

Influence of Modular Distance Learning to the Performance in Mathematics of Primary Learners in Mabini District, Pangasinan

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ABSTRACT –

The study focused on investigating the impact of Modular Distance Learning (MDL) on the Mathematics performance of Primary Learners in Mabini District, Pangasinan. MDL utilizes Self-Learning Modules (SLMs) based on essential learning competencies provided by the Department of Education, offering individualized instruction through print or digital formats. The research analyzed student and school profiles, identified factors affecting Mathematics performance, explored challenges faced by teachers, evaluated coping strategies, and examined the interrelationships among these aspects. Results indicated that student performance was influenced by their attitudes, family backgrounds, resource availability, and teacher readiness. Teachers encountered challenges throughout the MDL process, employing coping mechanisms like well-being strategies and peer mentoring. Recommendations include increased funding for MDL resources, development of comprehensive modules, localization of materials, enhanced parental involvement, and training programs for administrators to enhance the MDL experience. These suggestions aim to enhance the educational experience and support systems within the MDL framework.

Keywords: - Modular Distance Learning, Performance, Mathematics

INTRODUCTION

Mathematics education faces challenges impacting student achievement, with teachers playing a crucial role in students' success. Factors influencing mathematical progress include school type, student mindset, attitude towards math, and self-efficacy beliefs. The Philippines, despite valuing mathematics education, struggles with low performance in international assessments. The recent shift to blended learning due to the COVID-19 pandemic raises concerns about adapting teaching methods and student acceptance. Understanding these challenges is crucial to improving math performance and ensuring effective educational delivery in the evolving educational landscape.

Statement of the Problem

1. This study was conducted to find out the influence of Modular Distance Learning to the performance in Mathematics of primary learners in Mabini district. Specifically, it sought to answer the following:
 - 1). What are the profile of the respondents in terms of:
 - a. sex;
 - b. age;

- c. marital status;
 - d. rank position;
 - e. highest educational attainment;
 - f. years of teaching experience in Mathematics;
 - g. numbers of relevant training under Modular Distance Learning; and
 - h. support resources of teachers under Modular Distance Learning?
- 2). What is the extent of influence of the different factors on the performance of primary learners in Mathematics in Mabini District in terms of:
- a. learners' attitude towards Mathematics subject;
 - b. learners' family background;
 - c. teaching and learning resources; and
 - d. teacher preparedness and workload?
- 3) What is the degree of seriousness on challenges encountered by the teachers in modular distance learning in terms of:
- a. preparation of modules;
 - b. distribution of modules to the learners;
 - c. monitoring learners' learning;
 - d. retrieval of modules;
 - e. checking of modules; and
 - f. giving feedbacks to the learners?
- 4) What is the extent of utilization of coping mechanism of the teachers in modular distance learning in terms of:
- a. positive well-being;
 - b. time management;
 - c. openness to change;
 - d. peer mentoring; and
 - e. collaboration?
5. Is there a significant relationship between the degree of seriousness of challenges encountered by the teachers in modular distance learning and the profile of the respondents?
6. Is there a significant relationship between the extent of utilization of coping mechanism by the teachers in modular distance learning and the profile of the respondents?
7. What intervention plan can be proposed based on the results of the study?

Scope and Delimitations

This study was conducted to determine the influence of Modular Distance Learning to the performance in Mathematics of primary learners in Mabini District, Pangasinan. The researcher conducted the study in the public elementary schools of Mabini District, Pangasinan, from May to June, 2024. The respondents of this study were Grade 1, Grade 2 and Grade 3 teachers teaching mathematics.

The researcher used Google Forms and Facebook as platforms for floating survey questionnaires. The researcher will use these platforms to gather the necessary data in conducting his research.

Review of Related Literature

The literature covers a wide variety of theories about Mathematics. This review will focus on five major themes: definition of Mathematics, students' academic performance, causes of

poor academic performance, challenges and strategies of teachers in teaching Mathematics, which emerge repeatedly throughout the literature reviewed.

Definition of Mathematics

Mathematics is defined as a collection of sciences that examine numbers, forms, and their interactions. It is a science (Mohammadpour, 2012) concerned with the reasoning of order, amount, and shape. The National Council for Curriculum and Assessment (2005) defines mathematics as an expression of cognition, expertise, and processes that can be used to outline, demonstrate, and explain, forecast, describe patterns and associations in figures, and disseminate and elucidate meanings of certain matters in life. Mathematics affects the intellect in various ways, according to research.

According to Mata, Monteiro, and Peixoto (2012), mathematics aids reasoning, analytical thinking, the quickening of the mind, pragmatism, and day-to-day tasks.

Mathematics is the foundation of modern science, including computer science, information technology, computer engineering, and other related subjects (Adeyinka, Asabi & Adedotun, 2013). This reality has been recognized by industrialized countries, which have implemented strong mathematics policies that have propelled them to greater heights of growth. As a result, it may be claimed that no country can grow economically without at least a basic understanding of mathematics. The task for schools, on the other hand, is to improve performance in mathematics. Mathematics can also help a country's economic and technical progress (Carroll, 2011).

Student's Academic Performance

Banerjee (2016) conducted a systematic assessment of factors influencing the academic performance of underprivileged pupils in science and mathematics in school. The study conducted a large-scale assessment with a well-defined population for comparison and a solid research methodology. In all of the investigations, a measure of disadvantage was utilized, such as a lower SES, linguistic obstacle, tribal minority, interim refugee status, and a measure of outcome, such as standardized national test achievement. To address the study's pertinent issues, researchers looked at studies that used correlational analysis. A total of 771 studies published between 2005 and 2014 were examined. A total of 34 studies were synthesized. The data reveal a significant link between underachievement and deprivation, characterized by a lack of positive support and environment.

In Nigeria, Sa'ad, Adamu, and Sadiq (2014) conducted research to determine the factors contributing to pupils' mathematical achievement. The low achievement in mathematics was attributed to students' negative attitudes toward the subject and to a lack of trained subject teachers and teaching aids, according to the findings.

Michael (2015) suggested that for schools to enhance their mathematics performance, both students and staff should have a good attitude, be motivated, and have relevant teaching instruments provided.

Causes of Poor Academic Performance in Mathematics

The fear of mathematics (mathophobia), according to Sparks and Sarah (2011), has led

different scientists to conclude that mathophobia is a major contributory factor to the challenge of learning and teaching mathematics. As a result, it significantly affects students' academic achievement in Mathematics at the Ordinary Level. Mathematics is regarded as a negative subject. Many researchers agree, claiming that a survey of school-based education research has revealed that the majority of secondary school students regard Mathematics as the most difficult, abstract, lethal, and boring subject.

