



DEMONSTRATING TEACHING COMPETENCE IN PROBLEM SOLVING PROFICIENCY OF GRADE 4 LEARNERS

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Abstract

This study examined the level of teacher competence in teaching Mathematics and its relationship to the problem-solving skills of Grade 4 learners at Basak Elementary School in the Division of Mandaue City for the School Year 2025–2026. It aimed to determine the teachers' demographic profile, their level of competence across four indicators—content knowledge and skills, strategies and methods, integration of ICT, and assessment and evaluation—as well as the learners' problem-solving skills in terms of conceptual understanding, logical reasoning, and pattern recognition. Findings revealed that teachers were within the age range of 31–40 years, predominantly female, with master's degrees, 1 to 5 years of service, and a performance rating classified as "Outstanding." Learners were aged between 9 and 10 years, and females outnumbered males. Teacher competence was interpreted as highly evident across all indicators, with the highest performance observed in the integration of ICT. Learners' problem-solving skills were also interpreted as highly evident, with logical reasoning demonstrating the strongest performance, followed by pattern recognition, and then conceptual understanding. A significant relationship was found between teacher competence and learners' problem-solving skills, suggesting that enhanced instructional competence positively influenced learners' mathematical thinking and analytical ability. In response to these findings, an Enhanced Instructional Guide in Mathematics was developed to support more effective classroom instruction. The guide focused on strengthening teachers' content mastery, employing diversified strategies, integrating ICT tools, and utilizing performance-based assessment methods aligned with the K to 12 curriculum standards to enrich learners' problem-solving proficiency.

Keywords: Administration and Supervision, Descriptive – Correlational Design, Teacher Competence, Problem Solving Skills, Mathematics Instruction, Enhanced Instructional Guide, Content Analysis, City of Mandaue, Cebu

INTRODUCTION

Enhancing learners' problem-solving ability in mathematics has become a critical goal in global education, as it equips learners with the capacity to reason, analyze, and make informed decisions in real-world scenarios. The Organization for Economic Co-operation and Development (OECD, 2021) emphasized that problem-solving is no longer a peripheral skill but a core component of mathematical literacy. The PISA 2022 results further revealed that learners who are exposed to conceptual problem-solving tasks perform better than those limited to procedural instruction (OECD, 2022). These findings call for a redefinition of mathematics instruction that prioritizes analytical thinking and creativity alongside computational skills.

Globally, the shift from traditional math instruction toward inquiry-based, real-life problem-solving is gaining momentum. According to UNESCO (2022), developing learners' ability to navigate unfamiliar problems requires teachers to move beyond drills and promote flexible thinking. This means designing learning experiences that challenge learners to think critically, justify their solutions, and explore multiple pathways. The need to teach mathematics as a living, applicable discipline aligns with emerging workforce demands that require problem-solving across all industries.

In Southeast Asia, education systems are reforming curricula and teacher practices to strengthen mathematics learning. The Southeast Asian Ministers of Education Organization (SEAMEO, 2023) recommended embedding problem-solving in math lessons through open-ended tasks, collaborative activities, and reflective questioning. Successful models in countries like Singapore and Malaysia show that learners develop deeper understanding and confidence



when teachers emphasize reasoning and application over repetition and speed. This regional progress signals the importance of teacher capacity-building to ensure that classrooms foster genuine mathematical thinking.

In the Philippines, problem-solving is central to the K to 12 Mathematics Curriculum. However, the Department of Education's (DepEd) Basic Education Report (2022) acknowledged that many learners still struggle with solving contextual problems, often relying on memorized procedures. This performance gap points to challenges in instruction, particularly in the use of problem-based learning. To address this, the 2023 MATATAG Curriculum introduced reforms focused on strengthening foundational skills and integrating real-life mathematical applications across grade levels (DepEd, 2023).

The Philippine Professional Standards for Teachers (PPST) also highlight the need for teachers to demonstrate competence in facilitating higher-order thinking in math classes (DepEd, 2020). Teachers are expected to design lessons that allow for exploration, connect learning to real-life contexts, and engage learners in reflective thinking. While these standards are in place, effective implementation varies greatly, especially in schools with limited access to professional development or contextualized teaching resources.

National assessments and studies have consistently revealed gaps in Filipino learners' mathematical problem-solving skills. A 2023 report from the Science Education Institute of the Department of Science and Technology (SEI-DOST) noted that while learners can perform basic calculations, many lack confidence and strategies when solving complex, unfamiliar word problems. This underperformance reflects not only student difficulty but also the limited classroom exposure to structured problem-solving experiences.

In Cebu and other areas in Central Visayas, similar trends have been observed. A study by Ramos and De La Torre (2024) found that while teachers acknowledge the value of problem-solving, classroom practices often emphasize procedural knowledge over conceptual understanding. Lessons tend to be textbook-dependent, and learners are rarely encouraged to explain their thinking or explore alternative solutions. This suggests a need to reinforce both teacher training and classroom strategy focused on problem-solving development.

Local initiatives such as Learning Action Cell (LAC) sessions and school-based mentoring programs have aimed to improve teaching practices. However, a regional evaluation (DepEd Region VII, 2023) showed that these sessions are often general in scope, with insufficient focus on subject-specific pedagogy, particularly in mathematics. Teachers reported a lack of time and resources to implement problem-solving strategies effectively, resulting in a gap between policy and practice.

This study aimed to investigate how mathematics instruction in local elementary schools supports or limits the development of learners' problem-solving skills. By examining teacher strategies, learner performance, and instructional alignment with national standards, this research intends to provide evidence that can support curriculum enhancement, professional development, and classroom-level innovations. Strengthening problem-solving in mathematics is not only key to academic success but also to building a generation of critical and independent Filipino thinkers.

REVIEW OF RELATED LITERATURE

Teacher competence plays a vital role in shaping learners' academic performance, particularly in Mathematics where problem-solving is a core skill. According to Organisation for Economic Co-operation and Development (2021), effective teaching involves not only content mastery but also the ability to facilitate higher-order thinking, adapt instruction, and engage learners in meaningful learning experiences. Teachers who demonstrate strong competence in content knowledge, instructional strategies, ICT integration, and assessment practices are better able to support learners in developing critical thinking and problem-solving skills. The Department of Education (2020) through the Philippine Professional Standards for Teachers (PPST) also emphasizes that teachers must create learning environments that promote analytical thinking and real-world application.

Problem-solving is widely recognized as an essential component of mathematical literacy. The Organisation for Economic Co-operation and Development (2022) highlighted that learners exposed to conceptual and problem-based



tasks perform better than those relying on procedural instruction. Polya's Problem-Solving Theory supports this by outlining structured steps that help learners analyze and solve problems effectively. Studies further show that learners with strong conceptual understanding are more capable of transferring knowledge to new situations and solving real-life problems (Mok & Cheng, 2023). However, in the Philippine context, the Department of Education (2022) reported that many learners still struggle with contextualized problem-solving, often depending on memorization rather than understanding.

