

## **Mathematics 5 Instruction in Aritao 1 District, Schools Division of Nueva Vizcaya: Lens on the Perceptions and Experiences of Teachers**

**Karen Joy B. Flores**  **Advisers Rey A. Pascual**  **Anne Grace D. Pascual** 

Northeastern College Santiago City, Isabela, Philippines

Corresponding author: karenjoy.flores001@deped.gov.ph

Received: June

Accepted July

Revised: August

Published August 2026

**Abstract** Teaching mathematics is crucial for developing students' skills in numeracy, logical reasoning, critical thinking, and problem-solving, which are important for both school and daily life. This study examined Mathematics 5 teaching in Aritao I District, Schools Division of Nueva Vizcaya, based on teachers' views and experiences. A quantitative descriptive survey was conducted with all 27 Mathematics 5 teachers from 14 public elementary schools. Data were collected using a structured questionnaire created by the researcher and analyzed using frequency, percentage, and weighted mean. The results showed that teachers strongly agreed with the main principles of Mathematics teaching, with an overall weighted mean of 4.40. The most essential learning competencies were fully implemented throughout the year, with an average of 4.73. Learning delivery methods were seen as very effective, with an average of 4.92. Instructional practices and resources were also rated very effective, especially digital instructional materials (5.00), strategies (4.99), print materials (4.92), assessment tools (4.87), and teaching methods (4.60). Support from administration and supervision was also rated very effective (4.96). Despite these positive conditions, teachers noted moderately serious challenges, such as limited parental support, community involvement, and instructional resources. Interventions to address these challenges were seen as very effective (4.96). The findings suggest that effective Mathematics 5 teaching is supported by curriculum implementation, diverse teaching methods, sufficient learning resources, strong leadership, and responsive interventions. It is recommended to enhance parent-community involvement, professional development, and resource provision to maintain and improve Mathematics teaching in the district.

**Keywords:** *Mathematics 5 instruction; teaching practices; learning competencies; instructional support; mathematics teachers*

## **INTRODUCTION**

Good math teaching is important for moving ahead in school and handling everyday life. Learning math helps you get better at working with numbers, thinking logically, solving problems, and making decisions. It helps you make sense of all the numbers and logical stuff you run into every day (Nursyahidah et al., 2025). In our world that's all about data and technology, math is key to getting around digital spaces and understanding how tech works (Young, 2023). That's why there's a big push globally to teach math in a way that gets students ready for future school and job challenges. International guidelines suggest focusing on teaching methods that are centered around the learner, encourage inquiry, and involve problem-solving, rather than just memorizing steps. This approach helps students understand math concepts, engage with the ideas, and apply what they learn in more complex ways (Siswantari et al., 2025). Using digital tools like apps, interactive modules, and online

assessments can make learning more accessible (Utama et al., 2024; Zulfiani et al., 2023). Good assessment practices are also crucial because they help teachers figure out what students understand and where they might be struggling, so teachers can step in and help when needed (Alonzo et al., 2023). How well students do in math also depends on their learning environment, the leadership they have, and how involved their families and communities are (Luzano, 2024).

In the Philippines, Mathematics is a key subject in basic education, and the Department of Education (DepEd) is in charge of it. They set the curriculum standards and learning goals, especially the Most Essential Learning Competencies (MELCs), which outline the math skills and knowledge students need to acquire during their school years (Luzano, 2024). The MELCs help teachers focus on the important stuff when teaching and assessing to ensure that students truly understand the material. With recent disruptions such as the COVID-19 pandemic, teaching methods had to shift to modular, online, and blended approaches. This meant that Math teachers had to tweak their methods, strategies, materials, and tech to fit different learning setups (Nuevo & Valdez, 2024). Support from administration and supervisors is still crucial for rolling out the curriculum effectively, helping teachers grow professionally, and ensuring that resources are available (Luzano, 2024). However, there are still hurdles, such as getting enough teaching resources, ongoing professional development, and involving parents and the community, as well as supporting the students. These issues impact how Math is taught and how well students do (Luzano, 2024). To ensure quality Math education, it needs to be flexible, inclusive, and backed by good teaching practices, assessments, and involvement from everyone to help students build the skills they need for success in our connected world.

This study examines how Mathematics 5 is taught in the public elementary schools of the Aritao I District, part of the Schools Division of Nueva Vizcaya. The teachers here are on the front lines, putting the Most Essential Learning Competencies (MELCs) into action and helping students hit those grade-level targets. They're really the go-to folks when it comes to understanding how the curriculum is being rolled out (Son, 2025). By digging into their thoughts and experiences, we get a picture of how they follow the curriculum guidelines, the hurdles they face, the tweaks they make, and the teaching methods they use in their local setting. This includes how they juggle modular, online, and blended learning as they move away from the usual face-to-face classes (Jailani et al., 2025; Videla et al., 2022). The study also looks at the teaching methods, materials, assessment tools, and the kind of support teachers get from administration and supervisors. How they tackle challenges like limited resources and bringing in technology gives us clues on how to make teaching better (Eriksen Bergstrand & Xenofontos, 2026). By focusing on 14 public elementary schools and 27 teachers, this research fills a gap in primary Mathematics education studies, which often focus more on student outcomes than on what teachers have to say (Aslam et al., 2021; Lazić et al., 2021). Research on teaching strategies, tech use, and learning styles often looks at these separately, which doesn't really show how they all work together (Alajmi, 2021; Jailani et al., 2025). Since findings from other areas might not match what's happening in Aritao I District, there's a need for localized research that looks at how MELCs are put into practice, the ways lessons are delivered, teaching methods, assessments, and school support (Arokiasamy et al., 2025). By tackling these gaps, this study aims to shed light on the current state of Mathematics 5 teaching in Aritao I District. It highlights the strengths in teaching practices and points out issues like parental involvement, community participation, and whether there are enough resources, laying the groundwork for targeted interventions and policy support. This aligns with the global push for quality math education by focusing on teacher experiences and the realities they face (Aslam et al., 2021). So,