Research has identified low teaching as one of the causes of poor academic achievement in mathematics. Stuart (2000) agrees with the above statement, claiming that low academic achievement in Mathematics can be traced back to inadequate or ineffective teaching. Similar findings were made in American studies, which found that poor mathematics achievement can be ascribed to classroom issues such as inadequate teaching methods (Elliot et al 2013). According to research, question-and-answer, exposition, guided discovery, and group work are the most commonly used teaching approaches. According to a study conducted by Dhliwayo and Wadesango (2012) in Zimbabwe, the lecture style is only used on rare occasions, whereas hands-on activities and field trips are not widespread.

Challenges Faced by Teachers in Teaching Mathematics

Teachers of mathematics have noted that students frequently regard mathematics as a difficult subject. Success, according to researchers, is the best therapy for Math fear, and it should start with the teacher. The teacher's attitude toward the students is critical in resolving the difficulties they are experiencing in the subject. Teachers of mathematics have stated that they should recognize all efforts, no matter how minor, in order to increase students' achievements. It has been observed that students who have consistently failed in mathematics expect to fail every time. Because of their lack of confidence, they must rely on others to help them execute tasks. Mathophobia, according to literature, has led the majority of students to assume that mathematics is a difficult subject (Sparks & Sarah, 2011).

The majority of teachers stated that students who are slow learners experience numerous problems when learning mathematics. They don't establish active connections between what they've learned and what they're learning now. When confronted with an issue, these students are unable to address it using tactics or prior knowledge. Because most concepts in mathematics are hierarchical, students must expand on what they already know. Teachers in the Mathematics department have stated that certain students have memory problems, and they blame this to their pessimistic attitude. Some students struggle with addition, multiplication, and division. Some students demonstrate ignorance when solving multi-step problems, indicating that they have memory issues. This is due to the fact that they have issues with information storage, as the information they receive will never be retained in the Long Term Memory.

As a result, the quality of learners is also a concern (Sparks & Sarah, 2011). Teachers encounter a variety of hurdles, including a lack of understanding of the mathematical skills required to solve certain problems. Most students take a long time to master their talents. Another issue to consider is the teaching approach. Mathematics must be taught in a clear, informative, and engaging manner in order to hold students' attention (Sparks & Sarah, 2011).

Strategies For teaching Mathematics

According to research, teachers should help students develop a positive attitude toward mathematics. This contributes to greater interest in learning it (Obodo, 2012). Through the approaches to be employed, the teacher should make the subject both fascinating and exciting. In the teaching of mathematics, there are a variety of tactics that can be used. To address poor academic performance in mathematics, student involvement is critical. Students must devote significant time and effort to studying Mathematics to remain motivated to continue learning the subject. They should not be regarded like passengers, but rather as active participants.

Teacher competency, according to Ajogbeje and Alonge (2012), is also critical. Teachers should be able to demonstrate competency in all of the book's pedagogic content chapters. The teachers' continual and frequent feedback and remediation are also crucial. The provision of feedback and correction to students inevitably improves their performance in mathematics. Remediation aids in correcting shortcomings in learners, with the goal of bringing them up to par with other students. Teachers who employ interactive approaches get their students to participate actively. Methods such as discovery, group work, and project work have proven beneficial for the teaching and learning of mathematics.

Theoretical Framework

The rise of innovative technologies has led to a remarkable increase in distance learning. This growth is evident in the rising number of students opting for distance education and the increasing inclusion of distance learning in university programs. Despite the appeal of modern technology in distance education, existing literature suggests that the field lacks a coherent theoretical foundation and systematic research. This absence of a solid research and theoretical base has hindered the recognition of distance education within traditional academic circles. Some scholars (Garrison, 1990; Hayes, 1990) have characterized distance education as a mix of ideas and methods borrowed from traditional classrooms and applied to learners who are physically separated from their instructors. As distance education grapples with defining appropriate theoretical frameworks, the practical aspects of implementation also come into focus. These implementation challenges revolve around the learner, the instructor, and the technology. Given that distance education is centered on the learner, educators in this field must explore how learners, instructors, and technology work together to create knowledge.

Traditionally, theories and research in distance education have often been viewed within the framework of an educational system that was completely separate from the traditional classroom-based instructional model. Theorists such as Holmberg, Keegan, and Rumble examined the fundamental assumptions that distinguish distance education from traditional forms of education, both to justify and elucidate this phenomenon. These pioneers in distance education initially conceptualized nontraditional learners as individuals who are physically distant from the instructor (Rumble, 1986), engage in a planned and guided learning process (Holmberg, 1986), and partake in a structured two-way form of distance education that differs from conventional classroom teaching (Keegan, 1988). Early theoretical perspectives sought to define the distinctive characteristics of distance education and to validate its significance as an unconventional educational approach.

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In Keegan's (1986) analysis, three key historical perspectives on the evolution of distance education theory are identified. The first perspective, championed by Wedemeyer (1977) and Moore (1973) in the 1960s and 1970s, emphasizes the importance of learner autonomy and independence. Another viewpoint, introduced by Otto Peters (1971) in the 1960s, sees distance education as an industrialized form of teaching and learning. The third approach combines theories of interaction and communication from Badth (1982, 1987) and Daniel and Marquis (1979). Keegan introduces these approaches within the context of a postindustrial model, shaping the study and advancement of distance education as a field. According to Keegan, this idea of industrialized, open, and innovative learning has the potential to revolutionize the educational landscape. Rephrased Text:

In their key criteria for developing a theory of distance education, Garrison and Shale (1987) incorporate aspects such as non-sequential communication, interactive two-way communication, and the use of technology to facilitate essential two-way interaction.



Figure 1. The Evolution of Distance Learning

The diagram illustrates the progression of Distance Learning. Funding is allocated by

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policymakers to brick-and-mortar schools for the development of virtual programs. Equal financial support is given to both online and in-person classes, suggesting that the delivery of instruction is equally efficient. Nevertheless, as per Moller, Foshay, and Huett, virtual education might not lead to the creation of top-notch educational initiatives.

Similar criteria are utilized to assess the effectiveness of online programs as well as traditional K-12 programs. These criteria evaluate academic performance, retention rates, academic accomplishments, and overall satisfaction. Rice (2006) suggests that the success of distance education is primarily dependent on the educators, learners, and the methods used for learning, rather than the mode of instruction. In contrast, the same holds true for conventional classroom learning, as argued by Huett, J., Moller, L., Foshay, W., & Coleman, C. (2008, p. 63).

There is a requirement for fresh approaches to creating and producing online instructional materials, as well as a need for enhanced instructional models that are actively used by students. ID must develop distributed learning models that will evolve distance education from a delivery medium to a learning model. The most effective strategy is the one the learners actually use. One challenge of the ID is to determine how learners interact with the various e-learning instructional models and the contexts in which they do so.

In the realm of e-learning, we witness two significant forces at play. Firstly, there is the evolution of fresh perspectives and theories that highlight the importance of cognitive processes in constructing knowledge and solving problems. Concurrently, the second force focuses on developing innovative learning models. These transformative processes prioritize critical thinking, creativity, collaboration, and meaningful dialogue (Moller, L., Foshay, W., & Huett, J., 2008, p. 73). E-learning has transitioned from merely being a conduit for content delivery to becoming a comprehensive learning framework that fosters higher-order thinking skills, creativity, collaboration, and meaningful interactions. However, in my current role, focused on pre-kindergarten e-learning, the emphasis is solely on using learning programs to support skill and concept development.