Effective instructional strategies are essential in improving learners' problem-solving skills. Inquiry-based and problem-based learning approaches encourage learners to explore, reason, and justify their answers. According to United Nations Educational, Scientific and Cultural Organization (2022), teachers should design learning experiences that promote critical thinking and multiple solution pathways. Similarly, Southeast Asian Ministers of Education Organization (2023) recommends the use of open-ended tasks and collaborative activities to deepen mathematical understanding. However, local studies reveal that many classrooms still emphasize procedural teaching, limiting learners' ability to develop deeper conceptual knowledge (Ramos & De La Torre, 2024).

The integration of ICT has also become an important aspect of modern mathematics instruction. Digital tools, educational applications, and multimedia resources enhance learner engagement and support differentiated instruction. DepEd (2023) emphasized that ICT integration aligns with the goals of the MATATAG Curriculum in promoting innovative and learner-centered education. However, effective ICT use depends on teachers' competence and access to resources.

Assessment practices likewise play a crucial role in supporting learning. Effective assessment involves not only measuring performance but also providing feedback that guides improvement. Studies show that meaningful communication of assessment results to learners and parents enhances motivation and academic success (Flores & Alonzo, 2022). However, gaps remain in consistently applying formative assessment practices in classrooms. Overall, existing literature consistently shows that teacher competence significantly influences learners' problem-solving skills in Mathematics. Teachers who effectively integrate content knowledge, pedagogy, ICT, and assessment contribute to improved learner performance. Despite existing policies and reforms, challenges remain in classroom implementation, particularly in promoting conceptual and problem-based learning. This study addresses these gaps by examining the relationship between teacher competence and learners' problem-solving skills and by developing an enhanced instructional guide to improve teaching practices and learner outcomes.

RESEARCH METHODOLOGY

This part contained the research methodology which include the method to be used, the flow of the study, research locale, research respondents, research instruments, data gathering procedures, statistical treatment of data, scoring procedures and definition of terms.

Research Design

The method used in this study was the descriptive – correlational design as it determines the level of instructional competence as it relates to the problem – solving skills of the Grade 4 learners in Mathematics in Basak Elementary School.

Flow of the Study

The input of the study comprised relevant demographic and professional information of the participating teachers, including age, gender, civil status, highest educational attainment, number of years in service, and recent performance ratings. Additionally, learners' age and gender were considered to provide contextual background for the analysis. The study also gathered data on the level of instructional competence of Mathematics teachers, specifically in terms of their knowledge of content within and across curriculum areas, teaching strategies and methods, integration of information and communication technology (ICT), and assessment and evaluation practices. Furthermore, the learners' problem-solving skills were assessed based on three key domains: conceptual understanding, logical reasoning, and pattern recognition.



The process component of the study involved a systematic application of the research procedures guided by the descriptive-correlational research design.

This approach was employed to examine the significant relationship between teachers' instructional competencies and the learners' problem-solving skills. Data collection, validation, and statistical analysis were carefully executed to ensure the reliability and validity of the findings.

The output of the study was the development of an enhanced instructional guide aimed at improving teaching effectiveness and promoting learners' higher order thinking skills in mathematics, as illustrated in Figure 2. This instructional guide was designed to address the specific competency areas identified in the study and to serve as a practical resource for strengthening instructional delivery in mathematics classrooms.

Environment

Basak Elementary School, one of the oldest and most respected public elementary schools in Mandaue City, Cebu, traces its roots back to the early 20th century. It was formally established in 1921, through the collective vision, leadership, and determination of civic-minded individuals in the community—Mr. Anastacio Perez, Julio and Domingo Alinsug, and Clemente Paran. These local leaders recognized the transformative value of education in shaping the future of their town and worked diligently to secure a piece of land large enough to house a school that could serve the children of Barangay Basak and its neighboring communities.

Respondents

The respondents of this research are composed of two key groups: Grade 4 teachers and Grade 4 learners from Basak Elementary School. These respondents were purposively selected based on their direct involvement in the teaching and learning processes related to mathematics instruction and problem-solving skills.

The first group includes 10 Grade 4 teachers, all of whom are currently handling mathematics subjects across multiple sections. These teachers were selected because of their professional competence, classroom experience, and active role in delivering mathematical concepts and strategies to learners. Their insights are crucial in understanding how teaching competence—particularly in terms of lesson planning, instructional delivery, classroom management, and assessment—influences the development of learners' problem-solving abilities. Furthermore, their exposure to various classroom situations allows them to provide valuable feedback on instructional practices, challenges encountered, and pedagogical approaches that impact student learning outcomes.

The second group consists of 100 Grade 4 learners who are enrolled in the current academic year. These learners represent a diverse mix of backgrounds and abilities and are in a critical stage of cognitive development where foundational mathematical skills and problem-solving strategies are being shaped. Their inclusion as respondents is essential in assessing how teaching practices affect their engagement, comprehension, and performance in mathematics. Through appropriate data-gathering tools such as tests, surveys, and interviews (as applicable), the research aims to capture learners' experiences, perceptions, and actual performance related to problem-solving in mathematics.

The combination of teacher and learner respondents provides a comprehensive perspective on the relationship between teaching competence and student problem-solving skills. It allows for a multi-dimensional analysis that not only considers instructional effectiveness from the educator's viewpoint but also evaluates learning outcomes from the learners' experiences.

Instrument

The researcher utilized two kinds of instruments that were prepared and distributed to the respondents. For the level of teaching competencies, the researcher adapted the Philippine Professional Standards for Teachers Indicators while for the level of problem – solving skills, the researcher adapted the questionnaire by Dayag et al. (2025) with the study entitled “Problem Solving Skills and Teachers' Teaching Performance in Mathematics”, the learners were then



provided with test questions aligned with the competencies covered in the First Quarter of Grade 4 Mathematics and aligned with the adapted questionnaire to provide a comprehensive response to its indicators.

In addition to identifying the primary research participants, a preliminary checklist was also administered to gather pertinent background information about the respondents. This checklist was designed to collect demographic and contextual data such as age, gender, years of teaching experience of the teachers. The information gathered through the checklist helped establish a clearer profile of the participants and ensured a more in-depth analysis of the factors influencing the relationship between teaching competence and problem-solving skills.

Data Gathering Procedure

The research commenced upon the approval of the research by the Dean of the Graduate School at Cebu Technological University, Main Campus. To facilitate the smooth administration of the questionnaire, the researcher submitted a formal request to the School Head, requesting authorization to conduct the survey and specifying the proposed schedule for data collection. Prior to the administration of the instrument, the purpose and content of the questionnaire were thoroughly explained to the respondents through face-to-face orientations and social media communication platforms. Respondents and their parents were assured of the confidentiality of all information shared, in full adherence to the Data Privacy Act and relevant legal safeguards. The teachers answered the survey on teacher competence while the learners were given test questions based on the indicators under the Problem-Solving Questionnaire. The teachers were then provided with the results of the test as their reference in rating the problem-solving skills of the learners through the adapted questionnaire. Upon collection, the data were carefully organized and encoded, then subjected to statistical analysis to determine the relationship between teachers' competence and the problem-solving skills of the learners, thereby deriving meaningful insights and interpretations essential to the study's objectives.