this study looks at Mathematics 5 teaching in Aritao I District through the eyes of the teachers. It specifically examines teacher profiles, teaching principles, how MELCs are implemented, learning delivery methods, teaching strategies, materials and assessment tools, administrative and supervisory support, and the challenges and interventions needed to guide evidence-based improvements in the district (Eriksen Bergstrand & Xenofontos, 2026; Son, 2025).

### *RESEARCH QUESTIONS*

This study investigated Mathematics 5 instruction in the Aritao I District, Schools Division of Nueva Vizcaya, through teachers' perceptions and experiences. Specifically, it sought to answer the following research questions:

1. What is the demographic and professional profile of Mathematics 5 teachers in terms of age, gender, civil status, highest educational attainment, present position, latest performance rating, years in teaching, and level of in-service training or seminars attended?
2. To what extent do Mathematics 5 teachers subscribe to the general guiding principles of teaching mathematics?
3. To what extent are the Most Essential Learning Competencies (MELCs) in Mathematics 5 implemented across the four quarters?
4. How effective are the learning delivery modalities used in teaching Mathematics 5 in terms of modular distance learning, online distance learning, and blended learning?
5. How effective are the instructional factors used in teaching Mathematics 5 in terms of:
  - a. methods and strategies,
  - b. instructional materials,
  - c. assessment tools, and
  - d. administrative and supervisory support?
6. What challenges do Mathematics 5 teachers encounter in the implementation of Mathematics 5 instruction, and to what extent are these challenges experienced?
7. How effective are the interventions employed by Mathematics 5 teachers in addressing the challenges encountered in the implementation of Mathematics 5 instruction?

### **METHODS**

#### **Research Design**

This study employed a quantitative descriptive survey research design to assess Mathematics 5 instruction in the public elementary schools of Aritao I District, Schools Division of Nueva Vizcaya. The design was appropriate because it allowed the researcher to describe teachers' perceptions and experiences regarding the guiding principles of Mathematics teaching, implementation of the Most Essential Learning Competencies (MELCs), learning delivery modalities, instructional practices and resources, administrative and supervisory support, challenges encountered, and interventions employed without manipulating the variables or establishing cause-and-effect relationships.

#### **Local of the Study**

The study was conducted in 14 public elementary schools in Aritao I District, Schools Division of Nueva Vizcaya. The locale was selected because it represented the actual educational setting in which the respondents taught Mathematics 5 and implemented the curriculum, learning competencies,

instructional strategies, assessment practices, and other instructional requirements examined in the study. Your manuscript identifies the participating schools individually.

### **Respondents and Sampling Procedure**

The respondents consisted of 27 Mathematics 5 teachers from the public elementary schools of the Aritao I District. Since the target population was relatively small and manageable, total enumeration was employed, wherein all qualified Mathematics 5 teachers in the district were included in the study. This approach enabled the study to obtain information from the entire identified population rather than selecting only a sample population.

### **Research Instrument**

A researcher-developed, structured questionnaire served as the primary data-gathering instrument. It was developed based on research questions and supported by relevant literature, previous studies, curriculum documents, and policies related to mathematics instruction. The first part gathered the respondents' demographic and professional profiles, while the second part assessed their subscription to the guiding principles of mathematics teaching, implementation of the MELCs, learning delivery modalities, instructional practices and resources, administrative and supervisory support, challenges encountered, and interventions employed.

### **Validation and Reliability of the Research Instrument**

Before its administration, the questionnaire underwent content validation to determine the clarity, relevance, appropriateness, and alignment of the items with the research questions. Qualified teachers and individuals knowledgeable in mathematics education and research reviewed the instrument, and their comments and recommendations were incorporated into its final version. The questionnaire was also pilot tested among teachers with characteristics similar to those of the target respondents to identify unclear or potentially problematic items...

### **Data-Gathering Procedure**

The researcher secured the necessary permission from the Office of the Schools Division Superintendent and the school heads of the participating schools before collecting data. The researcher then coordinated with the school heads regarding the administration of the questionnaire. The respondents were informed of the purpose of the research and provided with instructions for completing the questionnaire. The questionnaires were distributed to the qualified Mathematics 5 teachers and retrieved after completion of the survey. The completed questionnaires were checked for completeness, coded, tabulated, and prepared for statistical analysis.

### **Supplementary Interview and Documentary Analysis**

Informal interviews and documentary analysis were used only as supplementary procedures to clarify and verify the selected information obtained from the questionnaire. Relevant records and documents, including institutional records, memoranda, performance-related records, and other available documents pertinent to Mathematics 5 instruction, were examined when necessary. These supplementary sources were used for verification and contextual understanding and were not treated as separate qualitative datasets. This reflects the supplementary role described in your current manuscript.