Conceptual Framework

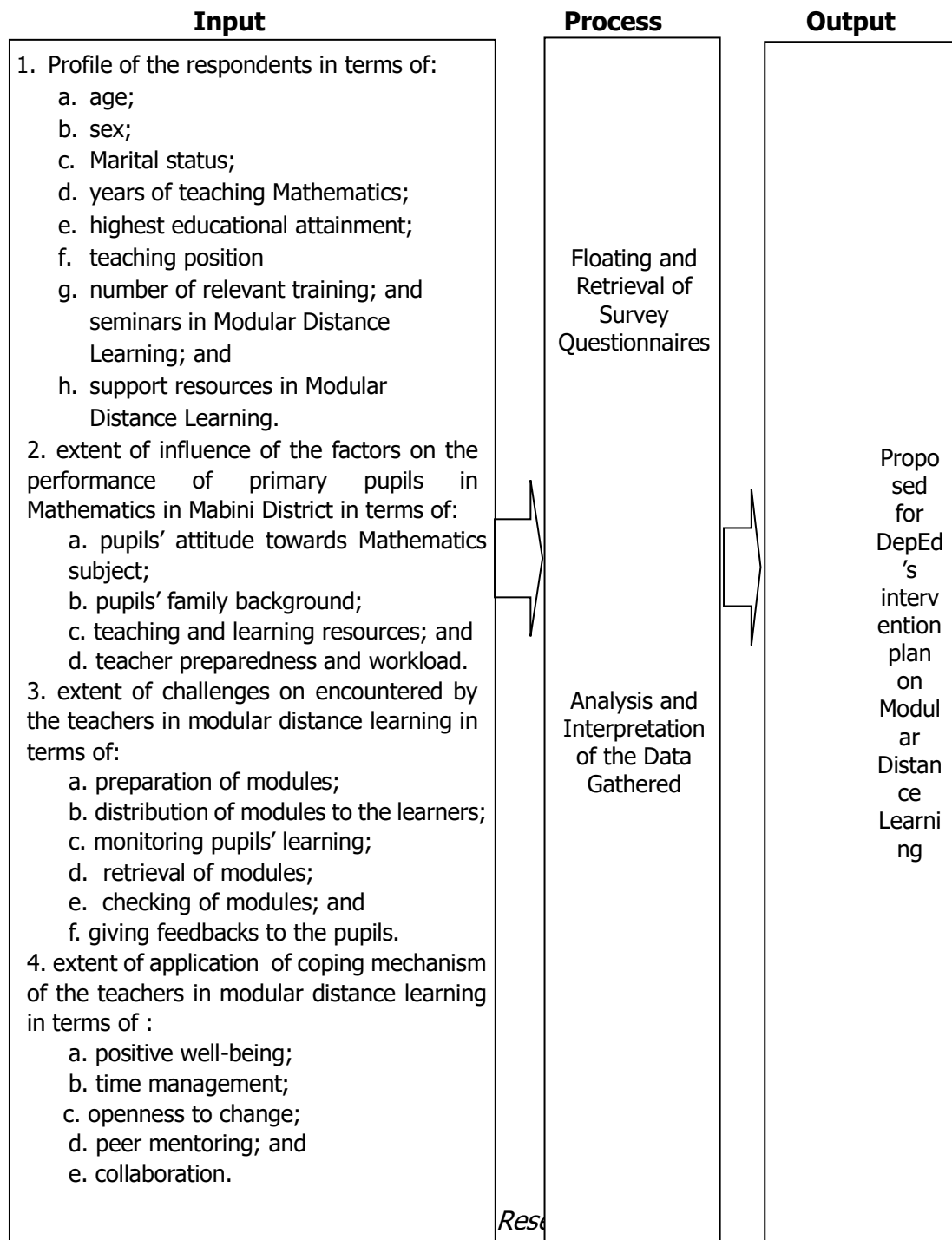
The conceptual framework comprises three main sections. The first section, Input, involves collecting personal information from participants such as age, gender, marital status, grade levels taught, educational background, teaching experience in mathematics, training attended, teaching position, and support systems available in Modular Distance Learning.

Moving on to the Process section, it outlines the methodologies used to gather data successfully, which included online survey questionnaires and a descriptive research approach. Finally, the Output section presents the research's positive outcomes, indicating its potential to guide the implementation of beneficial practices in our school to advance teachers and inform contingency planning. Moreover, it will play a pivotal role in proposing a DepEd project to offer additional support for teachers in the Mabini District, as well as in organizing further training sessions and seminars.

The dependent, independent, and intervening variables are shown in the conceptual framework. Math performance can be influenced by classroom activities. The survey focused on assessing how student attitude, family background, adequacy of teaching and learning

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resources, teachers' preparedness, and workload influence mathematics performance in selected schools in Mabini District among Grade 1-3 pupils of Pangasinan. However, these can be mitigated in order to achieve better results. Guidance and counselling are two intervening variables. At the classroom level, the teacher should counsel students and demonstrate the importance of Mathematics as a subject. Teachers should work to develop teacher-student connections so that kids can ask questions without fear of being judged.



According to Akungu (2014), the tutoring and dissemination of knowledge using resources (TLR) accessible to students determine the effectiveness of an institution.

These materials enable pupils to achieve good academic results. To keep learners motivated and engaged, the learning process should include prior preparation. A maths class must pique the students' interest and motivate them to understand new concepts. The importance of teacher preparation in the teaching process cannot be overstated. This is because it requires the teacher to organize schemes of work, plan the class in advance, write lesson notes, and keep track of what has been covered.

METHODOLOGY

This chapter presents the research design, population and sample, data-gathering instruments (such as survey research and standardized instruments), validation and administration, data-gathering procedures, and statistical treatment of data, which constitute the method used in this study.

Research Design

The study employed a mixed-methods research design, combining both quantitative and qualitative approaches to provide comprehensive insights into the influence of Modular Distance Learning on mathematics performance. This sequential explanatory design first collected quantitative data through surveys to identify patterns and relationships, followed by qualitative data collection to explain and contextualize these findings. The mixed-methods approach was selected because it provides both quantitative evidence of the extent of challenges and influences and rich descriptive information about teachers' experiences and perspectives in modular distance-learning environments. According to Creswell and Plano Clark (2018), mixed-methods research enables researchers to gain a more complete understanding of phenomena by combining the strengths of both quantitative and qualitative approaches. This comprehensive approach enables a deeper exploration of how modular distance learning influences primary mathematics performance, beyond simple numerical descriptions.