Simple Percentage Analysis. This refers to a basic statistical technique used to express the ratio of a part to a whole in percentage form. It is commonly used to compare two or more sets of data and to illustrate patterns or relationships among different variables or data series in an easily interpretable format.

Weighted Mean. The weighted mean is a type of average in which each value in a data set is multiplied by a predetermined weight that reflects its relative importance. It is calculated by summing the products of each value and its weight and dividing the total by the sum of the weights. This method is particularly useful when analyzing responses from scaled questionnaires, as it reflects the collective tendency of respondents more accurately than a simple mean.

Paired Samples T-Test. The paired samples t-test is a statistical procedure used to compare the means of two related groups to determine whether a significant difference exists between them. It is ideal for measuring changes within the same sample over time or under different conditions, such as before and after an educational intervention. This test accounts for the paired nature of the data, enhancing the sensitivity of the analysis and ensuring robust, valid results.

PRESENTATION, ANALYSIS OF DATA AND INTERPRETATION

This section presented the analysis and interpretation of the data gathered to address the specific problems of the study. It began with a description of the profile of Mathematics teachers in terms of their age, gender, civil status, highest educational attainment, number of years in service, and performance ratings. The age and gender of Grade 4 learners were also considered to provide a demographic context for their mathematical performance. The level of instructional competence of Mathematics teachers was examined based on four key areas: content knowledge and skills, strategies and methods, integration of information and communication technology (ICT), and assessment and evaluation. In addition, the level of problem-solving skills of Grade 4 learners in Mathematics was assessed in terms of conceptual understanding, logical reasoning, and pattern recognition. The study further analyzed whether a significant relationship existed between the instructional competence of teachers and the problem-solving skills of learners. An enhanced instructional guide in Mathematics was developed to address observed gaps and strengthen both teaching practices and learners' cognitive performance in Mathematics.



RELEVANT INFORMATION

This section presented the demographic profile of the respondents, including Mathematics teachers' age, gender, civil status, educational attainment, years of service, and performance rating, as well as the age and gender of Grade 4 learners. These details provided essential context for interpreting teacher competence and learners' problem-solving skills.

For teachers, the profile highlighted key personal and professional characteristics that may influence instructional competence in Mathematics. Variables such as age and gender were considered important, as age may reflect experience and maturity in teaching, while gender may relate to teaching styles and classroom dynamics. Understanding these factors helped establish a basis for analyzing the relationship between teacher competence and learners' problem-solving skills.

Table 2

Age and Gender Profile of the Teachers

Variable	Frequency n = 10	Percentage	Mean	SD
Age				
51 to 60 years old	1	10	53	0
41 to 50 years old	3	30	42	0.65
31 to 40 years old	4	40	34	0.59
21 to 30 years old	2	20	28	0.67
TOTAL	10	100	33	0.48
Gender				
Male	2	20	0	0
Female	8	80	0	0
TOTAL	10	100	0	0

As shown in Table 2, most teacher-respondents were aged 31–40 (40%), followed by 41–50 (30%), 21–30 (20%), and 51–60 (10%). This indicates a predominantly mid-career workforce, suggesting a balance of experience and openness to innovation, which may support effective instructional delivery. The presence of younger teachers also reflects potential for growth and adaptability in teaching practices.

In terms of gender, the majority were female (80%), while males comprised 20%, reflecting the common trend in the Philippine education system. This may have contributed to a nurturing and student-centered classroom environment, although both genders provided diversity in instructional approaches.

Regarding civil status, most respondents were married (80%), while 20% were single, with no widowed participants. This suggests that teachers may have varying personal support systems and responsibilities that could influence their teaching performance. Overall, these demographic characteristics provided important context in understanding how teacher competence may relate to learners' problem-solving skills.

Table 3
Civil Status of the Teachers

Variable	Frequency	Percentage
Civil Status		
Single	2	20



Married	8	80
Total	10	100

As shown in Table 3, the majority of teacher-respondents were married (80%), while 20% were single. This distribution suggests that most teachers had established family responsibilities, which may contribute to stability and consistency in teaching. Married teachers may benefit from strong support systems, while single teachers may have greater flexibility for lesson preparation and professional development. These differences provide meaningful context in understanding how personal circumstances may influence teaching competence and, consequently, learners' problem-solving skills.

Highest Educational Attainment.

Teachers' educational attainment plays a vital role in enhancing their content knowledge, instructional competence, and overall teaching effectiveness. Higher academic qualifications often reflect deeper subject mastery and exposure to diverse teaching strategies.

As shown in Table 4, the majority of respondents held a master's degree (60%), while 40% had a bachelor's degree. This indicates a generally well-qualified group of teachers, which may have contributed to the quality of instruction and the development of learners' problem-solving skills in Mathematics.

Table 4
Highest Educational Attainment of the Teachers

Variable	Frequency	Percentage
Highest Educational Attainment		
Masters' Degree	6	60
Bachelor's Degree	4	40
Total	10	100

The data presented in Table 4 showed that 60 percent of the teacher-respondents had attained a master's degree, while 40 percent held a bachelor's degree. This distribution implied a teaching force with a strong foundation in academic and professional preparation. The high percentage of teachers with graduate-level education suggested a commitment to ongoing learning and the enhancement of pedagogical skills, which may have contributed positively to instructional competence. Teachers with advanced degrees are often more equipped to design effective lessons, apply diverse teaching strategies, and conduct meaningful assessments, especially in complex subjects like Mathematics (Reyes & Delgado, 2022). Meanwhile, those with bachelor's degrees may still demonstrate competence but may benefit from further specialization and training. This level of academic attainment among respondents underscored the potential for improved classroom practices, which could directly support learners' development of problem-solving skills. The findings reinforced the importance of promoting graduate education and professional development as part of efforts to raise the quality of basic education.

Number of Years in Service. The length of a teacher's service within the education system is a critical determinant of their teaching effectiveness, classroom management expertise, and influence on student learning outcomes. Teachers who have accumulated more years of experience often possess a deeper understanding of curriculum implementation, student behavior, and instructional differentiation. They are more likely to exhibit refined pedagogical practices, resilience in managing classroom challenges, and adaptability to ongoing educational reforms and technological advancements. Moreover, experienced teachers tend to mentor younger colleagues and contribute to school-wide instructional improvement. In contrast, less experienced teachers may bring fresh perspectives and energy but often require continuous support and professional development to build confidence and competence. Table



5 presented a comprehensive analysis of the respondents' teaching experience, categorized by their years in service, ranging from early-career to veteran educators.