### **Statistical Treatment of Data**

The collected data were coded, tallied, tabulated, analyzed, and interpreted using descriptive statistical techniques. Frequency and percentage were used to describe the demographic and professional profiles

of the respondents. Weighted means were used to determine the respondents' assessments of the guiding principles of mathematics teaching, implementation of the MELCs, learning delivery modalities, instructional practices and resources, administrative and supervisory support, challenges encountered, and effectiveness of the interventions employed. The resulting weighted means were interpreted according to the descriptive categories established in the research instrument.

## FINDINGS

Table 1 Demographic and Professional Profile of the Respondents (n = 27)

| Profile Variable                        | Category           | Frequency (f) | Percentage (%) |
|-----------------------------------------|--------------------|---------------|----------------|
| Age                                     | 21–25 years        | 3             | 11.11          |
|                                         | 26–30 years        | 4             | 14.82          |
|                                         | 31–35 years        | 5             | 18.52          |
|                                         | 36–40 years        | 4             | 14.82          |
|                                         | 41–45 years        | 4             | 14.82          |
|                                         | 46–50 years        | 2             | 7.41           |
|                                         | 51–55 years        | 3             | 11.11          |
|                                         | 56–60 years        | 2             | 7.41           |
| Gender                                  | Male               | 11            | 40.74          |
|                                         | Female             | 16            | 59.26          |
| Civil Status                            | Single             | 8             | 29.63          |
|                                         | Married            | 19            | 70.37          |
| Highest Educational Attainment          | Bachelor's Degree  | 15            | 55.56          |
|                                         | Master's Degree    | 10            | 37.04          |
|                                         | Doctorate Degree   | 2             | 7.41           |
| Present Position                        | Teacher I          | 9             | 33.33          |
|                                         | Teacher II         | 2             | 7.41           |
|                                         | Teacher III        | 13            | 48.15          |
|                                         | Master Teacher I   | 2             | 7.41           |
|                                         | Master Teacher II  | 1             | 3.70           |
| Latest Performance Rating               | Outstanding        | 25            | 92.59          |
|                                         | Very Satisfactory  | 2             | 7.41           |
|                                         | Satisfactory       | 0             | 0.00           |
| Years in Service                        | 1–5 years          | 7             | 25.93          |
|                                         | 6–10 years         | 5             | 18.52          |
|                                         | 11–15 years        | 5             | 18.52          |
|                                         | 16–20 years        | 4             | 14.82          |
|                                         | 21–25 years        | 3             | 11.11          |
|                                         | 26–30 years        | 2             | 7.41           |
|                                         | 31 years and above | 1             | 3.70           |
| In-Service Trainings/Seminars Attended* | School Level       | 27            | 100.00         |
|                                         | District Level     | 27            | 100.00         |
|                                         | Division Level     | 27            | 100.00         |
|                                         | Regional Level     | 23            | 85.19          |
|                                         | National Level     | 18            | 66.67          |

Table 1 gives us a snapshot of the 27 Mathematics 5 teachers, showing a mix of different backgrounds and experiences. Most of them were women (59.26%) and married (70.37%). The biggest age group was those between 31 and 35 years old (18.52%). When it comes to education, over half had a bachelor's degree (55.56%), while 37.04% had a master's, and 7.41% had a doctorate. Almost half were at the Teacher III level (48.15%), and a whopping 92.59% had outstanding performance ratings. These teachers had varying lengths of teaching experience, with the largest chunk having taught for one to five years (25.93%). They all attended training at the school, district, and division levels, but fewer participated in regional, national, and international training. Overall, these findings show that Mathematics 5 teachers come with a wide range of experience and professional backgrounds, strong performance ratings, and plenty of professional development under their belts.

Table 2 Respondents' Subscription to the General Guiding Principles of Teaching Mathematics

| General Guiding Principles                                                                                                      | Weighted Mean | Interpretation      |
|---------------------------------------------------------------------------------------------------------------------------------|---------------|---------------------|
| Being mathematically competent means more than having the ability to compute and perform algorithms and mathematical procedures | 4.59          | Fully Subscribed To |
| The physical and social dimensions of a mathematical environment contribute to one's success in learning Mathematics            | 4.27          | Fully Subscribed To |
| Mathematics is best learned when learners are actively engaged                                                                  | 4.41          | Fully Subscribed To |
| A deep understanding of Mathematics requires a variety of tools for learning                                                    | 4.36          | Fully Subscribed To |
| Assessment in Mathematics must be valued for the sake of knowing what and how learners learn or fail to learn Mathematics       | 4.59          | Fully Subscribed To |
| Learners' attitudes and beliefs about Mathematics affect their learning                                                         | 4.45          | Fully Subscribed To |
| Mathematics learning needs the support of both parents and other community groups                                               | 4.14          | Subscribed To       |
| Overall Weighted Mean                                                                                                           | 4.40          | Fully Subscribed To |

