

Challenges in Mathematics Instruction Among Grade 2 Teachers in San Agustin District, Isabela

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Abstract. Mathematics instruction in the early grades is essential for developing learners' foundational numeracy, logical reasoning, and problem-solving skills. However, many elementary teachers continue to encounter instructional difficulties that affect learners' understanding and engagement with mathematics. Despite existing studies on mathematics education, limited research has focused on the specific instructional challenges experienced by Grade 2 teachers in the San Agustin District of Isabela. This study examined the challenges encountered in mathematics instruction and the teaching methods and classroom activities employed by Grade 2 teachers. It also determined the relationship between instructional challenges, teaching methods, and teaching activities, and identified the variables that significantly predicted instructional challenges. This study employed a descriptive-correlational research design involving 23 Grade 2 teachers selected through purposive sampling. A validated researcher-made questionnaire was used to gather data, which were analyzed using frequency, percentage, mean, standard deviation, analysis of variance (ANOVA), Pearson correlation, and multiple regression analysis. The findings revealed that teachers sometimes experience challenges in mathematics instruction, particularly in teaching abstract concepts and maintaining learner engagement. Despite these challenges, teachers frequently utilize effective instructional strategies and interactive classroom activities to support mathematics learning. The results further showed that instructional challenges significantly differed according to length of service and were significantly associated with teaching methods and activities. Moreover, teaching methods and classroom activities significantly contributed to the reduction of the instructional challenges. The findings highlight the importance of continuous professional development, effective instructional practices, and adequate learning resources for strengthening mathematics instruction in the early grades.

Keywords: Elementary Mathematics; Formative Assessment; Instructional Challenges; Primary Education; Teaching Methods

Introduction

Mathematics is a key part of education and plays a significant role in lifelong learning. It helps us develop logical thinking, problem-solving skills, and higher-order cognitive abilities that are important throughout our lives (Thwe & Kálmán, 2023). In our tech-driven world, mathematics education has grown to focus on numbers and literacy skills. This helps learners understand and use mathematical concepts in real-life situations (Sikko, 2022; Young, 2023). Globally, mathematics education involves more than just calculation. It encourages real-world applications and a deeper understanding of concepts using new teaching methods and technology to make learning inclusive and engaging (Haas et al., 2023; Madi & Gusni, 2025). By focusing on practical uses, learners gain critical life skills that are essential for social inclusion and employability. This reflects the global trend of viewing mathematics education as the key to lifelong learning and sustainable development (Cronholm, 2021; Madi & Gusni, 2025).

In the Philippines, improving elementary mathematics education remains a priority, as many students experience difficulty with the subject, resulting in low performance (Valle, 2024). Addressing these challenges requires effective teaching strategies, well-prepared teachers, and relevant curricula and assessment tools that are aligned with current educational demands. The post-pandemic shift toward diverse instructional approaches and the increased use of technology further highlight the need for innovation in teaching practices (Tashtoush et al., 2024; Valle, 2024). However, many teachers still face difficulties deepening their mathematical content knowledge and integrating technology effectively, indicating a need for targeted professional development (Ramos, 2025; Valle, 2024). In addition, limited access to technological resources and infrastructure in some areas continues to pose challenges, although it encourages adaptability and innovation among teachers (Pascua & Tagare, 2024; Reyes et al., 2024). These conditions emphasize the importance of sustained policy support and continuous capacity building to improve mathematics instruction quality.

Although several studies have examined mathematics instruction and teaching strategies, limited research has specifically focused on the instructional challenges experienced by Grade 2 teachers in the San Agustin District, Isabela. Existing studies largely discuss mathematics education in broader contexts and do not sufficiently examine how instructional challenges relate to teaching methods and classroom activities in early grades. This gap highlights the need for a localized investigation that identifies the actual instructional difficulties encountered by teachers and examines the teaching practices used to address them.

Therefore, this study aimed to determine the challenges encountered in mathematics instruction by Grade 2 teachers in the San Agustin District, Isabela. Specifically, it examined the level of instructional challenges, teaching methods, and classroom activities employed by the teachers. It also determined the significant differences and relationships among the variables and identified the factors that significantly predicted instructional challenges in mathematics instruction.

Research Questions

This study aimed to determine the challenges of mathematics instruction for Grade 2 teachers in the San Agustin District of Isabela. Specifically, this study seeks to answer the following questions:

1. What is the profile of the respondents in terms of Gender, Age, Civil Status, Length of Service, Educational Attainment, Teaching Position, Performance Rating, and Trainings/Seminars Attended?
2. What is the level of challenges in mathematics instruction in terms of: Abstract Concepts, Differentiating Instruction, Foundational Skills, Attention and Focus, Language Barriers, Motivation and Engagement, Resources, Professional Development, and Assessment Time Constraints
3. What is the level of teaching methods employed by teachers
4. What is the level of teaching activities used by teachers
5. Is there a significant difference in the level of challenges when respondents are grouped according to their profile variables?
6. Is there a significant relationship between: Challenges and Teaching Methods and Challenges and Teaching Activities
7. Which variables significantly predicted the level of challenges in mathematics instruction?