These insights were valuable in determining how tenure influences the effectiveness of Mathematics instruction and, more importantly, how it may impact the development of learners' problem-solving skills. Understanding this distribution helped establish the role of experience in bridging instructional competence with student achievement. As reflected in Table 5, most of the respondents have been connected with the school for 1 to 5 years, accounting for four (4) individuals or 40 percent. This

Table 5
Number of Years in Service of the Teachers

Variable	Frequency	Percentage	Mean	SD
16 – 20 years	1	10	17	0
11 – 15 years	3	30	12	0.34
6 – 10 years	2	20	8	0.45
1 – 5 years	4	40	4	0.24
TOTAL	10	100	10.3	0.34

is followed by respondents with 11 to 15 years of service, representing 3 individuals or 30 percent. There are also two (2) individuals or 20 percent at 6 – 10 years and one (1) individual or 10 percent at 16 – 20 years. This indicated a relatively young teaching workforce, many of whom were likely in the early stages of their careers and still developing their instructional approaches and classroom management strategies. While early-career teachers often bring enthusiasm and fresh pedagogical ideas, they may still require mentorship and professional development to build the depth of competence expected in more complex areas such as Mathematics instruction. The presence of teachers with 11 to 15 years of service (30%) suggested a significant portion of mid-career professionals who likely contributed stability, experience, and a more refined set of teaching practices. The smaller number of respondents with 6–10 years (20%) and 16–20 years (10%) of service reflected a limited representation of those in transitional and advanced stages of their careers. According to Gonzales and Rivera (2023), teaching experience is positively correlated with classroom effectiveness, particularly when paired with continuous training and reflective practice. Therefore, the variation in years of service among respondents had meaningful implications for instructional quality and highlighted the need for differentiated support to enhance teacher competence and promote learners' problem-solving skills in Mathematics.

Performance Rating of the Teachers. A performance rating is a formal assessment that evaluates a teacher's effectiveness in fulfilling their roles and responsibilities, often conducted by school administrators, master teachers, or other qualified evaluators based on established performance standards such as the Results-Based Performance Management System (RPMS). This evaluation process is essential not only for ensuring teacher accountability but also for providing constructive feedback that guides professional growth and instructional improvement. It helps identify strengths, areas for development, and alignment with institutional goals, which ultimately contribute to better learning outcomes for learners. In the context of this study, performance ratings were considered a key indicator of instructional competence, particularly in how teachers facilitated Mathematics instruction and supported the development of learners' problem-solving skills. Table 6 presented the most recent performance ratings of the teacher-respondents from the selected research locale, which included categories such as "Very Satisfactory" and "Outstanding." These ratings provided meaningful insights into the teachers' proficiency levels, work ethic, and instructional impact. By examining performance evaluations alongside other variables such as educational attainment and years of service, the study aimed to establish a clearer understanding of the factors influencing teaching quality and their effect on student achievement in Mathematics.

In evaluating teacher performance ratings within the research locale, findings indicate that 80 percent of the respondents achieved an outstanding rating, while the remaining 20 percent or 2 respondents received a very

Table 6
Performance Rating of the Teachers

Variable	Frequency	Percentage	Mean	SD
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Outstanding	8	80	4.86	0.36
Very Satisfactory	2	20	4.42	0.42
TOTAL	10	100	4.42	0.43

satisfactory rating. The performance rating results revealed that 80 percent of the teacher respondents received an Outstanding rating, while the remaining 20 percent, or two individuals, were rated Very Satisfactory. These findings suggested a high level of instructional competence among the teaching force in the research locale. The predominance of outstanding ratings indicated that most teachers consistently met and exceeded performance expectations, which may have positively influenced their effectiveness in delivering Mathematics instruction and supporting the development of learners' problem-solving skills. High performance ratings are often linked to strong classroom practices, effective use of teaching strategies, and professional commitment (Lopez & Santiago, 2024). Meanwhile, the presence of teachers with Very Satisfactory ratings still reflected competence but also highlighted opportunities for further growth through targeted training and support. Overall, these performance levels underscored the importance of continuous professional development to sustain teaching excellence and maximize student learning outcomes.

Learners

The participation of Grade 4 learners as respondents in this study was vital in evaluating the effectiveness of Mathematics instruction and its impact on their problem-solving skills. As the primary recipients of classroom instruction, their responses and performance provided direct insights into how teaching strategies influenced learning outcomes. The learners served as key sources of data in assessing the level of their conceptual understanding, logical reasoning, and pattern recognition—critical components of mathematical problem-solving. Their involvement allowed the researcher to draw meaningful conclusions about the relationship between instructional competence and student achievement. Furthermore, the learners' engagement in the study contributed to the development of an enhanced instructional guide tailored to their learning needs and cognitive development.

Age and Gender. The age and gender of Grade 4 learners were examined to provide a clearer demographic profile of the respondents. These variables were considered relevant in understanding differences in learning styles, developmental readiness, and engagement with mathematical problem-solving tasks. Age served as an indicator of cognitive maturity, while gender offered insights into potential variations in learning preferences and classroom participation. By analyzing these demographic characteristics, the study aimed to contextualize the learners' performance in Mathematics, particularly in relation to their conceptual understanding, logical reasoning, and pattern recognition. The data gathered helped establish a foundation for interpreting how learner-related factors may have interacted with the instructional competence of their teachers.

Table 7
Age and Gender Profile of the Learners

Variable	Frequency n = 100	Percentage	Mean	SD
Age				
11 – 12 years old	11	11	11	0.24
9 – 10 years old	89	89	9.2	0.21
TOTAL	100	100	10.3	0.23
Gender				
Male	47	47	0	0
Female	53	53	0	0
TOTAL	100	100	0	0



The data presented in Table 7 indicated that the majority of the Grade 4 learners were within the typical age range of 9 to 10 years old, comprising 89 percent of the total respondents. This suggested that most learners were in the expected developmental stage for their grade level, which likely aligned with the cognitive abilities required for mastering foundational mathematical concepts. The presence of learners aged 11 to 12 years, accounting for 11 percent, may have reflected instances of delayed school entry, grade repetition, or other educational interruptions. These age-related variations could have influenced classroom dynamics and individual learning progress. As noted by Alcosoba and Mendoza (2022), age-appropriate instruction is critical for effective curriculum delivery, and teachers must adjust their strategies to address developmental differences within the same class. Therefore, understanding the age composition of learners helped inform differentiated instructional approaches to support varied learning needs and improve problem-solving outcomes.

In terms of gender, the number of female learners exceeded that of male learners, with 53 females accounting for 53 percent of the total, while male learners numbered 47, representing 47 percent. This relatively balanced proportion suggested minimal gender disparity in terms of enrollment at the Grade 4 level within the research locale. Such distribution may contribute to a more inclusive and equitable classroom environment where both genders have similar access to learning opportunities. However, subtle differences in learning preferences, motivation, and performance between male and female learners may still exist, particularly in Mathematics. According to Cruz and Morales (2023), gender-sensitive instructional approaches can enhance engagement and participation among learners by addressing diverse learning needs. Therefore, recognizing this gender composition supported the development of more responsive teaching strategies aimed at improving all learners' problem-solving abilities.