Research Steps

The research proceeded through sequential phases to ensure comprehensive data collection and analysis. In Phase 1, quantitative data were collected through an online survey administered to 45 primary mathematics teachers to gather information on teacher profiles, factors influencing student performance, challenges encountered, and coping mechanisms used in modular distance learning. Following the initial survey and preliminary analysis of quantitative findings, Phase 2 involved qualitative data collection through multiple methods. Semi-structured interviews were conducted with selected mathematics teachers to explore in depth their experiences with the implementation of modular distance learning, including the factors driving their instructional decisions and their observations of student outcomes. Focus group discussions were organized with students to understand their perspectives on modular distance learning and its impact on their mathematics learning, providing valuable insights from the learner perspective. Additionally, classroom observations were conducted to document actual teaching and learning practices in modular distance-learning contexts, capturing authentic

information about how instruction was delivered and received. The qualitative phase aimed to provide a deeper understanding and context for the quantitative findings, allowing researchers to explore the "why" behind the numerical patterns identified in the survey data, thereby creating a more holistic understanding of the phenomenon.

Data Collection and Sample Selection

Quantitative Phase

The quantitative phase of this study employed random sampling to select respondents, ensuring each potential respondent had an equal and independent chance of being selected, thereby minimizing bias and increasing the likelihood that the sample accurately reflected the population's characteristics. The total number of respondents in this study was 45 primary mathematics teachers, randomly selected from the 18 elementary schools in Mabini District, Division of Pangasinan I. An online survey was administered via Google Forms and Facebook to gather data efficiently from geographically dispersed respondents. The survey collected comprehensive data on teacher demographic profiles, including sex, age, marital status, educational attainment, teaching experience, and training attended. Additionally, the survey assessed support resources available under Modular Distance Learning, factors influencing students' mathematics performance, such as learner attitudes, family background, teaching and learning resources, and teacher preparedness, as well as challenges encountered in the implementation of modular distance learning and coping mechanisms used by teachers. The survey data were automatically stored in a database, with preliminary analysis provided by the survey tool and further reviewed and interpreted by trained experts to ensure accuracy and completeness.

A standardized instrument was employed to measure the influence of Modular Distance Learning on mathematics performance, adapted from the research of Jainalyn Annong Aksan entitled "Effect of Modular Distance Learning Approach to Academic Performance in Mathematics of Students in Mindanao State University-Sulu Senior High School Amidst COVID-19 Pandemic." The use of a standardized instrument ensured that consistent information was gathered from every respondent in the same format, enabling meaningful comparisons among individuals and groups. This approach strengthened the validity and reliability of the quantitative findings by utilizing an instrument that had been previously tested and validated in similar educational contexts.

Qualitative Phase

The qualitative phase of this study utilized purposive sampling to select participants for in-depth data collection. Participants were selected based on their experience with modular distance learning and their ability to provide rich, detailed information about the phenomenon under study. Semi-structured interviews were conducted with selected mathematics teachers who had utilized modular distance learning in their classrooms. These interviews lasted approximately 15 to 30 minutes and were video recorded with participants' explicit permission to ensure accurate capture of responses. Interview questions were designed to explore the

factors driving teachers to implement specific strategies, the particular techniques they employed in their teaching, and their observations regarding student responses and learning outcomes. The flexible nature of semi-structured interviews allowed for follow-up questions and deeper probing into emerging topics, providing nuanced understanding of teachers' experiences.

Focus group discussions were organized with Grade 1-3 students from participating schools to gather student perspectives on their learning experiences. These discussions explored students' experiences with modular distance learning, their perceived challenges in this learning environment, the support systems available to them, and their attitudes toward mathematics as a subject. By involving students directly, the study captured authentic voices from learners themselves rather than relying solely on teacher perceptions. Additionally, classroom observations were conducted to document actual teaching and learning practices in modular distance learning contexts. These observations were designed to capture teacher-student interactions, instructional strategies employed, resource utilization patterns, and the overall learning environment characteristics. Direct observation provided objective data about how modular distance learning was being implemented in practice, complementing the subjective perspectives gathered through interviews and focus groups.

Data Analysis Methods

Quantitative Data Analysis

The quantitative data were analyzed using comprehensive statistical procedures to extract meaningful patterns and relationships from the survey responses. For personal profiles including sex, age, marital status, and educational attainment, frequency counts and percentage distributions were calculated to provide a clear picture of the respondent demographics. Mean values and standard deviations were computed for all Likert-scale responses to determine central tendencies and variability in teachers' ratings of various factors, challenges, and coping mechanisms. Weighted averages were calculated to determine the extent of factors' influence on student performance, the seriousness of challenges encountered by teachers, and the extent of utilization of coping mechanisms, providing a clear numerical representation of these key variables.

To test relationships between variables and determine statistical significance, multiple inferential statistical tests were applied. Spearman's rank correlation was used to assess relationships between ordinal variables, particularly when examining associations between teacher profile characteristics and various outcome measures. Point-biserial correlation was used to assess relationships between continuous and dichotomous variables, enabling a comprehensive analysis of the data. Chi-square tests were utilized to determine the statistical significance of categorical associations and to test the null hypotheses regarding relationships between teacher profiles and challenges or coping mechanisms. All quantitative data were cleaned, coded, and analyzed using SPSS version 24 to ensure accuracy and consistency. Statistical significance was tested at the 0.05 level, allowing 95% confidence in the findings while maintaining standard research conventions.

Qualitative Data Analysis

Qualitative data from interviews, focus groups, and observations were analyzed using systematic thematic analysis to identify meaningful patterns and insights. The first step involved transcribing audio and video recordings from interviews and focus groups verbatim, ensuring that all spoken content was accurately captured for analysis. Transcripts were then systematically coded to identify recurring themes and patterns related to teachers' experiences and perspectives on modular distance learning, students' learning experiences and challenges, coping strategies and support systems employed, and factors that facilitate or hinder the effective implementation of modular distance learning programs. The coding process involved careful reading and re-reading of the data to identify meaningful units of information that would contribute to understanding the research phenomenon.

Following the initial coding phase, codes were organized into broader themes through iterative review and comparison, allowing related codes to be grouped together into coherent conceptual categories. This thematic organization made it possible to see the larger patterns in the data and to understand how individual experiences and perspectives connected to broader themes. To ensure the reliability and validity of findings, themes were cross-checked by multiple researchers to identify points of agreement and to resolve any differences in interpretation through discussion and consensus. The qualitative themes that emerged from this analysis were then integrated with quantitative findings to provide a comprehensive interpretation of the data. This integration allowed quantitative findings to be explained and contextualized through rich qualitative narratives, provided context for statistical relationships discovered through the lived experiences and perspectives of teachers and students, and generated a comprehensive understanding of how modular distance learning influences primary mathematics performance.