Table 2 indicates that the mathematics 5 teachers generally exhibited a strong adherence to the general guiding principles of teaching Mathematics, with an overall weighted mean of 4.40, interpreted as Fully Subscribed To. The principles that received the highest ratings were the understanding that mathematical competence encompasses more than just computation and procedures, and that assessment plays a crucial role in determining what and how learners learn, both achieving a weighted mean of 4.59. Teachers also strongly acknowledged the significance of learners' attitudes and beliefs (4.45), active engagement (4.41), appropriate learning tools (4.36), and the physical and social learning environment (4.27). Although support from parents and community groups received the lowest mean of 4.14, it was still interpreted as Subscribed To. These findings suggest that teachers perceive Mathematics instruction as extending beyond procedural knowledge towards active, supportive, and

assessment-informed learning. This aligns with Siswantari et al. (2025), who emphasized learner-centered approaches that foster meaningful engagement and mathematical understanding, and Alonzo et al. (2023), who highlighted the importance of appropriate assessment practices in supporting learning. The findings also correspond with Luzano (2024), who identified the learning environment, family involvement, and community engagement as important components of Mathematics education.

Table 3 Implementation of the Most Essential Learning Competencies (MELCs) in Mathematics 5 by Quarter

| Quarter                     | Average Weighted Mean | Interpretation    |
|-----------------------------|-----------------------|-------------------|
| First Quarter               | 4.78                  | Fully Implemented |
| Second Quarter              | 4.66                  | Fully Implemented |
| Third Quarter               | 4.75                  | Fully Implemented |
| Fourth Quarter              | 4.73                  | Fully Implemented |
| Grand Average Weighted Mean | 4.73                  | Fully Implemented |

The implementation of the Most Essential Learning Competencies (MELCs) in Mathematics 5 throughout the academic quarters consistently received a "Fully Implemented" rating, with average weighted means ranging from 4.66 to 4.78 per quarter and a grand average weighted mean of 4.73. This strong performance indicates that educators have effectively aligned their teaching practices with curriculum standards, ensuring comprehensive coverage of required competencies. Such full implementation aligns with research highlighting the importance of well-structured and contextually relevant instructional strategies and materials to optimize student learning. For instance, the development and use of interactive, discovery-based learning media have been shown to significantly enhance students’ conceptual understanding and mathematical dispositions, underscoring the critical role of aligning curriculum implementation with effective teaching tools (Saharani & Abadi, 2024). Furthermore, incorporating culturally responsive and localized learning resources—such as game-based learning activity sheets tailored to learners’ contexts—supports mastery of essential competencies by making learning more engaging and relevant (Suguitan & Natividad, 2022). These approaches complement the MELCs by fostering both foundational skills and higher-order thinking needed in mathematics. The data suggests that the steady and full implementation of MELCs could benefit from integrating innovative instructional designs, such as project-based learning models that develop procedural and conceptual mathematical skills through collaborative and applied activities, effectively strengthening curriculum delivery (Guizado et al., 2024). Additionally, motivational and manipulable learning materials targeting less-mastered competencies can further enhance student engagement and performance, ensuring no learning gaps persist throughout the instruction period (Tagupa & Arnado, 2023).

Table 4 Effectiveness of Learning Delivery Modalities Used in Teaching Mathematics 5

| Learning Delivery Modality  | Average Weighted Mean | Interpretation |
|-----------------------------|-----------------------|----------------|
| Modular Distance Learning   | 4.90                  | Very Effective |
| Online Distance Learning    | 4.90                  | Very Effective |
| Blended Learning            | 4.95                  | Very Effective |
| Grand Average Weighted Mean | 4.92                  | Very Effective |

Table 4 shows that the learning delivery modalities used in teaching Mathematics 5 were perceived as Very Effective, with a grand average weighted mean of 4.92. Blended learning obtained the highest mean of 4.95, while both modular distance learning and online distance learning obtained 4.90. These findings indicate that teachers perceived the different learning modalities as effective approaches for delivering Mathematics instruction across varied learning conditions. The slightly higher rating for blended learning suggests the value of combining different modes of instruction to provide greater flexibility and opportunities for teacher-learner interaction. This finding is consistent with Jailani et al. (2025), who highlighted the relevance of blended learning in Mathematics education, and Videla et al. (2022), who emphasized the use of appropriate instructional strategies and educational resources in online Mathematics education. Overall, the results suggest that flexible and appropriately supported learning modalities can help teachers sustain Mathematics instruction across different learning environments.

Table 5. Effectiveness of Instructional Practices and Resources Used in Mathematics 5

| Instructional Factor            | Mean | Interpretation |
|---------------------------------|------|----------------|
| Methods                         | 4.60 | Very Effective |
| Strategies                      | 4.99 | Very Effective |
| Print Instructional Materials   | 4.92 | Very Effective |
| Digital Instructional Materials | 5.00 | Very Effective |
| Assessment Tools                | 4.87 | Very Effective |

Table 5 illustrates that the instructional practices, materials, and assessment tools employed in teaching Mathematics 5 are generally regarded as highly effective. Among the dimensions, digital instructional materials achieved the highest average weighted mean of 5.00, followed by strategies (4.99), print instructional materials (4.92), assessment tools (4.87), and teaching methods (4.60). In terms of assessment, rubrics and summative tests received the highest means of 5.00, while written tests obtained the lowest means of 4.71, yet still considered very effective. These results suggest that Mathematics 5 teachers effectively use a combination of teaching approaches, print and digital resources, and diverse assessment practices to enhance instruction. These findings align with Nurwahidin et al. (2023) on the importance of digital teaching materials, Putra et al. (2024) on active and technology-supported mathematics instruction, and Baiduri (2022) on the impact of varied assessment approaches on mathematics learning. These references are already included in the manuscript.