LEVEL OF TEACHER COMPETENCE AND LEVEL OF PROBLEM – SOLVING SKILLS OF THE LEARNERS

This study examined the level of teacher competence in Mathematics instruction and its relationship to the problem-solving skills of Grade 4 learners. Teacher competence, reflected in areas such as content knowledge, teaching strategies, ICT integration, and assessment practices, played a crucial role in shaping student learning outcomes. Simultaneously, the learners' problem-solving skills—specifically in conceptual understanding, logical reasoning, and pattern recognition—served as key indicators of their mathematical development. By assessing these two variables, the study aimed to determine how the quality of instruction influenced learners' ability to apply mathematical thinking to various problems. The findings provided valuable insights into the instructional strengths of teachers and how these impacted the development of essential problem-solving competencies among their learners, forming the basis for an enhanced instructional guide in Mathematics.

Content Knowledge and Skills. This section examined the teachers' content knowledge and skills as a fundamental component of their instructional competence. Content knowledge referred to the depth of understanding teachers possessed in the subject matter they delivered, while skills encompassed their ability to communicate concepts clearly, address learner misconceptions, and apply mathematical principles effectively. As content knowledge directly influenced instructional quality, its assessment was vital in determining how well-equipped teachers were to guide learners through increasingly complex mathematical problems. The findings in this area helped establish the connection between a teacher's mastery of the subject and the development of learners' problem-solving abilities, which was central to the objectives of the study. Table 8 presented data on the indicator, Content Knowledge and Skills, as a key dimension in assessing the level of teacher competence.

Table 8
Content Knowledge and Skills

Table 9 revealed the level of teacher competence in terms of Strategies and Methods.

Table 9
Strategies and Methods

Strategies and Methods	Teachers		
	Weighted Mean	SD	Interpretation
Encourage learners to express their ideas and opinions in a clear and concise manner.	3.16	0.18	Moderately Evident



Encourage learners to participate in active learning	3.39	0.32	Highly Evident
Include targeted education that supports learners' growth in using critical thinking techniques and procedures.	3.52	0.36	Highly Evident
Exhibit a suitable degree of subject matter expertise in their area of expertise.	3.19	0.47	Moderately Evident
Utilize a range of techniques and resources appropriate for each student's needs.	3.45	0.56	Highly Evident
Average Weighted Mean	3.34	0.38	Highly Evident

The indicator that obtained the highest weighted mean was Include targeted education that supports learners' growth in using critical thinking techniques and procedures at 3.52 interpreted as Highly Evident as perceived by the teachers. This result implied that the teachers were intentional in designing and implementing instructional strategies aimed at enhancing learners' critical thinking skills—a core component of effective mathematics instruction. When teachers focus on fostering critical thinking, learners are more likely to develop logical reasoning, make informed decisions, and apply learned concepts to real-world situations (Reyes & Bautista, 2023). The strong emphasis on this area indicated that instructional practices were aligned with higher-order thinking goals, contributing positively to learners' ability to solve complex problems and supporting the broader aim of cultivating 21st-century skills in the classroom.

The indicator that obtained the lowest weighted mean as perceived by the teachers was Encourage learners to express their ideas and opinions in a clear and concise manner with a weighted mean of 3.16 respectively interpreted as Moderately Evident. This result suggested that while opportunities for student expression were present, they may not have been consistently or effectively emphasized in classroom practice. Encouraging learners to articulate their mathematical thinking is crucial for developing communication skills and deeper conceptual understanding (Domingo & Nuñez, 2022). The moderate rating implied that learners might not be fully supported in verbalizing their reasoning, which could hinder their confidence in problem-solving and limit classroom discourse. Addressing this area could enhance learner engagement and support the development of reflective, independent thinkers capable of articulating and defending their mathematical ideas.

Integration of ICT. This section examined the integration of Information and Communication Technology (ICT) in mathematics instruction as an essential component of teacher competence. The use of ICT tools—such as digital learning platforms, interactive software, and multimedia resources—was recognized for enhancing the teaching and learning process by making lessons more engaging, accessible, and interactive. Teachers who effectively integrated ICT were better able to support differentiated instruction, provide timely feedback, and foster learner autonomy. Analyzing how ICT was utilized in the classroom provided valuable insights into the digital readiness of the teachers and their ability to adapt to evolving educational demands. The results in this section offered a deeper understanding of how the strategic use of technology contributed to both instructional delivery and the development of learners' problem-solving skills. Table 10 showed the indicator integration of ICT.

The indicator that obtained the highest weighted mean was use of Educational Apps and Games for Problem Solving at 3.71 as Highly Evident as perceived by the teachers. This finding implied that teachers were actively incorporating digital tools to enhance student engagement and reinforce mathematical problem-solving in an interactive and motivating manner. Educational apps and games have been shown to promote individualized learning, increase motivation, and improve critical thinking and computational fluency (Santiago & Dela Cruz, 2023). The high rating reflected the teachers' recognition of technology as a meaningful supplement to traditional teaching strategies, aligning with modern pedagogical trends that emphasize the integration of ICT to meet diverse learner needs and improve

Table 10
Integration of ICT



Integration of ICT	Teachers		
	Weighted Mean	SD	Interpretation
Use of Educational Apps and Games for Problem Solving	3.71	0.18	Highly Evident
Use of Multimedia Resources to Understand and Solve Problems	3.39	0.35	Highly Evident
Teacher-Led Digital Activities Involving Step-by-Step Problem Solving	3.58	0.29	Highly Evident
Collaborative Group Tasks Using ICT Tools	3.21	0.31	Moderately Evident
Average Weighted Mean	3.47	0.28	Highly Evident

academic outcomes. The indicator that obtained the lowest weighted mean as perceived by the teachers was Collaborative Group Tasks Using ICT Tools with a weighted mean of 3.21 interpreted as Moderately Evident. This suggested that while ICT was utilized individually or for teacher-led instruction, its application in promoting collaborative learning among learners was less emphasized. Effective use of ICT in group settings fosters teamwork, communication, and shared problem-solving, which are vital skills in 21st-century learning environments (Reyes & Valencia, 2022). The moderate rating indicated a potential area for professional development, encouraging teachers to explore more opportunities for student collaboration through digital platforms. Strengthening this component could enhance classroom interactivity and foster deeper peer engagement in mathematics learning.

Assessment and Evaluation. This section focused on the role of assessment and evaluation in measuring learners' progress and guiding instructional decision-making. Assessment and evaluation were considered critical components of instructional competence, as they provided teachers with data to understand learners' learning needs, identify areas for improvement, and refine teaching strategies. In the context of mathematics instruction, effective assessment practices helped determine the extent to which learners developed problem-solving skills, conceptual understanding, and logical reasoning. Teachers' ability to design, implement, and interpret assessments accurately reflected their competence in aligning instruction with learning goals. The results presented in this section offered valuable insights into how teachers applied various

Table 11
Assessment and Evaluation

Assessment and Evaluation	Teachers		
	Weighted Mean	SD	Interpretation
tracking learners' advancement toward learning objectives	3.45	0.24	Highly Evident
Report assessment findings for analysis, evaluation, and decision-making at the school level.	3.57	0.38	Highly Evident
Utilize a range of assessment tools to measure student development. Develop classroom and instructional strategies based on the relevant data.	3.48	0.21	Highly Evident
Work together with coworkers to track student progress and adapt instruction to meet each student's unique learning needs and cultural variances.	3.76	0.35	Highly Evident
Inform children and their parents or guardians about their strengths and shortcomings depending on the results of the assessment.	2.34	0.17	Less Evident
Average Weighted Mean	3.32	0.27	Highly Evident



assessment tools and strategies to monitor learning outcomes and support student achievement. Table 11 showed the indicator, assessment and evaluation.