Data Integration

The quantitative and qualitative findings were strategically integrated throughout the analysis and interpretation process to create a unified understanding of the research phenomenon. Quantitative data identified the extent and magnitude of various challenges, influences, and coping mechanisms, while qualitative data explained why these patterns existed and how they manifested in actual practice. By explaining the numerical patterns identified in survey data through rich qualitative narratives, the study provided not just "what" the data showed but also "why" these patterns emerged. The qualitative data provided context for statistical relationships discovered through teacher and student perspectives, allowing readers to understand the human experiences behind the numbers. This comprehensive integration enabled the development of evidence-based recommendations grounded in both numerical data and lived experiences, ensuring that conclusions and recommendations were supported by multiple forms of evidence and reflected the reality of modular distance learning implementation in primary mathematics education.

Research Hypotheses and Validation Null Hypotheses

The following hypotheses were tested in null form at the 0.05 level of significance to determine whether statistically significant relationships existed between variables of interest. The first null hypothesis stated that there is no significant relationship between the degree of seriousness of challenges encountered by teachers in modular distance learning and the respondents'

profile, including variables such as age, sex, marital status, educational attainment, teaching experience, training attended, and support resources available. The second null hypothesis stated that there is no significant relationship between the extent of utilization of coping mechanisms by teachers in modular distance learning and the profile of respondents, examining whether demographic and professional characteristics influenced how teachers employed coping strategies. Testing these hypotheses allowed the study to determine whether certain teacher characteristics were associated with differential experiences of challenges or the use of coping mechanisms in modular distance-learning environments.

Validation

The study employed multiple validation strategies to ensure the credibility and trustworthiness of both quantitative and qualitative findings. For the quantitative component, the researcher consulted his adviser to verify the appropriateness and coherence of the survey questions, ensuring that the items accurately measured the constructs of interest. The survey was presented to content experts, including the School Head in charge of Mathematics, the Master Teacher in charge of Mathematics, and the School Mathematics Coordinator, for comprehensive content validation. These experts reviewed the survey for clarity, relevance, and alignment with the research objectives. Their recommendations and suggestions were carefully considered and incorporated into the final survey questionnaire, strengthening its validity and appropriateness for the target population.

For the qualitative component, multiple validation strategies were implemented to enhance credibility. Member checking was conducted by sharing preliminary findings from interviews and focus groups with participants to verify accuracy and interpretation, allowing participants to confirm or clarify their responses and ensuring that the researcher's interpretations aligned with participant intentions. Triangulation of data from multiple qualitative sources, including interviews, focus groups, and observations, was employed to ensure consistency and credibility, with convergence across sources strengthening confidence in the findings. Peer debriefing was conducted, during which preliminary analyses were discussed with colleagues to ensure that interpretations were reasonable, grounded in the data, and free from researcher bias. This collaborative review process enhanced the overall credibility of the qualitative findings by subjecting them to external scrutiny and alternative perspectives.

Study Limitations and ethical considerations

This study was conducted to determine the influence of Modular Distance Learning to the performance in Mathematics of primary learners in Mabini District, Pangasinan. The researcher conducted the study in the public elementary schools of Mabini District, Pangasinan, from May to June, 2024. The respondents in this study were Grade 1, Grade 2, and Grade 3 mathematics teachers.

The researcher used Google Forms and Facebook as platforms for floating survey questionnaires. The researcher will use these platforms to gather the necessary data in conducting his research.

ETHICAL CONSIDERATIONS

In conducting this research study, the researcher adhered to strict ethical standards to ensure

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the protection and welfare of all participants. The following ethical considerations were implemented throughout the research process:

Informed Consent. All respondents were provided with comprehensive information about the nature, purpose, and procedures of the study prior to their participation. Participants were fully informed of their right to voluntarily participate in the study and were assured that they could withdraw their participation at any time without penalty or consequence.

Confidentiality and Anonymity. The researcher maintained strict confidentiality regarding all personal information and responses provided by the respondents. All data collected were kept confidential and secure, accessible only to authorized research personnel. Respondents were assured that their identities would remain anonymous and that individual responses would not be disclosed or identified in any way.

Institutional Approval. Prior to conducting the study, the researcher obtained formal authorization from the Officer-In-Charge, Assistant Schools Division Superintendent of Pangasinan I, and approval from the Public Schools District Supervisor of Mabini District. This ensured that the research was conducted in accordance with institutional policies and guidelines.

Data Protection and Security. All collected data were carefully handled and secured to prevent unauthorized access or misuse. The questionnaires and responses were stored in a secure database using SPSS version 24, with access restricted to authorized personnel only.

No Harm to Participants. The researcher ensured that the research procedures posed no physical, psychological, or social harm to any participant. The survey questionnaire was designed to be non-invasive and respectful of participants' time and professional responsibilities.

Honesty and Integrity. The researcher-maintained honesty and integrity throughout the research process, ensuring accurate reporting of data, findings, and conclusions without falsification, fabrication, or misrepresentation of results.

RESULTS AND DISCUSSION

This study investigated teachers' perceptions of how Modular Distance Learning influences primary mathematics education in Mabini District, Pangasinan. The findings are presented and discussed in relation to the research questions and existing literature, with careful attention to the distinction between teacher perceptions and actual learner performance outcomes.

Table 1
Profile of the Respondents
n=45

Profile	Category	Frequency	Percentage
Sex	Male	7	15.6
	Female	38	84.4
Age	20-25 years old	1	2.2
	26-30 years old	8	17.8
	31-35 years old	10	22.2
	36-40 years old	8	17.8

	41-45 years old	10	22.2
	46-50 years old	1	2.2
	51-55 years old	4	8.9
	56-60 years old	2	4.4
	Above 60 years old	1	2.2
Marital Status	Single	15	33.3
	Married	28	62.2
	Separated	1	2.2
	Widowed	1	2.2
Rank Position	Teacher 1	14	31.1
	Teacher 2	7	15.6
	Teacher 3	18	40.0
	Master Teacher 1	4	8.9
	Master Teacher 2	2	4.4
	Bachelor's Degree	4	8.9
Number of Years of Teaching Mathematics	5 years and below	10	22.2
	6-10 years	18	40.0
	11-15 years	6	13.3
	16-20 years	3	6.7
	21-25 years	2	4.4
	26 years and above	6	13.3
Number of Relevant Trainings and Seminars	None	5	11.1
	1-5	38	84.4
	6-10	2	4.4
Support Resources Under Modular Distance Learning	Module	45	100.0
	Textbooks	40	88.9
	Instructional Materials	39	86.7
	Health Essential	33	73.3
	Mentorship and Coaching	8	17.8
	Parental Engagement Resources	17	37.8
	Load Allowance	17	37.8

The respondent profile reveals that mathematics instruction in Mabini District is predominantly delivered by female educators (84.4%), with the majority aged between 31 and 45 years and having 6-10 years of teaching experience. Most respondents held Teacher 3 positions and had attended between 1 and 5 trainings related to Modular Distance Learning. These demographic characteristics suggest a relatively experienced teaching force with some exposure to distance learning methodologies. However, the finding that 84.4% of teachers had attended only 1-5 trainings indicates that professional development in MDL remains limited. The profile data demonstrate that targeted professional development programs should consider the specific needs of experienced educators transitioning to distance-learning contexts, as they bring substantial classroom experience but may require support in adapting their pedagogical approaches to new delivery modalities.