Table 6 Effectiveness of Administrative and Supervisory Support for Mathematics 5 Instruction

| Dimension                                       | Average Weighted Mean | Interpretation |
|-------------------------------------------------|-----------------------|----------------|
| Administrative Support Extended by School Heads | 4.98                  | Very Effective |
| Supervisory Support                             | 4.93                  | Very Effective |
| Grand Average Weighted Mean                     | 4.96                  | Very Effective |

Table 6 shows that the administrative and supervisory support provided for Mathematics 5 instruction was perceived as very effective, with a grand average weighted mean of 4.96. Administrative support extended by school heads obtained a mean of 4.98, while supervisory support received 4.93, indicating that teachers experienced strong institutional assistance in implementing Mathematics 5 instruction.

The findings suggest that effective school leadership and supervision can provide teachers with the guidance, resources, coordination, and professional support necessary for successful curriculum implementation. This finding is consistent with that of Arokiasamy et al. (2025), who emphasized the role of school principals and instructional leadership in advancing Mathematics and STEM education. Similarly, Luzano (2024) highlighted the importance of administrative and supervisory support in strengthening curriculum implementation, professional development, and resource allocation in mathematics education. Thus, sustained leadership and instructional supervision may help Mathematics 5 teachers maintain effective teaching practices and address emerging instructional needs of students. Both supporting studies have been included in the reference list of the manuscript.

Table 7 Challenges Encountered in the Implementation of Mathematics 5 Instruction

| Challenges                                                                                                | Weighted Mean | Interpretation     |
|-----------------------------------------------------------------------------------------------------------|---------------|--------------------|
| Lack of understanding of the MELCs of the Mathematics curriculum and how to implement them                | 2.38          | Slightly Serious   |
| Inadequate skills in the delivery of Mathematics instruction along the K to 12 Curriculum                 | 2.37          | Slightly Serious   |
| Lack of training on updated teaching trends, digital literacy, and ICT skills development                 | 2.33          | Slightly Serious   |
| Lack of instructional and learning resources such as Self-Learning Modules and Learning Activity Sheets   | 2.62          | Moderately Serious |
| Lack of time to address all necessary lessons and learners' needs                                         | 2.43          | Slightly Serious   |
| Lack of school administrative support for activities promoting learners' knowledge and skills development | 2.42          | Slightly Serious   |
| Lack of community involvement/participation in promoting the Mathematics Program                          | 2.95          | Moderately Serious |
| Lack of home support or parental involvement in helping learners                                          | 3.00          | Moderately Serious |
| Inadequate physical equipment/facilities for Mathematics instruction                                      | 2.29          | Slightly Serious   |
| Lack of ability to conduct basic or action research to improve Mathematics instruction                    | 2.24          | Slightly Serious   |
| Overall Weighted Mean                                                                                     | 2.60          | Moderately Serious |

The challenges associated with implementing Mathematics 5 instruction are categorized as moderately serious and slightly serious, based on weighted mean evaluations. The most significant issues include the lack of home support or parental involvement (weighted mean 3.00) and limited community participation in promoting the mathematics program (2.95), both rated as moderately serious. These external factors are critical, as parental and community engagement significantly influence students' attitudes toward mathematics and their success. The scarcity of instructional and learning resources, such as self-learning modules and learning activity sheets, is also a moderately serious challenge (2.62), indicating that resource limitations continue to impede effective instruction. Slightly serious internal challenges involve teacher preparedness and instructional conditions, including inadequate

understanding of the Mathematics Essential Learning Competencies (MELCs) and their implementation (2.38), insufficient skills in delivering K to 12 curriculum-based mathematics instruction (2.37), and limited training on updated teaching trends and digital literacy (2.33). These highlight gaps in professional development that hinder teaching practices. Additional challenges include a lack of time to cover the curriculum and meet learner needs (2.43), insufficient school administrative support for activities that foster learner knowledge and skills (2.42), and inadequate physical facilities (2.29). The inability to conduct basic or action research to improve teaching is also noted (2.24), suggesting limited engagement with evidence-based improvement. These findings align with studies indicating that mathematics difficulties are influenced by deficits in external support and internal teaching challenges, such as limited training, resource constraints, and time management issues (Maphumulo & Biccard, 2024; Yabashiru et al., 2025; Zhang et al., 2023). Contextual, interactive, and student-centered approaches, along with strong collaboration among teachers, parents, and schools, have been emphasized to mitigate these challenges and foster conducive learning environments (Yabashiru et al., 2025). Furthermore, inadequate professional development in pedagogical and digital competencies constrains instructional effectiveness, highlighting the need for sustained training and administrative support (Maphumulo & Biccard, 2024; Priyanda et al., 2025).