The indicator that obtained the highest weighted mean is the indicator was work together with coworkers to track student progress and adapt instruction to meet each student's unique learning needs and cultural variances at 3.76 as Highly Evident as perceived by the teachers. This finding highlighted the teachers' strong commitment to collaborative assessment practices and differentiated instruction, reflecting a learner-centered approach that respects learners' diverse backgrounds and academic needs. Such practices align with contemporary educational frameworks that emphasize inclusivity, equity, and responsiveness in teaching (Santos & Herrera, 2023). The high rating indicated that teachers were not only evaluating student outcomes but also engaging in professional collaboration to ensure instruction was adaptive and culturally relevant. This approach fostered a supportive learning environment and contributed significantly to improving student performance, especially in subjects like mathematics where individualized support is often essential.

The indicator that obtained the lowest weighted mean was Inform children and their parents or guardians about their strengths and shortcomings depending on the results of the assessment as perceived by the teachers with a weighted mean of 2.34 interpreted as Less Evident. This result suggested a gap in consistent and effective communication between teachers and families regarding student progress. Although assessment plays a crucial role in identifying learning needs, its full potential may not be realized if the results are not clearly shared with learners and their guardians. According to Flores and Alonzo (2022), meaningful parent-teacher communication enhances student motivation, accountability, and support at home. The low rating implies that schools may need to strengthen their reporting practices and provide teachers with tools or training to better engage families in the learning process. Addressing this area could lead to more informed and involved stakeholders, ultimately supporting better academic outcomes for learners.

Summary on the Level of Teacher Competence

This section summarized the overall results of the teacher respondents' instructional competence based on four key indicators: content knowledge and skills, strategies and methods, integration of ICT, and assessment and evaluation. These domains represented the core areas of teaching performance that directly influenced classroom instruction and student learning outcomes. Each indicator was assessed using specific items that reflected observable and measurable teaching practices. The summary provided a comprehensive view of how teachers demonstrated competence across these domains, as perceived through their self-assessments. The findings served as a basis for identifying strengths and areas for improvement, which could inform professional development initiatives and contribute to the enhancement of instructional quality in mathematics education.

Table 12 showed the summary of the weighted mean of all the indicators that pertains about Teacher Competence. As reflected in Table 12, the indicator that obtained the highest weighted mean as perceived by the teachers was Integration of ICT with a weighted mean of 3.47 interpreted as Highly Evident. This suggest that teachers demonstrated a strong capability in utilizing digital tools and platforms to enhance mathematics

Table 12
Summary on the Level of Teacher Competence

Indicators	Teachers		
	Weighted Mean	SD	Interpretation
Content Knowledge and Skills	3.19	0.31	Moderately Evident
Strategies and Methods	3.34	0.38	Highly Evident
Integration of ICT	3.47	0.28	Highly Evident
Assessment and Evaluation	3.32	0.27	Highly Evident
Average Weighted Mean	3.33	0.31	Highly Evident



instruction. This result implied that teachers were well-aligned with the ongoing shift toward digital and blended learning environments, where technology not only supports instructional delivery but also facilitates active learner engagement, personalized learning paths, and improved access to diverse educational resources (Santos & De Guzman, 2022). The prominence of ICT competence could be attributed to increased professional development efforts and digital literacy initiatives launched by educational institutions and the Department of Education in response to the demands of remote and hybrid teaching during and after the COVID-19 pandemic (DepEd, 2023; Navarro & Reyes, 2024). Furthermore, this trend emphasized the crucial role of technology integration in developing 21st-century skills among learners and fostering innovation in classroom practices (Torres & Medina, 2021). As such, sustaining and enhancing teachers' ICT skills through continuous training, access to digital resources, and institutional support remains essential for maximizing student learning outcomes in mathematics.

LEVEL OF PROBLEM – SOLVING SKILLS OF LEARNERS

This section presented the level of problem-solving skills of the Grade 4 learners in Mathematics, which was a crucial component in understanding their cognitive development and mathematical proficiency. The assessment focused on three key indicators: conceptual understanding, logical reasoning, and pattern recognition, all of which were essential for learners to navigate mathematical tasks with accuracy and confidence. These indicators reflected not only the learners' ability to recall and apply concepts but also their capacity to analyze, deduce, and generalize information when solving problems. By evaluating these aspects, the study aimed to identify both strengths and gaps in learners' problem-solving abilities, which could serve as a basis for enhancing instructional approaches and curriculum support in elementary Mathematics.

Conceptual Understanding. This part of the study focused on assessing the learners' conceptual understanding in Mathematics, which referred to their ability to comprehend mathematical concepts, operations, and relationships deeply. Conceptual understanding enabled learners to make sense of mathematical ideas rather than relying solely on memorized procedures. It served as a foundation for flexible thinking, problem-solving, and the application of knowledge to new situations. The results in this section provided insights into how well learners grasped fundamental concepts and how effectively they could connect prior knowledge to solve various mathematical problems. Table 13 showed the indicator on the level of problem – solving skills of learners, Conceptual understanding.

Table 13
Conceptual Understanding

Conceptual Understanding Indicators	Teachers		
	Weighted Mean	SD	Interpretation
Demonstrate clear understanding of mathematical concepts	3.37	0.29	Highly Evident
Explain mathematical ideas based on their own understanding.	3.46	0.35	Highly Evident
Connect learned mathematical concepts effectively	3.51	0.16	Highly Evident
Apply mathematical concepts to the problems given	3.79	0.41	Highly Evident
identify and rectify misconceptions in understanding mathematical concepts	3.22	0.27	Moderately Evident
Average Weighted Mean	3.43	0.30	Highly Evident

As reflected in Table 13, the indicator that obtained the highest weighted mean as perceived by the teachers was apply mathematical concepts to the problems given with a weighted mean of 3.79 interpreted as Highly Evident. This suggested that a significant number of learners were able to demonstrate a strong grasp of mathematical principles



and apply them appropriately when confronted with various problem-solving situations. Such a result highlights the effectiveness of instructional strategies that emphasize concept-based learning rather than rote memorization. According to recent studies, learners who exhibit strong conceptual understanding are more likely to succeed in higher-order thinking tasks and transfer knowledge across different contexts (Mok & Cheng, 2023; De Vera & Ramos, 2021). Thus, this outcome underscored the importance of reinforcing conceptual instruction in the classroom to promote deeper mathematical comprehension and learner autonomy.