Scope and Delimitation of the Study

This study focused on the challenges encountered by Grade 2 teachers in teaching mathematics in the San Agustin District, Isabela, during the School Year 2025–2026. It examined the different instructional challenges experienced by teachers, as well as the teaching methods and classroom activities they used for mathematics instruction. The study also determined whether the challenges varied according to the teachers' profile and explored the relationship between instructional challenges, teaching methods and teaching activities. The respondents were limited to 23 Grade 2 teachers from selected public elementary schools in the district, who were chosen through purposive sampling. The study used a researcher-made questionnaire and a descriptive-correlational research design. The findings were limited to the respondents and schools included in the study.

Literature Review

Challenges in Mathematics Instruction in Early Grades

Mathematics instruction in the early grades involves several challenges that affect teaching and learning. One common difficulty is teaching abstract mathematical concepts to young learners who are still developing their thinking and reasoning abilities. Rainey et al. (2024) explained that young learners often struggle to understand abstract ideas when appropriate instructional strategies are not employed. Studies have also shown that learners have different levels of readiness and understanding, making differentiated instruction important in mathematics classrooms (Bunga et al., 2025; Olawale, 2024). These findings suggest that teachers need flexible, learner-centered strategies to address diverse learning needs.

Another challenge in mathematics instruction is maintaining learners' attention, motivation and engagement. Son (2025) emphasized that learner motivation and active participation are important factors in improving the learning outcomes. Similarly, Bognar et al. (2025) and Santos-Trigo (2014) noted that interactive and problem-solving activities help increase students' engagement and understanding of mathematics. However, teachers may still experience difficulties when learners have weak foundational skills or low interest in the subject matter.

Language barriers and limited instructional resources also affect mathematics instruction in the region. Mekheimer (2025) found that learners with limited language proficiency may struggle to understand mathematical terms and instructions. Wilson et al. (2025) reported that limited resources and time constraints make it difficult for teachers to implement varied and effective teaching strategies. Salami and

Spangenberg (2025) further explained that teachers in resource-limited settings may encounter difficulties integrating innovative instructional tools and approaches in the classroom.

Studies have also highlighted the importance of continuous professional development in improving mathematics instruction. Schoen et al. (2024) stated that training programs help improve teachers' instructional skills and classroom practices. Likewise, Bonesrønning et al. (2022) emphasized the need for sustained support and interventions to strengthen mathematics teaching in early grades. Although previous studies have discussed instructional challenges and effective teaching strategies, limited research has focused specifically on the experiences of Grade 2 teachers in the San Agustin District of Isabela. Moreover, few studies have examined the relationship between instructional challenges, teaching methods, and classroom activities in local elementary school settings. This gap justifies the need for this study.

Effective Teaching Strategies in Mathematics

Effective mathematics teaching strategies help learners understand abstract concepts and improve their engagement in classroom instruction, particularly in the early grades. One commonly used approach is the Concrete–Representational–Abstract (CRA) approach, which allows learners to progress from using concrete materials to visual representations and, finally, to abstract symbols. Kaya and Yildiz (2023) found that the CRA approach improves learners' conceptual understanding and retention of mathematical concepts. Similarly, Prosser and Bismarck (2023) emphasized that the structured sequence of the CRA approach helps learners understand difficult mathematical topics.

The use of visual aids, manipulatives, and hands-on activities also contributes to effective mathematics teaching. Byrne et al. (2023), Ruamba et al. (2025), and Shi et al. (2023) explained that multisensory learning experiences help learners better understand mathematical ideas and improve problem-solving skills. These studies suggest that learners understand concepts more effectively when they actively participate in classroom activities rather than relying solely on traditional lecture methods. Interactive activities and games are also recognized as effective mathematics teaching strategies. Adams and Holden (2011) noted that games and playful activities increase learners' motivation and classroom participation. Similarly, Bognar et al. (2025) and Santos-Trigo (2014) emphasized that problem-solving activities and open-ended questions help develop learners' critical thinking and mathematical reasoning skills. These findings show that learner-centered activities play an important role in improving engagement and conceptual understanding of the subject.

In addition, connecting mathematics lessons to real-life situations makes learning more meaningful. Washington (2021) explained that contextualized mathematics activities help learners understand the practical value of mathematics in their everyday lives. Real-life applications also encourage learners to participate actively and develop positive attitudes toward subjects. Although many studies support the effectiveness of these teaching strategies, most research has focused on general mathematics instruction and broader educational settings. Few studies have examined the specific teaching methods and classroom activities used by Grade 2 teachers in San Agustin District, Isabela. Furthermore, there is limited evidence on how these teaching strategies relate to the instructional challenges that teachers experience in local elementary classrooms. This gap supports the need for this study.