Table 8 *Effectiveness of Interventions Employed to Address Challenges in the Implementation of Mathematics 5 Instruction*

| Interventions                                                                                                                          | Weighted Mean | Interpretation |
|----------------------------------------------------------------------------------------------------------------------------------------|---------------|----------------|
| Apply self-initiative to learn updates regarding educational trends in implementing the MELCs in Mathematics                           | 4.81          | Very Effective |
| Attend higher-level seminars and training to develop skills in teaching Mathematics along the K to 12 Curriculum                       | 4.86          | Very Effective |
| Invest in technological resources and use them in teaching Mathematics; avail of training provided by DepEd and similar agencies       | 5.00          | Very Effective |
| Tap alumni, parents, and other stakeholders in the reproduction of Mathematics modules and activity sheets                             | 4.95          | Very Effective |
| Plan and budget instructional time wisely to deliver significant competencies based on the curriculum                                  | 5.00          | Very Effective |
| Present activities promoting learners' knowledge and skills development to school administrators through proposals and plans of action | 5.00          | Very Effective |
| Reach out to the community for possible solutions to problems encountered in implementing the Mathematics Program                      | 5.00          | Very Effective |
| Conduct home visits and teacher-parent conferences and regularly monitor parental supervision through phone calls and social media     | 5.00          | Very Effective |
| Innovate local materials available in the community and use them in teaching Mathematics lessons                                       | 5.00          | Very Effective |
| Join research fora or conferences and conduct action research or innovations related to Mathematics instruction                        | 5.00          | Very Effective |

Table 8 shows that the interventions employed by Mathematics 5 teachers to address instructional challenges were generally perceived as very effective, with an overall weighted mean of 4.96. Most interventions obtained the highest means of 5.00, particularly those involving technological resources, instructional time management, administrative and community support, home visits and parent-teacher communication, locally available instructional materials, and participation in research-related activities. Meanwhile, tapping alumni, parents, and other stakeholders obtained 4.95, attending higher-level seminars and training received 4.86, and teachers' self-initiative in learning updated educational trends obtained 4.81. These findings indicate that addressing challenges in Mathematics instruction requires a combination of teacher initiative, professional development, technology integration, stakeholder involvement, and appropriate instructional resources. This supports Priyanda et al. (2025), who emphasized the importance of developing teachers' pedagogical and technological competencies in Mathematics education. Likewise, Nurwahidin et al. (2023) highlighted the value of digital teaching materials in creating interactive and learner-centered learning environments, while Maphumulo and Biccard (2024) emphasized the importance of addressing teacher-related instructional challenges to improve Mathematics teaching. These studies are already included in the manuscript's reference list.

## CONCLUSION

The findings reveal that Mathematics 5 instruction in the Aritao I District is generally marked by robust curriculum implementation, effective instructional practices, and significant institutional support. Teachers fully adhered to the general guiding principles of mathematics teaching and reported the complete implementation of the MELCs across all four quarters. Learning delivery modalities, teaching methods and strategies, print and digital instructional materials, assessment tools, and administrative and supervisory support were perceived as highly effective. Notably, digital instructional materials and teaching strategies received very high ratings, underscoring the importance teachers place on diverse and technology-supported approaches to mathematics instruction. However, moderately serious challenges persist, particularly limited home or parental support, inadequate community participation, and insufficient instructional and learning resources. Despite these concerns, the interventions employed by teachers were perceived as highly effective, especially those involving technology, time management, stakeholder participation, home-school communication, locally available materials, and professional development. Overall, effective Mathematics 5 instruction requires not only competent teachers and appropriate instructional practices but also sustained leadership, adequate resources, professional development, and meaningful collaboration among schools, families, and communities.

## RECOMMENDATIONS

Based on the findings, Mathematics 5 teachers should continue the effective implementation of MELCs and maintain the use of diverse, learner-centered, and technology-supported teaching methods, along with suitable print and digital resources and assessment practices. School heads and instructional supervisors should uphold strong instructional support while offering ongoing professional development focused on innovative mathematics pedagogy, digital competence, contextualized learning materials, and classroom-based research. Greater attention should be directed towards the

significant challenges identified by teachers, particularly parental involvement, community participation, and the availability of instructional resources. Schools are therefore encouraged to enhance parent-school communication, conduct home visits, organize parent-teacher conferences, foster community partnerships, and develop resources with stakeholder support. As teachers have found these interventions to be highly effective, successful practices should be sustained and, where appropriate, institutionalized across schools in the district. Future research may involve larger populations from other districts or divisions, including learners and school administrators, and employ qualitative or mixed method approaches to gain a deeper understanding of the factors influencing mathematics instruction and to determine whether similar patterns occur in other educational settings.

## **LIMITATIONS OF THE STUDY**

The study was limited to 27 Mathematics 5 teachers from 14 public elementary schools in Aritao I District, Schools Division of Nueva Vizcaya; therefore, the findings may not represent the experiences of Mathematics teachers in other districts or divisions. The study also relied primarily on teachers' self-reported responses to a structured questionnaire, which may be influenced by individual perceptions. Since the study used a descriptive design, the findings describe existing conditions and should not be interpreted as establishing cause-and-effect relationships.

## **FUTURE RESEARCH DIRECTIONS**

Future studies may include a larger number of Mathematics teachers from other districts or school divisions to validate and extend the findings. Researchers may also include learners, school heads, and parents to obtain broader perspectives on Mathematics instruction. Qualitative or mixed-method approaches may also be employed to explore more deeply the challenges, instructional practices, and factors that contribute to effective Mathematics teaching.