Table 2
Summary of Extent of Influence of The Different Factors on The Performance of Primary Learners in Mathematics in Mabini District
n=45

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Indicator	Mean	Descriptive Equivalence
I- Learners' Attitude towards Mathematics	3.69	High Influence
II- Learners' Family Background	3.60	High Influence
III- Teaching and Learning Resources	4.04	High Influence
IV- Teacher Preparedness and Workload	4.09	High Influence
Overall	3.86	High Influence

The study identified four factors that teachers perceived as influencing student mathematics performance, with an overall mean score of 3.86 indicating high perceived influence. Teacher preparedness and workload (mean = 4.09) and teaching and learning resources (mean = 4.04) received the highest ratings, suggesting that teachers perceive these institutional factors as most critical to student success. Learner attitudes toward mathematics (mean = 3.69) and family background (mean = 3.60) also received high ratings, indicating that teachers recognize the importance of affective and contextual factors in mathematics learning.

These findings represent teacher perceptions of factors influencing performance, not measured student achievement outcomes. No actual learner performance data (such as test scores, academic grades, or learning assessments) were collected in this study. Therefore, these results indicate what teachers believe influences mathematics performance, which may or may not correlate with actual student achievement gains. The high perception ratings of teacher preparedness and resources suggest that teachers recognize their importance, but this does not confirm that improvements in these areas would necessarily lead to improved student performance. Future research should include direct measurement of student learning outcomes to validate these teacher perceptions.

The findings align with the existing literature, which acknowledges the multifaceted nature of educational success. Michael (2015) suggested that schools seeking to enhance mathematics performance should ensure both students and staff maintain positive attitudes, possess adequate motivation, and have access to relevant teaching instruments. The current study's findings support these observations from the teacher perspective, as teachers rated resources and preparedness highly. However, the study cannot confirm whether addressing these perceived factors would actually improve mathematics performance without direct measurement of student outcomes.

Table 3
Summary of Degree of Seriousness on Challenges Encountered by The Teachers in Modular Distance Learning

Indicator	Mean	Descriptive Equivalence
A. Preparation of modules	3.45	Moderately Serious
B. Distribution of modules to the pupils	4.21	Highly Serious
C. Monitoring pupils learning	3.57	Highly Serious
D. Retrieval of modules	3.70	Highly Serious
E. Checking of modules	3.83	Highly Serious
F. Giving feedback to the learners	2.56	Moderately Serious
Overall	3.55	Highly Serious

Table 3 summarizes the challenges faced by teachers during modular distance learning, with indicators ranging from the preparation of modules to the feedback given to learners. The mean values indicate the degree of seriousness of each challenge, providing insights into areas that may require more support or improvement.

Teachers reported experiencing highly serious challenges in implementing Modular Distance Learning, with an overall mean seriousness rating of 3.55. The most critical challenge identified was the distribution of modules to pupils (mean = 4.21), followed by checking modules (mean = 3.83), retrieving modules (mean = 3.70), and monitoring student learning (mean = 3.57). In contrast, providing feedback to learners was rated as moderately serious (mean = 2.56). These findings reveal that teachers perceive logistical and operational challenges as more

serious than instructional challenges related to feedback provision.

These challenge ratings represent teacher perceptions of difficulty levels, not objective measures of implementation effectiveness or student learning impact. The high ratings for module distribution and checking suggest that teachers find these logistical tasks burdensome and challenging, but the study does not directly measure whether these challenges actually impede student learning. Teachers may perceive certain tasks as challenging due to workload, lack of systems, or inadequate resources, but the actual impact on learner outcomes remains unmeasured. The relatively lower seriousness rating for feedback provision suggests that teachers feel more capable in the instructional domain than in operational logistics, which may reflect their professional training and experience in teaching rather than the actual effectiveness of the feedback provided.

These operational challenges are consistent with concerns raised in distance education literature. The difficulty with module distribution, in particular, represents a fundamental barrier to learning, as students cannot engage with content they cannot access. However, addressing these logistical challenges should be understood as a necessary but not sufficient condition for improving mathematics performance. The study provides evidence that teachers perceive these as serious obstacles, but it does not demonstrate that removing them would improve student achievement.

Table 4 Summary of the Extent of Utilization of Coping Mechanism of The Teachers in Modular Distance Learning

n=45

Indicator	Mean	Descriptive Equivalence
A. Positive Well-being	3.96	Well Applied
B. Time Management	4.44	Well Applied
C. Openness to Change	4.68	Very Well Applied
D. Peer Mentoring	4.70	Very Well Applied
E. Collaboration	4.16	Well Applied
Overall	4.39	Well Applied

Despite facing significant challenges, teachers demonstrated strong utilization of coping mechanisms, with an overall mean score of 4.39, indicating well-applied strategies. Peer mentoring (mean = 4.70) and openness to change (mean = 4.68) received the highest ratings, indicating very well-applied approaches. Time management (mean = 4.44), collaboration (mean = 4.16), and positive well-being strategies (mean = 3.96) were also well utilized.

These findings indicate that teachers reported employing various coping strategies to manage the challenges of modular distance learning. The high ratings for peer mentoring and openness to change suggest that teachers perceive themselves as collaborative and adaptable professionals. However, these self-reported coping strategies do not necessarily translate to improved student outcomes. Teachers may employ effective coping mechanisms to manage their own stress and workload while students still experience learning difficulties. The study documents teacher resilience and adaptive capacity but does not measure whether these coping strategies directly benefit student learning or mathematics performance. The distinction is important: teachers may be coping well personally while students may still be struggling academically.

The finding that peer mentoring and collaboration were rated highly is noteworthy, as it suggests that despite systemic challenges, teachers are supporting one another. This professional solidarity may contribute to teacher retention and job satisfaction, which are important outcomes in themselves. However, without measurement of student learning outcomes, we cannot conclude that peer mentoring directly improves mathematics performance. Future research should examine whether specific coping strategies employed by teachers correlate with improvements in student achievement.