Assessment Practices in Mathematics Education

Assessment practices in mathematics education are important for monitoring learners' progress and improving instruction. Formative and summative assessments serve different but related purposes in the teaching-learning process. Formative assessment focuses on monitoring learners' understanding during instruction, whereas summative assessment measures learners' achievement after instruction has been completed. Gezer et al. (2021) explained that formative assessment helps teachers identify learning difficulties and adjust instruction to better support learners, particularly in primary mathematics classrooms.

Effective assessment practices also aim to evaluate both conceptual understanding and procedural skills, which are essential for mathematics learning. Hankeln et al. (2025) emphasized that assessment tools should not only measure computation skills but also assess learners' reasoning and explanations to strengthen their conceptual understanding. This suggests that effective assessment should go beyond written tests and include activities that allow learners to demonstrate their understanding in different ways. Studies have also highlighted the importance of feedback in improving learner performance. Enu and Ngcobo (2022) found that teachers often focus on corrective feedback but provide limited opportunities for learners to develop self-regulated learning skills. Similarly, Vijay et al. (2023) explained that performance-based assessments and direct observation activities provide structured feedback that improves learners' confidence and skills, although time constraints may affect implementation. De Brún et al. (2021) also noted that peer assessment can improve engagement and critical thinking when properly guided by teachers.

Furthermore, blended assessment approaches that combine formative and summative assessment practices can support both learner development and evaluation (Rohlin, 2022). However, Atwa et al. (2024)

and Goertzen et al. (2025) explained that the effectiveness of formative assessment depends on proper implementation, teacher preparation, and instructional support for teachers. These findings indicate that assessment practices play an important role in improving mathematics instruction and learner outcomes. Although several studies have discussed effective assessment practices in mathematics education, limited research has examined how Grade 2 teachers implement assessment activities in mathematics instruction within the San Agustin District, Isabela. There is also limited evidence regarding how assessment practices relate to instructional challenges and teaching methods in local elementary schools. This gap further supports the need for this study.

Integrated Theoretical-Conceptual Mapping

The intricate tapestry of this study's theoretical-conceptual mapping unfurls the intricate dance between the hurdles of mathematics instruction, the artistry of teaching methods, and the symphony of assessment activities among grade 2 educators. Anchored in the bedrock of venerable theories such as Constructivism, Social Constructivism, the Concrete–representational–abstract (CRA) approach, and Formative Assessment Theory, this framework paints a vivid picture of how young minds blossom into mathematical thinkers through the alchemy of active engagement, social interplay, and perpetual assessment. These guiding stars illuminate the path for the teaching practices and assessment strategies used by educators. The model reveals that the trials faced in mathematics instruction influence the choice of teaching methods and assessment activities, shaping the essence of mathematics instruction. In this intricate ballet, instructional practices are the brushstrokes that enhance teaching prowess and deepen students' mathematical comprehension. The interwoven threads of these components underscore that effective mathematics instruction is a living, breathing process in which theory breathes life into practice and practice rises to meet classroom challenges, ultimately crafting a tapestry of enriched learning outcomes for grade 2 pupils.

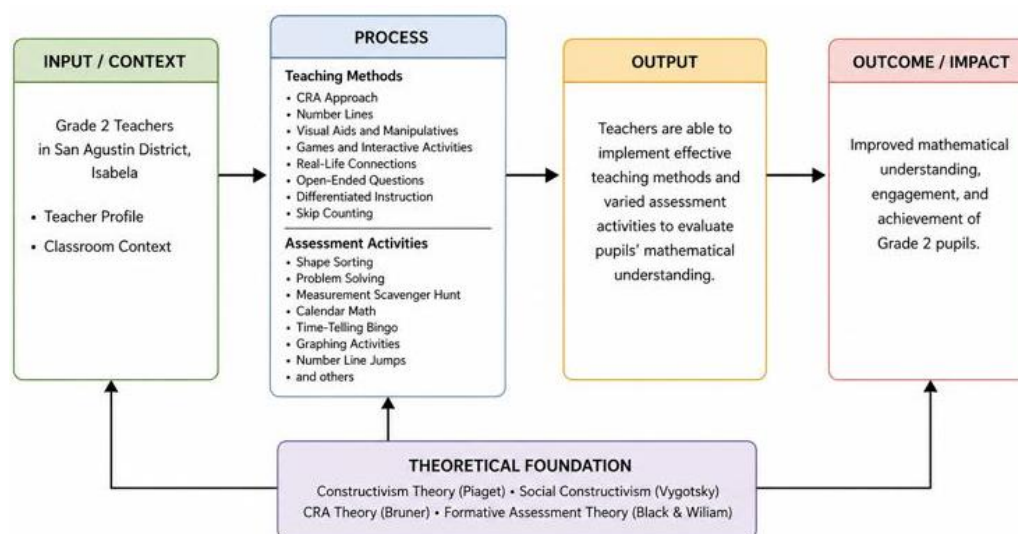


Figure 1 Theoretical-Conceptual Mapping of the study

Methodology

Research Design

This study employed a descriptive-correlational research design to determine the challenges encountered in mathematics instruction and the teaching methods and classroom activities employed by Grade 2 teachers in the San Agustin District, Isabela. The descriptive component was used to describe the level of instructional challenges, teaching methods, and teaching activities, while the correlational component examined the relationships between the variables. Regression analysis was used to determine which variables significantly predicted the level of instructional challenges. This design was appropriate because it allowed the researcher to analyze the existing conditions and relationships among the variables without manipulating them.