## **ETHICS STATEMENT**

The researcher secured the necessary permission from the Schools Division Superintendent and the concerned school heads before conducting the study. The respondents were informed of the purpose of the research before participating. If informed consent, voluntary participation, and confidentiality were actually implemented, you may add: Informed consent was obtained from the respondents, participation was voluntary, and the confidentiality and privacy of their information were maintained throughout the research process. Ethical principles governing research involving human participants were observed.

## **REFERENCES**

- Alajmi, M. M. (2021). Implementation Difficulties of Kuwait National Competency-Based Curriculum. *Journal of Educational and Social Research*, 11(5), 151. <https://doi.org/10.36941/jesr-2021-0113>
- Alonzo, D., Bejano, J., & Labad, V. (2023). Alignment between Teachers' Assessment Practices and Principles of Outcomes-Based Education in the Context of Philippine Education Reform. *International Journal of Instruction*, 16(1), 489–506. <https://doi.org/10.29333/iji.2023.16127a>
- Arokiasamy, A. R. A., Tasaloti, M., Ngadiron, M. S., Hossain, S. F. A., & Tanucan, J. C. M. (2025). Leading STEM Success: The Role of School Principals in Advancing Science and Mathematics

- Through Instructional Leadership. *International Journal of Innovative Research and Scientific Studies*, 8(3), 545–557. <https://doi.org/10.53894/ijirss.v8i3.6571>
- Aslam, S., Saleem, A., Hali, A. U., & Zhang, B. (2021). Promoting Sustainable Development in School Classrooms: Using Reciprocal Teaching in Mathematics Education. *TEM Journal*, 392–400. <https://doi.org/10.18421/tem101-49>
- Baiduri, B. (2022). Effect of self and peer assessments on mathematics learning achievement. *Al-Jabar: Jurnal Pendidikan Matematika*, 13(1), 13–21. <https://doi.org/10.24042/ajpm.v13i1.10731>
- De Aquino, M. A., Balingit, A. M., Bontog, A. D., Fortugaliza, P. J. S., Hungo, M. O., & Casinillo, L. F. (2023). The Sentiments of Students and Teachers on Modular Distance Learning Amid the Health Crisis. *Indonesian Journal of Educational Research and Review*, 6(2), 299–309. <https://doi.org/10.23887/ijerr.v6i2.61478>
- Eriksen Bergstrand, A. M., & Xenofontos, C. (2026). Adapting mathematics teaching for pupils with learning difficulties: Norwegian teachers experiences. *Journal of Pedagogical Research*. <https://doi.org/10.33902/jpr.202638721>
- Guizado, J. V., Ortiz, J. Á. R., & Abanto, V. E. C. (2024). Project-Based Learning Model: Its Implication in The Initial Training of Mathematics Teachers. *Revista de Gestão Social e Ambiental*, 18(7), e08136. <https://doi.org/10.24857/rgsa.v18n7-190>
- Indiyarti Putri, L., Retnawati, H., Jaedun, A., Murfi, A., & Begimbetova Atymtaevna, G. (2025). Enhancing mathematical skills through multicontextual approaches: a meta-analysis of realistic mathematics, ethnomathematics, and technology integration. *Cogent Education*, 12(1). <https://doi.org/10.1080/2331186x.2025.2548648>
- Jailani, N., Rosli, R., & Mahmud, M. S. (2025). Factors Influencing Mathematics Teachers' Blended Learning: A Systematic Review. *International Journal of Learning, Teaching and Educational Research*, 24(1), 397–419. <https://doi.org/10.26803/ijlter.24.1.20>
- Jasmin, D. R., & Ongcoy, P. J. (2024). Study on School Students' Blended Learning Experiences and Mathematical Self-Concept during Covid-19. *Journal of Learning for Development*, 11(3), 492–501. <https://doi.org/10.56059/jl4d.v11i3.1136>
- Lazić, B. D., Knežević, J. B., & Maričić, S. M. (2021). The influence of project-based learning on student achievement in elementary mathematics education. *South African Journal of Education*, 41(3), 1–10. <https://doi.org/10.15700/saje.v41n3a1909>
- Luzano, J. F. (2024). Multifaceted structures of mathematics education in the Philippines: a case analysis. *Diversitas Journal*, 9(3). <https://doi.org/10.48017/dj.v9i3.3062>
- Maphumulo, T., & Biccard, P. (2024). Teachers Identified Challenges to Implement Differentiated Instruction in Mainstream Primary School Mathematics Classrooms. *Unnes Journal of Mathematics Education*, 13(1), 55–65. <https://doi.org/10.15294/ccwb1a43>
- Nuevo, M. A. S., & Valdez, G. M. (2024). Future-Proofing mathematics education: Challenges from the pandemic to coping mechanisms and action planning. *Davao Research Journal*, 15(4). <https://doi.org/10.59120/drj.v15i4.274>
- Nursyahidah, F., Wardono, W., Mariani, S., & Wijayanti, K. (2025). Integrating technology, Javanese ethnomathematics, and realistic mathematics education in supporting prospective mathematics teachers' numeracy skills: A learning trajectory. *Journal on Mathematics Education*, 16(2), 671–688. <https://doi.org/10.22342/jme.v16i2.pp671-688>