Table 5
Summary of Extent of Utilization of Coping Mechanism of The Teachers in Modular Distance Learning

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n=45

Profile		Indicators						
		A	B	C	D	E	F	G
Sex	r	- 0.1 77	- 0.0 47	- 0.1 73	- 0.2 47	- 0.2 16	- 0.0 06	- 0.1 98
	S i g	0.2 46	0.7 61	0.2 56	0.1 02	0.1 55	0.9 66	0.1 92
Age	r	0.1 00	.23 3*	- 0.0 17	0.1 67	0.1 02	0.0 33	0.1 10
	S i g	0.3 92	0.0 48	0.8 80	0.1 52	0.3 80	0.7 77	0.3 23
Civil Status ^a	r	.33 4*	0.2 33	.37 4*	.35 7*	.38 1*	0.2 29	.44 4**
	S i g	0.0 29	0.1 33	0.0 13	0.0 19	0.0 12	0.1 40	0.0 03
Grade Level	r	0.0 95	0.0 13	0.2 07	.44 3**	.25 3*	- 0.1 39	0.1 87
	S i g	0.4 49	0.9 15	0.0 90	0.0 00	0.0 42	0.2 65	0.1 14
Rank Position	r	.35 5**	.39 0**	0.1 54	.24 1*	.33 7**	0.0 65	.33 8**
	S i g	0.0 04	0.0 01	0.1 97	0.0 47	0.0 05	0.5 92	0.0 03
Highest Education Attainment	r	0.1 67	0.0 90	0.0 42	0.1 67	0.2 12	0.0 69	0.1 79
	S i g	0.1 75	0.4 67	0.7 28	0.1 73	0.0 83	0.5 73	0.1 24
Number of Years of Teaching Mathem atics	r	.30 0*	.33 0**	- 0.0 11	.26 1*	0.2 08	- 0.1 69	0.1 65
	S i g	0.0 12	0.0 06	0.9 26	0.0 29	0.0 81	0.1 58	0.1 46
Numbers of Relevant Training s and Seminars Related to Modular Distance Learning	r	- 0.0 25	- 0.0 79	- 0.1 68	-.29 8*	- 0.2 03	- 0.0 78	-.24 9*
	S i g	0.8 48	0.5 44	0.1 87	0.0 21	0.1 18	0.5 47	0.0 44
Support Resource s Under Modular Distance Learning	r	.28 8*	.41 2**	.26 7*	0.2 25	.40 1**	0.0 42	.35 6**
	S i g	0.0 15	0.0 01	0.0 21	0.0 55	0.0 01	0.7 19	0.0 01

Legend:

A. Preparation of modules
C. Monitoring pupils learning
E. Checking of modules

B. Distribution of modules to the pupils.
D. Retrieval of modules
F. Giving feedback to the learners

G. Overall

Statistical analysis revealed several significant relationships between teacher profile characteristics and perceived seriousness of challenges. Age demonstrated a significant positive relationship with challenges in distributing modules, suggesting that older teachers may perceive greater difficulty with this logistical task. Civil status showed significant associations with multiple challenge areas, though the study cannot explain the mechanisms underlying these relationships. Rank position and years of teaching experience also correlated with perceptions of challenge seriousness.

These correlations describe associations between teacher characteristics and their perceptions of challenges, not causal relationships or objective measures of actual challenge severity. The finding that older teachers perceive greater difficulty with module distribution, for example, does not necessarily mean that module distribution is objectively more difficult for older teachers; it may reflect differences in technology comfort, workload perception, or other unmeasured factors. Furthermore, teacher perceptions of challenge seriousness may not correlate with actual impact on student learning. Teachers may perceive certain challenges as serious due to personal stress factors unrelated to student outcomes.

Table 6 shows the test of relationship between the extent of utilization of coping mechanism by the teachers in modular distance learning and the profile of the respondents. To test the association, Spearman - rank and Point - Biserial correlation were utilized. These coefficients were inferentially tested to determine if the computed coefficients are significantly different from zero.

Table 6
Summary of Extent of Utilization of Coping Mechanism of The Teachers in Modular Distance Learning
n=45

Profile		Indicators					
		Positive Well-being	Time Management	Openness to Change	Peer Mentoring	Collaboration	Overall
Sex	r	-0.063	-0.068	0.122	0.097	0.141	0.059
	Sig	0.680	0.659	0.425	0.525	0.356	0.700
Age	R	-0.135	0.048	0.123	0.197	0.161	0.069
	Sig	0.245	0.678	0.320	0.106	0.168	0.536
Civil Status	r	-.435**	-0.154	0.046	0.228	-0.139	-0.123
	Sig	.004	0.324	0.772	0.142	0.373	0.433
Rank Position	R	-0.115	-0.037	0.039	0.086	0.135	0.022
	Sig	0.341	0.761	0.761	0.502	0.267	0.852
Highest Educational Attainment	R	-0.125	-0.161	0.046	0.172	0.083	-0.050
	Sig	0.304	0.189	0.722	0.181	0.500	0.668
Number of Years of Teaching Mathematics	R	-0.038	0.195	0.208	.251*	.280*	0.212
	Sig	0.748	0.101	0.100	.045	.020	0.062
Numbers of Relevant Trainings and Seminars Related to Modular	R	-0.002	0.078	0.170	0.075	0.050	0.139
	Sig	0.987	0.548	0.216	0.582	0.702	0.261

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Distance Learning							
Support Resources Under Modular Distance Learning	R	-0.060	0.107	0.193	0.220	.258*	0.142
	Sig	0.609	0.362	0.122	0.075	0.029	0.206

The study found that civil status showed a significant negative correlation with positive well-being ($r = -0.435$, $p = 0.004$), indicating that teachers with different marital statuses reported varying levels of well-being. Years of teaching mathematics demonstrated positive correlations with peer mentoring and collaboration, suggesting that more experienced teachers may engage more readily in collegial support. Support resources showed positive correlations with collaboration and peer mentoring utilization.

These findings describe associations between teacher characteristics and reported coping mechanisms, not causal relationships or measures of coping effectiveness. The negative correlation between civil status and positive well-being, for instance, suggests an association but does not explain why this relationship exists or what underlying factors may be responsible. Additionally, self-reported utilization of coping mechanisms does not necessarily indicate that these mechanisms are effective in improving either teacher well-being or student outcomes. Teachers may report using collaborative strategies frequently without these strategies actually reducing their stress or improving their teaching effectiveness. The study documents what teachers report doing; it does not measure the actual outcomes of these coping efforts.

The positive correlation between years of teaching experience and collaboration is noteworthy, as it suggests that experienced teachers may have developed stronger collegial networks. However, this association does not confirm that collaboration improves teaching practice or student learning. It may simply reflect that experienced teachers have had more time to develop professional relationships.

Table 7
Intervention Plan Based
on the Results of Study

Area of Concern	Rationale	Objectives	Strategies	Time Frame	Persons Involved	Budget Allocation	Expected Output
A. Teachers' Development	Continuous growth of teachers enhances teaching quality and student success.	Capacitate teachers in ICT	Professional development sessions, webinars	Year Round	School Head, Teachers, Parents, Learners	Php. 2,000	Certificate of participation in seminars/webinars/trainings

B. Curriculum Development	Quality Self-Learning Modules (SLMs) are vital for continuity in learning	100% completion of SLMs	Modify and print SLMs, develop learning plans	Year Round	Teachers, Parents, Learners	Php. 5,000	Additional books, donations from LGU/private sector
C. Community Extension	Engaging community and stakeholders enhance support for students	Involve community in education	Seek community assistance for materials and support	Year Round	Barangay Officials, School Head, Teachers, PTCA Officers, Parents, Learners	Php. 10,000	Active involvement of community/stakeholders in educational programs.

Based on the teacher perceptions and reported challenges documented in this study, an intervention plan was proposed addressing three areas: teacher development, curriculum development, and community extension. The recommendations emphasize professional development in information and communication technology, completion and localization of Self-Learning Modules, and increased community engagement in educational support.