Sampling Design

The respondents of the study consisted of twenty-three (23) Grade 2 teachers from selected public elementary schools in the San Agustin District, Isabela. A purposive sampling technique was employed to select teachers who were directly handling Grade 2 mathematics classes during the conduct of the study. The relatively small sample size was due to the limited number of Grade 2 teachers available in the selected schools within the district. Despite the small number of respondents, the participants were considered appropriate because they possessed direct teaching experience and relevant knowledge regarding mathematics instruction in the early grades. The study specifically focused on teachers who could provide accurate, reliable, and relevant information aligned with the objectives of the research.

Research Locale

The study was conducted in the San Agustin District, Isabela, during the School Year 2025–2026. The district is composed of selected public elementary schools under the Department of Education that provide basic education services to learners from diverse communities. The locale was chosen because it reflects the actual classroom conditions and instructional practices experienced by Grade 2 teachers in mathematics instruction. The district also provided an appropriate setting for examining the challenges encountered by teachers in teaching mathematics in the early grades.

Research Participants

The participants of the study were twenty-three (23) Grade 2 teachers from selected public elementary schools in the San Agustin District, Isabela. The respondents were chosen using purposive sampling since they were directly handling Grade 2 mathematics classes during the conduct of the study. These teachers were considered appropriate participants because they possessed relevant teaching experience and firsthand knowledge regarding the challenges, teaching methods, and classroom activities used in mathematics instruction.

Research Instrument

The study utilized a researcher-made questionnaire developed from an extensive review of related literature and studies related to mathematics instruction, instructional challenges, teaching methods and classroom activities. The instrument consisted of two sections. Part I gathered the demographic profile of the respondents, including gender, age, civil status, length of service, educational attainment, teaching position, performance rating, and training or seminars attended. Part II measured the level of instructional challenges, teaching methods employed, and teaching activities used by the teachers. The instructional challenges included abstract concepts, differentiated instruction, foundational skills, attention and focus, language barriers, motivation and engagement, resources, professional development, assessment of conceptual understanding, and time constraints. The teaching methods covered the Concrete–Representational–Abstract (CRA) approach, visual aids, games, differentiated instruction, real-life applications, and open-ended questioning strategies, while the teaching activities included problem-solving tasks, graphing activities, shape sorting, number line activities, and other interactive classroom exercises. The questionnaire utilized a 5-point Likert scale ranging from “Never” to “Always.” The instrument underwent content validation by three experts in education and mathematics instruction to ensure the clarity, relevance, and appropriateness of the items. Revisions were made based on the validators’ suggestions. A pilot test was also conducted among teachers outside the actual respondents of the study, and the reliability test yielded Cronbach’s alpha coefficients above 0.70, indicating acceptable internal consistency of the instrument.

Data Gathering Procedure

Prior to data collection, permission was obtained from the Schools Division Office and the heads of the participating schools. Upon approval, the researcher distributed and retrieved the questionnaires. The respondents were informed about the purpose of the study and assured that their responses would remain confidential and used solely for academic purposes. Participation in the study was voluntary, and the respondents were allowed to withdraw at any time without penalty. The completed questionnaires were checked to ensure completeness before the data were analyzed.

Results and Discussions

Research Question 1. What is the profile of the respondents in terms of gender, age, civil status, length of service, educational attainment, teaching position, performance rating, and training/seminars attended?

Table 1. Respondents Profile Gender, Age, Civil Status, Length of Service)

Profile Variable	Category	Frequency	Percentage
Gender	Male	3	13.04%
	Female	20	86.96%
Age	25 below	0	0.00%
	26–30 years old	1	4.00%
	31–35 years old	3	13.00%
	36–40 years old	2	9.00%
	41 above	17	74.00%
Civil Status	Single	2	9.00%
	Married	19	82.00%
	Widower	2	9.00%
Length of Service	1–3 years	1	4.00%
	4–6 years	1	4.00%
	7–10 years	3	13.00%
	11 years above	18	79.00%
Total Respondents		23	100%

The results indicate that most of the respondents were female, aged 41 years and above, married, and had more than 11 years of teaching experience. This suggests that the group comprised experienced and mature teachers, which may have contributed to their ability to effectively manage classroom instruction and address learning challenges in mathematics. The predominance of female teachers reflects the common trend in elementary education, where teaching is largely female-dominated. Moreover, the high proportion of teachers with long years of service implies that most respondents have already developed strong pedagogical skills, classroom management strategies, and professional competence. These characteristics may positively influence their teaching practices and capacity to implement effective instructional methods in mathematics.