The indicator that obtained the lowest weighted mean was explain mathematical ideas based on their own understanding with a weighted mean of 3.46 interpreted as Highly Evident. This implied that while learners generally grasped mathematical concepts, there was still a relative challenge in articulating these ideas using their own words and reasoning. According to Bernardo and Garcia (2022), being able to explain mathematical thinking is a crucial component of deep understanding, as it reflects internalized knowledge and cognitive processing. The slightly lower rating may suggest a need for more student-centered discussions, reflective questioning, and opportunities to verbalize reasoning during instruction. Strengthening this area could enhance learners' mathematical communication skills and foster a more confident and conceptually grounded learning environment.

Logical Reasoning. Logical reasoning is a fundamental component of mathematical problem-solving, as it enables learners to analyze relationships, make inferences, and draw valid conclusions based on given premises. This skill allows learners to approach problems methodically, evaluate the accuracy of their reasoning, and justify their solutions with evidence. In the context of this study, the logical reasoning abilities of Grade 4 learners were assessed to determine how well they could apply structured thinking in mathematical tasks. Table 14 presented the findings on learners' level of logical reasoning, providing valuable insights into their analytical capabilities and the effectiveness of instruction aimed at developing this cognitive domain.

Table 14
Logical Reasoning

Logical Reasoning Indicators	Teachers		
	Weighted Mean	SD	Interpretation
Follow logical sequence of steps to arrive at a solution	3.84	0.26	Highly Evident
Identify assumptions	3.16	0.34	Moderately Evident
Deduce conclusions based on given premises shown in the context of the problem	3.51	0.11	Highly Evident
Evaluate the correctness of the solutions	3.76	0.29	Highly Evident
Construct valid logical procedures to answer the problem correctly	3.22	0.24	Moderately Evident
Average Weighted Mean	3.50	0.25	Highly Evident

As reflected in Table 14, the indicator that obtained the highest weighted mean as perceived by the teachers was follow logical sequence of steps to arrive at a solution with a weighted mean of 3.84 interpreted as Highly Evident. This result suggests that most learners demonstrated strong procedural fluency and were able to apply logical steps consistently when solving mathematical problems. According to Nuñez and Sevilla (2023), the ability to follow a logical process is a key element in developing critical thinking and supports long-term mathematical achievement. This finding indicates that instructional strategies in the classroom may have effectively emphasized step-by-step problem-solving approaches. However, maintaining and enriching this skill requires continued practice through scaffolded tasks, reflective questioning, and the integration of real-life problem contexts to deepen reasoning beyond rote procedures.

The indicator that obtained the lowest weighted mean was identify assumptions with a weighted mean of 3.16 interpreted as Moderately Evident. This suggests that while learners showed some capacity to recognize underlying assumptions in problem-solving situations, this skill was not consistently demonstrated. Identifying



assumptions is a higher-order cognitive skill that plays a crucial role in critical thinking and logical analysis (Santos & Reyes, 2022). The moderate performance in this area may indicate a need for more explicit instruction and practice in tasks that challenge learners to question given information, detect implicit ideas, and justify their reasoning. Enhancing this skill can contribute to more robust mathematical reasoning and better problem-solving outcomes in complex scenarios.

Pattern Recognition. This section focused on assessing the level of learners' pattern recognition skills in mathematics, which is a fundamental aspect of problem-solving and logical thinking. Pattern recognition involves the ability to identify relationships, trends, and structures in numbers or shapes, allowing learners to make predictions, formulate generalizations, and simplify complex problems. Understanding patterns not only supports mathematical fluency but also strengthens learners' ability to connect concepts across different areas of mathematics. The indicators under this component provided insight into how well learners could recognize and apply patterns in solving mathematical tasks. Table 15 showed the problem – solving indicator, pattern recognition.

Table 15
Pattern Recognition

Pattern Recognition Indicators	Teachers		
	Weighted Mean	SD	Interpretation
Determine patterns in numerical data	3.89	0.25	Highly Evident
Predict outcomes based on careful analysis	3.45	0.37	Highly Evident
Recognize relationships of different mathematical concepts applied	3.63	0.15	Highly Evident
Generalize findings from specific analyzed contexts of the problems	3.15	0.29	Moderately Evident
Utilize patterns to simplify the contexts of the problems	3.34	0.28	Highly Evident
Average Weighted Mean	3.49	0.27	Highly Evident

As reflected in Table 15, the indicator that obtained the highest weighted mean as perceived by the teachers was determine patterns in numerical data with a weighted mean of 3.89 interpreted as Highly Evident. This implied that the learners were capable of discerning mathematical relationships and regularities, which were essential for effective problem-solving and abstract reasoning. Such competence supported the development of higher-order thinking skills and indicated that the instructional approaches used by teachers had effectively enhanced learners' abilities in recognizing numerical patterns. This also underscored the importance of having previously integrated pattern-based activities into the mathematics curriculum to sustain and further develop this critical skill.

The indicator that obtained the lowest weighted mean was generalize findings from specific analyzed contexts of the problems with a weighted mean of 3.15 interpreted as Moderately Evident. This suggested that while learners were able to identify and analyze patterns, they encountered challenges in extending those findings to broader mathematical concepts or unfamiliar contexts. The result implied a need for more instructional emphasis on helping learners connect specific problem-solving experiences to generalized principles, which is crucial for developing transferable problem-solving skills and deeper mathematical understanding.

Summary on the Level of Problem – Solving Skills

This section summarized the overall level of problem-solving skills of the Grade 4 learners based on the three key indicators: conceptual understanding, logical reasoning, and pattern recognition. These domains collectively reflected the learners' ability to comprehend mathematical concepts, apply logical thinking processes, and identify patterns to solve problems effectively. The results provided a comprehensive overview of the learners' strengths and areas for improvement in mathematical problem-solving. By analyzing these indicators, the study aimed to offer insights that



could inform instructional decisions and guide the development of enhanced teaching strategies tailored to address the specific needs of the learners. Table 16 showed the summary on the level of Problem – Solving Skills of the learners. As seen at the table, the findings revealed that among all the indicators under problem-solving skills, logical reasoning obtained the highest weighted mean of 3.50, interpreted as Highly Evident. This suggested that learners demonstrated a strong ability to follow logical sequences, make sound inferences,

Table 16
Summary on the Level of Problem – Solving Skills

Indicators	Teachers		
	Weighted Mean	SD	Interpretation
Conceptual Understanding	3.43	0.30	Highly Evident
Logical Reasoning	3.50	0.25	Highly Evident
Pattern Recognition	3.49	0.27	Highly Evident
Average Weighted Mean	3.47	0.27	Highly Evident

and arrive at valid conclusions when solving problems. The result implied that instruction may have been effective in developing learners' reasoning abilities, which are essential for critical thinking and mathematical proficiency. It also indicated that logical reasoning served as a foundational strength that could be leveraged to enhance other aspects of problem-solving, such as conceptual understanding and pattern recognition.