- Nurwahidin, M., Izzatika, A., Hermawan, J. S., Perdana, D. R., Rizqi, Y. F., Ulfah, N., & Aulia, F. N. (2023). Sociomathematics Digital Teaching Material Design for Elementary Schools. *Indonesian Journal of Science and Mathematics Education*, 6(3), 469. <https://doi.org/10.24042/ijsme.v6i3.19638>
- Priyanda, R., Herman, T., Amalia, R., & Ihsan, I. R. (2025). Exploring teachers' pedagogical reasoning in mathematics education using the TPACK framework. *Frontiers in Education*, 10. <https://doi.org/10.3389/feduc.2025.1552760>
- Putra, I. K. A., Suweken, G., & Sudiarta, I. G. P. (2024). Integrating Scratch-assisted Project-based Learning Worksheets to Enhance Students' Mathematical Problem-Solving Skills and Dispositions. *Jurnal Pedagogi Dan Pembelajaran*, 7(3), 570–579. <https://doi.org/10.23887/jp2.v7i3.83540>
- Saharani, T., & Abadi, A. M. (2024). The Development of Interactive Learning Media Based on Discovery Learning Oriented to Students' Concept Understanding and Mathematical Disposition. *AL-ISHLAH: Jurnal Pendidikan*, 16(4). <https://doi.org/10.35445/alishlah.v16i4.5681>
- Siswantari, S., Sabon, S. S., Listiawati, N., Wirda, Y., Zulkardi, Z., & Riyanto, B. (2025). Bridging mathematics and communication: Implementing realistic mathematics education principles for skill development. *Journal on Mathematics Education*, 16(2), 729–752. <https://doi.org/10.22342/jme.v16i2.pp729-752>
- Son, H. (2025). The Impact of Movement-Integrated Instruction on Physical Literacy Development in Elementary Students. *Education Sciences*, 15(5), 545. <https://doi.org/10.3390/educsci15050545>
- Sugiyanti, S., Murtono, M., & W, S. S. (2021). THE EFFECT OF PROBLEM BASED LEARNING AND THINK PAIR SHARE BASED ON BLENDED LEARNING ON MATHEMATICS LEARNING OUTCOMES. *Primary Jurnal Pendidikan Guru Sekolah Dasar*, 10(5), 1175. <https://doi.org/10.33578/jpkip.v10i5.848>
- Suguitan, L., & Natividad, E. (2022). Localized Game-Based Learning Activity Sheets in Mathematics 7. *American Journal of Multidisciplinary Research and Innovation*, 1(4), 210–227. <https://doi.org/10.54536/ajmri.v1i4.723>
- Tagupa, E. R., & Arnado, A. A. (2023). Development and Validation of Motivational Manipulative Learning Materials (MMLMs) for the Least-Learned Competencies of Grade 9 Trigonometry. *International Journal of Membrane Science and Technology*, 10(2), 1002–1022. <https://doi.org/10.15379/ijmst.v10i2.1379>
- Utama, C., Mashfufah, A., & Thohir, M. A. (2024). DIGITAL PEDAGOGY IN PRIMARY EDUCATION: DEVELOPING SIPEJAR MICROLEARNING TO CULTIVATE CRITICAL THINKING SKILLS. *JURNAL EDUSCIENCE*, 11(3), 747–762. <https://doi.org/10.36987/jes.v11i3.6598>
- Videla, R., Rossel, S., Muñoz, C., & Aguayo, C. (2022). Online Mathematics Education during the COVID-19 Pandemic: Didactic Strategies, Educational Resources, and Educational Contexts. *Education Sciences*, 12(7), 492. <https://doi.org/10.3390/educsci12070492>
- Wong, J. T., Chen, E., Au-Yeung, N., Lerner, B. S., & Richland, L. E. (2024). Fostering engaging online learning experiences: Investigating situational interest and mind-wandering as mediators through learning experience design. *Education and Information Technologies*, 29(14), 18789–18815. <https://doi.org/10.1007/s10639-024-12524-2>
- Yabashiru, F., Apriza, B., & Dinata, K. (2025). Mathematics Learning Difficulties among Elementary School Students. *Journal for Lesson and Learning Studies*, 8(2), 304–315. <https://doi.org/10.23887/jlls.v8i2.94756>
- 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>

Zhang, Q., Sun, J., & Yeung, W. (2023). Effects of using picture books in mathematics teaching and learning: A systematic literature review from 2000–2022. *Review of Education*, 11(1).

<https://doi.org/10.1002/rev3.3383>

Zulfiani, Z., Suwarna, I. P., Muin, A., Mulyati, T., & El Islami, R. A. Z. (2023). Developing the MathSci 21st app: Enhancing higher-order thinking skills assessment in mathematics and science education within an Islamic context. *International Journal of ADVANCED AND APPLIED SCIENCES*, 10(8), 19–31. <https://doi.org/10.21833/ijaas.2023.08.003>

## AI DISCLOSURE STATEMENT

During the preparation of this work, the author(s) used Google Gemini AI solely for grammar checking and language enhancement. No AI tools were used to analyze or interpret the research data or generate the study findings. After using the AI tool, the author(s) carefully reviewed and edited the content and take full responsibility for the accuracy, integrity, and final content of the work.

---

### APA Citations

Flores, K. J., Pascual, R. A., & Pascual, A. G. D. (2026). Mathematics 5 instruction in Aritao I District, Schools Division of Nueva Vizcaya: Lens on the perceptions and experiences of teachers. *Bamboo Nexus: Journal of Innovation, Education, and Climate Action*, 1(2), 383–397.

---