Table 2. Educational Attainment, Teaching Position, Performance Rating, and Trainings Attended

Profile Variable	Category	Frequency	Percentage
Educational Attainment	Bachelor's Degree	1	4.00%
	With Units in MA	7	31.00%
	MA Graduate	10	44.00%
	With Units in PhD/EdD	3	13.00%
	PhD/EdD Graduate	2	8.00%
Teaching Position	Local School Board	1	4.00%
	Teacher I	1	4.00%
	Teacher III	19	84.00%
	Master Teacher 2	2	8.00%
Performance Rating	Outstanding	22	99.00%
	Very Satisfactory	0	0.00%
	Not Available/LSB Teacher	1	1.00%
Trainings Attended	School Level	23	100.00%
	Division Level	23	100.00%
	Regional Level	23	100.00%
	National Level	21	91.30%
	International Level	2	8.70%
Total Respondents		23	100%

The results show that most respondents are highly educated, with the majority being MA graduates, and are currently holding the Teacher III position. In terms of performance, almost all teachers obtained

outstanding ratings, indicating their high teaching competence. Additionally, all respondents attended school-, division-, and regional-level training, and a large proportion also participated in national seminars. These findings suggest that teachers are professionally qualified, experienced, and actively engaged in continuous professional development, which may positively influence their teaching effectiveness in math.

Research Question 2. What is the level of challenge in mathematics instruction among Grade 2 teachers?

Table 3. Challenges in Mathematics Instruction in Grade 2

Particulars	Mean	SD	Interpretation
Abstract Concepts	3.26	0.65	Sometimes
Differentiating Instruction	3.04	0.70	Sometimes
Lack of Foundational Skills	3.04	0.68	Sometimes
Attention and Focus	3.26	0.66	Sometimes
Language Barriers	3.00	0.72	Sometimes
Motivation and Engagement	3.00	0.71	Sometimes
Limited Resources	2.78	0.75	Sometimes
Lack of Professional Development	3.00	0.69	Sometimes
Assessing Conceptual Understanding	2.78	0.74	Sometimes
Time Constraints for Assessment	2.60	0.77	Sometimes
Average	2.988	0.71	Sometimes

The study's results indicated that Grade 2 teachers occasionally face difficulties in teaching mathematics, especially when it comes to conveying abstract concepts and keeping students focused. This suggests that although teachers can generally handle instruction, persistent challenges still affect teaching and learning processes. Rainey et al. (2024) support these findings by highlighting that young students often find it difficult to grasp abstract mathematical ideas, complicating the teaching process. Similarly, Son (2025) pointed out that maintaining attention and engagement is crucial in mathematics education and that issues with focus can hinder students' comprehension. Additionally, Mekheimer (2025) observed that language barriers can obstruct students' understanding of mathematical terminology. Furthermore, Wilson et al. (2025) noted that limited resources and time constraints hinder teachers' ability to implement effective and varied strategies. Anselmo et al. (2024) found that mobile learning tools can enhance student engagement and understanding of concepts. Overall, the findings imply that while the challenges are moderate, they persist, underscoring the need for improved strategies, enhanced student engagement, and stronger institutional support.

Research Question 3. What is the level of teaching methods employed by Grade 2 teachers in mathematics instruction?

Table 4. Teaching Methods Employed by Teachers

Particulars	Mean	SD	Interpretation
CRA Approach	4.39	0.52	Always
Visual Aids and Manipulatives	4.35	0.55	Always
Games and Interactive Activities	4.35	0.56	Always
Number Lines	4.39	0.50	Always
Skip Counting	3.00	0.73	Sometimes
Real-Life Connections	4.35	0.54	Always
Differentiated Instruction	3.13	0.70	Sometimes
Open-Ended Questions	4.30	0.57	Always
Average	4.03	0.58	Often

Table 4 reveals that teachers frequently employ effective strategies in teaching mathematics, notably the concrete–representational–abstract (CRA) method, visual aids, interactive exercises and real-world applications. This suggests that educators can implement suitable techniques to enhance students' comprehension of mathematical ideas. Anselmo (2023) supports this by demonstrating that well-crafted instructional resources boost both students' understanding and the effectiveness of teaching. Nonetheless, certain techniques, such as skip counting and differentiated instruction, were not consistently utilized, indicating potential areas for improvement in teacher training. These observations align with Kaya and Yildiz (2023), who stressed the effectiveness of the CRA method, and Shi et al. (2023), who underscored the advantages of visual aids and practical activities. Furthermore, Adams and Holden (2011) observed that interactive activities heighten student engagement, and Washington (2021) noted that real-world applications make learning more meaningful. In summary, the findings indicate that teachers employ effective teaching methods; however, there is a need to focus more on differentiated instruction to better support diverse learning needs.

Research Question 4. What is the level of teaching activities used by grade 2 teachers?