Among all the indicators under problem-solving skills, conceptual understanding obtained the lowest weighted mean of 3.43, although still interpreted as Highly Evident. This result implied that while learners generally showed competence in understanding mathematical concepts, their performance in this area was relatively lower compared to logical reasoning and pattern recognition. It suggested a need to reinforce foundational mathematical ideas and deepen learners' comprehension to support more advanced problem-solving tasks. Strengthening conceptual understanding could further enhance the learners' ability to apply appropriate strategies and explain their reasoning with greater clarity and confidence.

TESTING OF RELATIONSHIP

Level of Teacher Competence and Level of Problem – Solving Skills of the Learners

This section presented the statistical analysis used to determine the relationship between the level of teacher competence and the level of problem-solving skills of the learners. Establishing this relationship was essential in understanding how the various dimensions of teaching competence—such as content knowledge, instructional strategies, integration of ICT, and assessment practices—may influence or contribute to the development of learners' abilities in solving mathematical problems. The findings from this analysis provided valuable insights into the alignment between instructional effectiveness and learner outcomes, which could inform future teaching practices and interventions. Table 17 showed the relationship between teacher competence and problem – solving skills of the learners.

Table 17
Teacher Competence and Learners' Performance

	Computed r-value	Critical p-value	Decision on Ho	Interpretation
Teacher Competence and Problem – Solving Skills of the learners	0.3632	0.02757	Reject Ho	Significant

@ 0.05 level of significance



Based on the computed values, the r – value was 0.3632, and the critical p -value was 0.02757. Since the p -value was less than the 0.05 level of significance, the null hypothesis was rejected. This indicated that there was a significant relationship between the level of teacher competence and the level of problem-solving skills of the learners. This suggested that improvements in teacher competence were associated with enhanced learner performance in solving problems. Teachers who demonstrated a high level of expertise, utilized varied teaching strategies, and effectively integrated technology contributed significantly to developing learners' analytical and reasoning skills (Garcia & Villanueva, 2023; De Leon & Ramos, 2022). This outcome reinforced the assertions of Santos and Ramirez (2022), who found that competent teachers were more effective in fostering higher – order thinking among learners. Additionally, Bautista and Cruz (2024) emphasized that the ability of teachers to assess learners meaningfully and adjust instruction accordingly plays a critical role in improving learning outcomes. The results of this study aligned with the view of Tan and Mendoza (2021), who highlighted the direct influence of instructional quality on learners' mathematical and logical performance. Hence, strengthening teacher competence could be considered a key strategy in enhancing the overall problem-solving proficiency of learners in basic education settings.

SUMMARY, FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

This section presented a comprehensive synthesis of the study, encompassing the summary, key findings, conclusions, and recommendations. The summary revisited the central research problem and its related variables, offering a clear and cohesive outline of the investigation. The key findings, derived from systematic data analysis, served as the foundation for drawing insightful and evidence-based conclusions. These conclusions informed the formulation of targeted recommendations designed to address the study's objectives and contribute to improved educational practices.

SUMMARY

The study assessed the competence of Mathematics teachers in relation to the problem-solving skills of Grade 4 learners at Basak Elementary School, Division of Mandaue City, for the School Year 2025–2026, with the goal of developing an enhanced instructional guide. It examined key teacher demographics such as civil status, educational attainment, years of service, and performance ratings, as well as the age and gender of the learners. The study measured teacher competence in four areas: content knowledge and skills, strategies and methods, integration of ICT, and assessment and evaluation. Simultaneously, it evaluated learners' problem-solving skills in terms of conceptual understanding, logical reasoning, and pattern recognition. Statistical analysis revealed a significant relationship between teacher competence and learners' problem-solving performance, highlighting the critical role of teacher quality in enhancing mathematical learning outcomes and informing the development of a responsive and data-based instructional guide.

FINDINGS

The findings of the study revealed that the majority of the teacher-respondents were between 31 to 40 years old and predominantly female. Most of them held a master's degree, indicating advanced academic preparation relevant to their profession. In terms of teaching experience, the largest portion had been in service for 1 to 5 years, suggesting a relatively young teaching workforce in the institution. Furthermore, the performance ratings of the teachers showed that the majority had achieved an Outstanding rating, reflecting a high level of professional effectiveness. Regarding the learners, most of them were within the age range of 9 to 10 years old, consistent with the expected age for Grade 4 learners, and majority of them are females. These demographic findings provided important context for understanding the professional and learning environment in which the study was conducted.

The findings on the level of teacher competence indicated that, overall, the teacher-respondents demonstrated a high level of competence across all assessed domains. Among the four indicators, Integration of ICT received the highest overall weighted mean, interpreted as Highly Evident, highlighting the teachers' effective use of digital tools and educational applications in delivering instruction and enhancing student engagement. Content Knowledge and Skills and Strategies and Methods also recorded Highly Evident ratings, suggesting that teachers possessed strong subject matter expertise and were capable of employing varied instructional techniques to support learning. Meanwhile, Assessment and Evaluation was rated as Less Evident on some items, indicating areas for improvement particularly in communicating assessment results to parents and guardians. Collectively, these findings affirmed that the teachers



were largely competent in their instructional practices, with some areas that could be strengthened through targeted professional development.

The findings on the level of problem-solving skills of the learners revealed that their overall ability was interpreted as Highly Evident across the three key indicators: Conceptual Understanding, Logical Reasoning, and Pattern Recognition. Among these, Logical Reasoning obtained the highest overall weighted mean, demonstrating that learners effectively followed logical steps to solve problems and could deduce conclusions based on given premises, such as identifying necessary assumptions and applying valid reasoning to reach accurate outcomes. Pattern Recognition followed, indicating learners' ability to identify and use patterns in numerical data, recognize relationships among mathematical concepts, and predict outcomes based on observed trends—skills that are essential for simplifying complex problem contexts. Meanwhile, Conceptual Understanding had the lowest mean among the three, though still interpreted as Highly Evident, showing that while learners could apply mathematical concepts effectively to problem situations and connect ideas across topics, there was slightly less consistency in articulating mathematical ideas clearly in their own words and generalizing concepts across different scenarios. These findings suggested that learners possessed strong foundational problem-solving skills, with opportunities to further enhance their conceptual articulation, reasoning flexibility, and ability to transfer mathematical thinking across various contexts.

CONCLUSION

Based on the findings of the study, there is a significant relationship between level of teacher competence and level of problem – solving skills of the learners.

RECOMMENDATION

Based on the conclusions derived from the findings of the study, it is strongly recommended to utilize the Enhanced Instructional Guide to further improve teaching practices and learners' problem-solving skills in Mathematics. Future researchers may expand the scope of the study by including a larger sample across different schools or divisions to enhance the generalizability of the results. They may also explore additional variables such as learners' attitudes toward Mathematics, parental involvement, and classroom environment to gain a more comprehensive understanding of factors influencing problem-solving skills. The use of a mixed-methods approach is likewise encouraged to provide deeper insights into both teaching practices and learner experiences. Furthermore, longitudinal and intervention-based studies may be conducted to examine the long-term effects of teacher competence and to validate the effectiveness of the Enhanced Instructional Guide. Finally, future research may focus on strengthening assessment practices, particularly in improving the communication of learners' progress to parents and other stakeholders.

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