The intervention plan is grounded in teacher perceptions of what would be helpful, not in evidence of what interventions would directly improve student mathematics performance. While teachers perceive that enhanced ICT training, better modules, and community support would address their challenges, implementing these interventions does not guarantee improved student outcomes. The plan addresses operational and support system challenges that teachers face, which may create better conditions for learning, but the actual impact on student achievement would require subsequent measurement and evaluation.

The recommendations for localized, culturally relevant modules reflect teacher perceptions that generic materials may not adequately engage students. However, without assessment of student learning with localized versus generic materials, this recommendation remains based on teacher intuition rather than evidence of differential effectiveness. Similarly, recommendations for enhanced parental engagement are based on teacher perceptions of family background as an influential factor, but the study does not measure whether increased parental engagement would actually improve student mathematics performance.

SUMMARY

This research study investigated how Modular Distance Learning (MDL) impacts mathematics performance among primary learners (Grades 1-3) in Mabini District, Pangasinan, Philippines. The study surveyed 45 mathematics teachers and examined multiple interconnected factors affecting student achievement, teacher challenges, and coping mechanisms employed in distance learning environments.

The teacher respondents were predominantly female (84.4%), aged between 31-45 years, married, with an average of 6-10 years of teaching experience. Most held Teacher 3 or Teacher 1 positions, and 84.4% had attended between 1-5 trainings related to MDL. However, the findings revealed significant gaps in support systems, with limited access to mentorship,

coaching, and parental engagement resources, indicating a critical need for enhanced professional support networks.

The study identified four key factors influencing student mathematics performance, with a combined mean score of 3.86 indicating high influence. Teacher preparedness and workload emerged as the strongest predictors, with a mean of 4.09, followed closely by teaching and learning resources (4.04). Learner attitudes toward mathematics (3.69) and family background (3.60) also demonstrated substantial influence on academic outcomes. These findings underscore the multifaceted nature of educational success, requiring attention to both institutional resources and individual learner characteristics.

Teachers encountered significant challenges throughout the MDL process, with an overall mean seriousness rating of 3.55. The most critical challenge was distributing modules to pupils (4.21), followed by checking modules (3.83), retrieving modules (3.70), and monitoring student learning (3.57). Interestingly, providing feedback to learners was rated as moderately serious (2.56), suggesting that while logistical challenges dominated teachers' concerns, instructional feedback was more manageable. These findings highlight operational and logistical barriers to the effective implementation of distance learning programs.

Despite facing substantial challenges, teachers demonstrated remarkable resilience by employing diverse coping mechanisms with a combined mean utilization score of 4.39. Peer mentoring (4.70) and openness to change (4.68) were rated as very well applied, indicating strong collaborative cultures and adaptability among educators. Time management (4.44), collaboration (4.16), and positive well-being strategies (3.96) were also well utilized, demonstrating that teachers actively sought to maintain their effectiveness and mental health in challenging circumstances.

CONCLUSIONS

- The study concludes that Modular Distance Learning can effectively support primary mathematics education when properly implemented with adequate institutional support. The research reveals that student performance is not determined by any single factor but rather by the complex interplay of teacher preparedness, resource availability, student attitudes, and family engagement. While teachers have demonstrated commendable adaptability and collaborative spirit in responding to the challenges of distance learning, they require substantial and sustained institutional support to overcome significant logistical barriers, particularly in module management and assessment.
- The findings indicate that resource availability and teacher preparedness are the strongest predictors of student success in mathematics, with mean scores of 4.04 and 4.09 respectively. This suggests that schools seeking to improve mathematics outcomes should prioritize investments in quality teaching materials and comprehensive teacher development programs. Additionally, the significant influence of student attitudes (3.69) and family backgrounds (3.60) emphasizes that educational improvements must extend beyond the classroom to encompass community engagement and family support systems.

- The critical challenges identified in module distribution, retrieval, checking, and monitoring reveal systemic weaknesses in the operational infrastructure of MDL programs. The fact that distribution emerged as the most serious challenge (4.21) suggests that even before learning can occur, schools struggle with basic logistical coordination. This finding is particularly concerning because it creates a barrier that prevents students from accessing learning materials. Conversely, the relatively lower seriousness rating for providing feedback (2.56) indicates that teachers are managing instructional aspects more effectively than logistical ones, suggesting that targeted interventions focused on operational systems could yield significant improvements.
- The strong utilization of coping mechanisms by teachers, particularly peer mentoring (4.70) and openness to change (4.68), provides a foundation upon which sustainable improvements can be built. These findings demonstrate that teachers possess the resilience and collaborative capacity necessary to navigate complex educational environments. However, this resilience should not be mistaken for contentment; rather, it reflects teachers' determination to serve their students despite systemic inadequacies. Schools must recognize and support this commitment by removing unnecessary barriers and providing the resources and systems necessary for teachers to apply their skills and dedication effectively.

RECOMMENDATIONS

Schools should implement immediate, medium-term, and long-term strategies to enhance the effectiveness of MDL in improving primary mathematics performance. Immediately, educational leaders must establish a centralized, technology-enabled module distribution system to address the most critical operational challenge identified in this study. Simultaneously, comprehensive teacher mentoring and coaching programs should be implemented to provide educators with the professional support they need to navigate distance-learning environments effectively. Additionally, teacher workloads should be reassessed and reduced through adequate staffing and strategic resource allocation to prevent burnout and maintain teaching quality.

In the medium term, schools should develop localized, culturally relevant Self-Learning Modules that resonate with students' experiences and community contexts, as generic materials may not adequately engage primary learners. Enhanced parental engagement programs with clear communication channels and accessible resources must be established to strengthen the home-school partnership and leverage family support for student learning. Ongoing Information and Communication Technology (ICT) training should be provided to all educators to improve their digital competency and enable them to effectively utilize available technologies in distance learning contexts.

For long-term sustainability, districts and regional offices must increase funding allocation for MDL resources, particularly high-quality support materials, technology infrastructure, and professional development programs. Training programs for school administrators must be developed and implemented to build leadership capacity in MDL implementation and teacher support. Furthermore, formal peer mentoring networks should be institutionalized to sustain collaborative professional growth and create communities of practice where teachers can continuously learn from one another. Finally, systematic monitoring and evaluation

mechanisms should be established to regularly assess MDL effectiveness, identify emerging challenges, and refine strategies based on evidence.

The success of Modular Distance Learning in improving primary mathematics performance requires a holistic, sustained commitment from multiple stakeholders including schools, district offices, families, and community organizations. By systematically addressing the identified challenges, leveraging teachers' demonstrated resilience and collaborative capacity, and investing in necessary resources and systems, educational institutions can create a supportive environment where all primary learners develop strong mathematics competencies and positive attitudes toward the subject. The path forward demands not only recognition of current challenges but also decisive action to transform them into opportunities for educational improvement and student success.

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