Table 5. Teaching Activities Used by Teachers

Particulars	Mean	SD	Interpretation
Number Line Jumps	4.22	0.60	Always
Skip Counting Chants	4.30	0.58	Always
Measurement Scavenger Hunt	4.39	0.52	Always
Time-Telling Bingo	4.35	0.55	Always
Graphing Activities	4.26	0.57	Always
Calendar Math	4.39	0.51	Always
Shape Sorting	4.43	0.49	Always
Shape Creations	4.39	0.53	Always
Problem Solving	4.43	0.50	Always
Problem of the Day	4.39	0.52	Always
Average	4.36	0.54	Always

Table 5 illustrates that teachers consistently employ a diverse array of teaching activities, as evidenced by the overall mean categorized as "Always." Activities such as shape sorting, problem-solving tasks, and interactive exercises are frequently used, indicating a strong commitment to learner-centered approaches. These findings align with those of Bognar et al. (2025), who stressed that successful mathematics teaching involves active learning strategies that foster problem-solving and critical-thinking abilities. Similarly, Santos-Trigo (2014) underscored the significance of problem-solving activities in enhancing students' mathematical reasoning and conceptual understanding. Shi et al. (2023) observed that hands-on and activity-based learning improves students' comprehension of mathematical concepts, especially in the early grades. Furthermore, Washington (2021) explained that contextualized and interactive activities boost students' motivation and engagement, making learning meaningful. Anselmo et al. (2025) further supported this by highlighting that innovative tools enhance learners' critical thinking and problem-solving abilities. Overall, the findings indicate that teachers consistently implement engaging and interactive teaching activities that significantly enhance learners' understanding of mathematical concepts.

Research Question 5. Is there a significant difference in the level of challenges in mathematics instruction when the respondents are grouped according to their profile variables?

Table 6. One-Way ANOVA on Challenges in Mathematics Instruction When Grouped According to Length of Service

Source of Variation	Sum of Squares (SS)	df	Mean Square (MS)	F-value	p-value	Interpretation
Between Groups	1.284	3	0.428	2.95	0.048	Significant
Within Groups	2.748	19	0.145			
Total	4.032	22				

The results show a significant difference in the level of challenges in mathematics instruction when teachers are grouped according to their length of service ($p < 0.05$). This indicates that teaching experience influences the perception and management of instructional challenges. Teachers with longer years of service are more likely to have developed effective strategies and classroom management skills that help them address difficulties in teaching math. This finding is supported by Schoen et al. (2024), who emphasized that teaching experience and continuous professional exposure enhance instructional effectiveness and improve students' learning outcomes. Thus, experience plays a critical role in reducing instructional challenges in early grade mathematics.

Research Question 6. Is there a significant relationship between the challenges in mathematics instruction, teaching methods, and teaching activities?

Table 7. Correlation Between Challenges, Teaching Methods, and Teaching Activities

Variables	r-value	p-value	Interpretation
Challenges & Teaching Methods	-0.52	0.011	Moderate Negative Significant Relationship
Challenges & Teaching Activities	-0.48	0.018	Moderate Negative Significant Relationship
Teaching Methods & Teaching Activities	0.71	0.001	Strong Positive Significant Relationship

The correlation results revealed a moderate negative significant relationship between challenges and both teaching methods and teaching activities, indicating that as teachers use more effective strategies and activities, the level of challenge decreases. Additionally, a strong positive significant relationship existed between teaching methods and teaching activities, suggesting that these two elements are closely interconnected in enhancing instruction. These findings support the principles of Constructivism and Social Constructivism, which emphasize that active engagement and meaningful learning experiences reduce

learning difficulties. Consistent with this, Bogнар et al. (2025) and Santos-Trigo (2014) highlighted that interactive and problem-solving approaches improve students' understanding and engagement, thereby minimizing instructional challenges.

Research Question 7. Which variables significantly predicted the level of challenges in mathematics instruction?

Table 8. Multiple Regression Analysis Predicting Challenges in Mathematics Instruction

Predictor Variables	B	SE	β (Beta)	t-value	p-value	Interpretation
(Constant)	5.12	0.68	—	7.53	0.001	Significant
Teaching Methods	-0.41	0.15	-0.45	-2.73	0.013	Significant
Teaching Activities	-0.32	0.14	-0.38	-2.29	0.032	Significant

Model Summary

R	R ²	Adjusted R ²	F-value	p-value	Interpretation
0.68	0.46	0.41	8.52	0.002	Significant Model

The regression analysis showed that teaching methods and activities significantly predicted the level of challenges in mathematics instruction, with both variables negatively influencing the challenges. This means that increased use of effective instructional strategies and engaging activities leads to a reduction in the teaching difficulties. These findings support the Concrete–Representational–Abstract (CRA) approach, which promotes a structured progression in learning to enhance conceptual understanding (Kaya and Yildiz, 2023). Moreover, the results align with Formative Assessment Theory, which emphasizes continuous assessment as a means of identifying and addressing learning gaps (Gezer et al., 2021). Overall, the results suggest that improving teaching methods and classroom activities is a key factor in minimizing instructional challenges and enhancing mathematics-learning outcomes.

