sig*	*F-value*	*Sig*	*F-value*	*Sig*
Age	2.571	.064	2.406	.078	.078	2.235	.095	2.307	.088	2.319	.086
Civil Status	2.553	.088	3.241	.047	.047	3.112	.053	3.250	.047	3.221	.048
Highest Educational Attainment	4.726	.003*	3.718	.010*	.010*	3.534	.013*	3.752	.010*	3.791	.009*
Number of Years of Teaching Experience	1.009	.412	1.152	.343	.343	1.069	.382	1.035	.398	1.018	.407
Relevant Trainings Attended	5.342	.003*	5.140	.004*	.004*	4.251	.009*	4.710	.006*	4.613	.006*
Action Research Conducted	2.322	.133	2.279	.137	.137	2.405	.127	2.826	.099	2.612	.112

**Significant at .05 level*

The ANOVA summary table shows the average differences in teachers' instructional practices, broken down by their numeracy profile variables, for Grade 3. Based on the results of the study, it appears that teachers' instructional practices regarding their use of manipulative materials/skills for problem solving, communication of mathematical ideas, instructional strategies, and assessment practices have no significant difference based on their age, civil status, years of teaching, or number of action research projects done. In conclusion, the hypothesis that there is a significant difference in Grade 3 teachers' instructional practices in numeracy has been rejected, as the results do not provide evidence at the .05 level of statistical significance. Thus, the instructional practices of respondents are generally similar across the profile variables defined in this study.

On the other hand, there is a significant difference in the extent of instructional practices of Grade 3 teachers in numeracy across the profile variables, highest educational attainment when compared to the use of manipulative materials/skills, problem solving strategies, communicating mathematics ideas, use of instructional strategies, and assessment practices at .003, .010, .013, .010, and .009 level of significance, respectively. Therefore, the research hypothesis is accepted at .05 level of significance. This indicates a statistical difference among the groups being compared. This would imply that the difference is reliable and probably real. As such, the profile variables are comparable.

On the other hand, the profile variable number of relevant trainings attended indicates a significant difference when compared to the extent of instructional practices of Grade 3 teachers on the use of manipulative materials/skills, problem solving strategies, communicating mathematics ideas, use of instructional strategies, and assessment practices with .003, .004, .009, .006, and .006 level

of significance, respectively. Therefore, the research hypothesis, which states that there is a significant difference in the extent of instructional practices of Grade 3 teachers in numeracy, is accepted. This would imply that the profile variables are comparable.

Table 9 exhibits the Pearson-r correlation between the extent of instructional practices of Grade 3 teachers in numeracy and their profile variables.

Table 9. *Relationship Between the Extent of Instructional Practices of Grade 3 Teachers in Numeracy and Their Profile Variables*

Profile Variable	*Use of Manipulative Materials/Skills*	*Use of Manipulative Materials/Skills*	*Problem-Solving Strategies*	*Problem-Solving Strategies*	*Communicating Mathematics Ideas*	*Communicating Mathematics Ideas*	*Communicating Mathematics Ideas*	*Use of Instructional Strategies*	*Use of Instructional Strategies*	*Assessment Practices*	*Assessment Practices*
Profile Variable	*r-value*	*sig*	*r-value*	*sig*	*r-value*	*sig*	*r-value*	*sig*	*r-value*	*sig*	*r-value*
Age	-.206	.132	-.223	.102	-.180	.187	-.200	.144	-.176	.200	-.206
Civil Status	-.188	.169	-.200	.142	-.193	.158	-.197	.149	-.201	.142	-.188
Highest Educational Attainment	-.153	.265	-.183	.180	-.195	.154	-.197	.149	-.191	.163	-.153
Number of Years of Teaching Experience	-.216	.113	-.194	.156	-.193	.159	-.180	.190	-.169	.217	-.216
Relevant Trainings Attended	-.182	.184	-.163	.233	-.143	.299	-.144	.294	-.129	.347	-.182
Action Research Conducted	-.398**	.003	-.384**	.004	-.363**	.007	-.377**	.005	-.380**	.004	-.398**

**Significant at .05 level*

The Pearson-r values in the table indicate that the majority of independent variables, including age, sex, civil status, highest educational attainment, years of teaching experience, and the number of conducted action research projects, do not correlate with the extent of instructional practice in numeracy among grade 3 teachers. Therefore, these profile variables do not appear to be determinants of respondents' levels of instructional practice. On the contrary, Pearson's r values for the number of relevant training sessions attended by respondents are significantly correlated with the extent of instructional practice in numeracy. Consequently, the hypothesis that there is a significant relationship between the extent of instructional practices of the grade 3 teachers and the number of relevant trainings attended is accepted at the 0.05 level of significance. Consequently, it is reasonable to conclude that teachers' attendance at relevant trainings can be considered a source of variation in their instructional practices and that there exists a predictable relationship between the extent of instruction and the degree to which teachers implement instructional practices in numeracy.

Conclusions

The respondent teachers vary widely in their profiles, and at times their differences are extreme, forming a distinctly female-dominated group. The respondent teachers are proficient in applying their instructional practices in numeracy. The respondent teachers are comparable in the extent of their numeracy instructional practices. The extent of teachers' numeracy instruction is strongly associated with the number of relevant training sessions.

Based on the findings of this study and the conclusions drawn, the following are hereby recommended:

The respondent teachers are encouraged to pursue advanced academic degrees from reputable institutions and engage in continuous professional development through participation in training, seminars, and workshops at various levels. Respondent teachers should always aim for excellence in their numeracy instruction to improve learners' academic performance in Mathematics. It is recommended that future research examine more relevant variables to identify best practices in numeracy instruction for benchmarking. Further research should be conducted to determine the extent of teachers' numeracy instruction practices from another perspective, under the supervision of an accredited graduate school.

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