Ethical Considerations

This study strictly adhered to the ethical standards throughout the research process. Prior to data collection, permission was obtained from the appropriate school authorities, and the respondents were informed of the purpose of the study. Participation was voluntary, and the teachers were assured that they could withdraw at any time without consequences. Informed consent was obtained from all participants, and confidentiality was maintained by ensuring that no personal identity was disclosed in the data or results. The collected information was used solely for academic purposes and handled with care to protect the privacy and rights of the respondents. Additionally, honesty and integrity were observed in reporting the findings, ensuring that the results were presented accurately without manipulation or bias.

Conclusion

The study revealed that Grade 2 teachers in the San Agustin District, Isabela, experienced moderate challenges in mathematics instruction, particularly in teaching abstract concepts and maintaining learner engagement. Despite these challenges, teachers frequently employ effective teaching methods and interactive classroom activities that support learners' understanding of mathematical concepts. The findings further showed that instructional challenges significantly varied according to length of service and were significantly related to teaching methods and teaching activities. Moreover, teaching methods and classroom activities were found to significantly contribute to the reduction of instructional challenges in the study. This study highlights the importance of effective instructional practices, continuous professional development, and adequate instructional support in improving mathematics instruction in the early grades.

Reccomendations

In light of the findings of this study, it would be highly beneficial for schools and educational authorities to consider offering continuous professional development programs aimed at enhancing teachers' skills in teaching abstract mathematical concepts and implementing differentiated instructions. It may also be advantageous to strengthen training on innovative and learner-centered strategies, such as the effective use of the Concrete–Representational–Abstract (CRA) approach and technology integration, to further support students' understanding of mathematics. Additionally, it would be helpful for schools to ensure the availability of adequate instructional materials and resources to improve teaching and training effectiveness in the future. Teachers are encouraged to continuously utilize varied formative assessment strategies to monitor learners' progress and address any learning gaps in their teaching. Future researchers might find it valuable to conduct similar studies with a larger and more diverse sample and to incorporate inferential analyses to validate and expand the findings.

References

- Adams, S. S., & Holden, J. (2011). Games, ethics, and engagement (pp. 291–311). IGI Global. <https://doi.org/10.4018/978-1-60960-120-1.ch018>
- Anselmo, C. T. (2023). Development and validation of module in fluid physics. *East Asian Journal of Multidisciplinary Research*, 2(3), 1019–1032. <https://doi.org/10.55927/eajmr.v2i3.3270>
- Anselmo, C. T., Foronda, M. S., & Dumelod, D. A. (2026). Smart tools, smarter minds: AI in the science classroom for critical thinking and problem solving. Isabela State University. <https://www.fsh-publication.com/storage/file/978-621-8438-17-0.pdf#page=82>
- Anselmo, C. T., Prudente, M. S., Aquino, J. L. R., Dumelod, D. A., & Cabrera, F. R. (2024). A systematic review of the effectiveness of mobile learning tools in enhancing physics education. *International Journal of Learning, Teaching and Educational Research*, 23(12), 237–257. <https://doi.org/10.26803/ijlter.23.12.13>
- Bognar, B., Mužar Horvat, S., & Jukić Matić, L. (2025). Characteristics of effective elementary mathematics instruction: A scoping review of experimental studies. *Education Sciences*, 15(1), 76. <https://doi.org/10.3390/educsci15010076>
- Bonesrønning, H., Finseraas, H., Hardoy, I., Iversen, J. M. V., Nyhus, O. H., Opheim, V., Salvanes, K. V., Sandsør, A. M. J., & Schøne, P. (2022). Small-group instruction to improve student performance in mathematics in early grades: Results from a randomized field experiment. *Journal of Public Economics*, 216, 104765. <https://doi.org/10.1016/j.jpubeco.2022.104765>
- Bunga, J. B., Olano, M. L. R., & Morga, M. R. (2025). Differentiated instruction in multigrade classrooms: Bridging theory and practice. *International Journal of Educational Methodology*, 11(3), 377–390. <https://doi.org/10.12973/ijem.11.3.377>
- De Brún, A., Rogers, L., Drury, A., & Gilmore, B. (2021). Evaluation of a formative peer assessment in research methods teaching using an online platform: A mixed methods pre-post study. *Nurse Education Today*, 108, 105166. <https://doi.org/10.1016/j.nedt.2021.105166>
- Enu, J., & Ngcobo, A. Z. (2022). Connecting knowledge and practice: Mathematics teacher educators' knowledge and use of formative feedback in Ghana. *Journal of Education*, 87, 1–22. <https://doi.org/10.17159/2520-9868/i87a04>
- Gezer, T., Wang, C., Polly, A., Martin, C., Pugalee, D., & Lambert, R. (2021). The relationship between formative and summative assessment in primary grade mathematics classrooms. *International Electronic Journal of Elementary Education*, 13(5), 673–685. <https://doi.org/10.26822/iejee.2021.220>
- Hankeln, C., Kroehne, U., Voss, L., Gross, S., & Prediger, S. (2025). Developing digital formative assessments for deep conceptual learning goals: Which topic-specific research gaps need to be addressed? *Educational Technology Research and Development*, 73(4), 1953–1973. <https://doi.org/10.1007/s11423-025-10486-x>
- Kaya, S., & Yildiz, N. G. (2023). Using the concrete–representational–abstract sequence to teach math skills to a student with autism spectrum disorder in a general education classroom. *International Journal of Developmental Disabilities*, 70(8), 1–12. <https://doi.org/10.1080/20473869.2023.2180539>
- Mbambo-Marimirofa, S., & Phillips, H. (2023). Explicit teaching strategies are used to enhance the comprehension skills of second language learners. *Per Linguam*, 39(2). <https://doi.org/10.5785/39-2-998>
- Mekheimer, M. (2025). Challenges in preparing EFL students in the faculties of education in Egypt. *Social Sciences & Humanities Open*, 11, 101517. <https://doi.org/10.1016/j.ssaho.2025.101517>
- Olawale, B. E. (2024). Impact of pre-service teacher education programme on mathematics student teachers' teaching practices during school experiences. *Education Sciences*, 14(7), 762. <https://doi.org/10.3390/educsci14070762>
- Pascua, K., & Tagare, R. J. (2024). Experiences, motivation, commitment, and suggestions of physical education teachers during the COVID-19 crisis. *Education and Science*, 49(219), 187–200. <https://doi.org/10.15390/eb.2024.12095>
- Rainey, L., Farran, D. C., & Durkin, K. (2024). EMC-PK2: An experimental observation tool for capturing instructional coherence and quality in early-math classrooms. *Education Sciences*, 14(10), 1039. <https://doi.org/10.3390/educsci14101039>
- Salami, O. O., & Spangenberg, E. D. (2025). Evaluating mathematics teachers' usage of online tools to enhance learning performance of high school students. *International Journal of Evaluation and Research in Education*, 14(6), 4443. <https://doi.org/10.11591/ijere.v14i6.33960>
- Santos-Trigo, M. (2014). Problem solving in mathematics education (pp. 496–501). Springer. https://doi.org/10.1007/978-94-007-4978-8_129
- Schoen, R. C., Rhoads, C., Perez, A. L., Tazaz, A. M., & Secada, W. G. (2024). Impact of cognitively guided instruction on elementary school mathematics achievement: Five years after the initial opportunity. *Journal of Research on Educational Effectiveness*, 19(1), 1–26. <https://doi.org/10.1080/19345747.2024.2419396>

- Shi, L., Dong, L., Zhao, W., & Tan, D. (2023). Improving middle school students' geometry problem-solving ability through hands-on experience: An fNIRS study. *Frontiers in Psychology*, 14, 1126047. <https://doi.org/10.3389/fpsyg.2023.1126047>
- Son, H. (2025). The impact of movement-integrated instruction on physical literacy development in elementary school students. *Education Sciences*, 15(5), 545. <https://doi.org/10.3390/educsci15050545>
- Svensäter, G., & Rohlin, M. (2022). Assessment model blending formative and summative assessments using the SOLO taxonomy. *European Journal of Dental Education*, 27(1), 149–157. <https://doi.org/10.1111/eje.12787>
- Tashtoush, M. A., Wardat, Y., Ali, R. A., & Saleh, S. (2024). Artificial intelligence in education: Mathematics teachers' perspectives, practices and challenges. *Iraqi Journal for Computer Science and Mathematics*, 5(1), 60–77. <https://doi.org/10.52866/ijcsm.2024.05.01.004>
- Thwe, W. P., & Kálmán, A. (2023). Lifelong learning in the educational setting: A systematic literature review. *The Asia-Pacific Education Researcher*, 33(2), 407–417. <https://doi.org/10.1007/s40299-023-00738-w>
- Valle, L. (2024). Reimagining mathematics education: Identifying post-pandemic training needs and challenges among public elementary school teachers. *International Journal of Education and Practice*, 12(3), 527–539. <https://doi.org/10.18488/61.v12i3.3723>
- Vijay, N., Rawekar, A. T., Bhalerao, A. V., Somalwar, S. A., & Singh, A. (2023). Direct observation of procedural skills: A formative assessment tool for postgraduate training in obstetrics and gynecology. *Journal of Datta Meghe Institute of Medical Sciences University*, 18(3), 353–356. https://doi.org/10.4103/jdmimsu.jdmimsu_363_22
- Washington, M. F. (2021). Real life math mysteries. Routledge. <https://doi.org/10.4324/9781003237631>
- Wilson, M. M., Zafar, F., & Nichol, C. (2025). Fostering inquiry: The impact of cross-curricular professional development on STEM teacher practices. *Education Sciences*, 15(4), 421. <https://doi.org/10.3390/educsci15040421>
- Young, J. R. (2023). The role of technology in enhancing urban mathematics education. *Journal of Urban Mathematics Education*, 16(2), 1–13. <https://doi.org/10.21423/jume-v16i2a589>