IJNRD.ORG ISSN : 2456-4184
INTERNATIONAL JOURNAL OF NOVEL RESEARCH AND DEVELOPMENT (IJNRD) | IJNRD.ORG
An International Open Access, Peer-reviewed, Refereed Journal

INTERVENTION STRATEGIES TO IMPROVE NUMERACY SKILLS OF GRADE 6 LEARNERS

JUDE O. TALINIO

Institute of Graduate and Professional Studies,
Lyceum-Northwestern University
Dagupan City

Abstract :

This study assessed the level of performance in Mathematics of the Grade 6 learners of Matubog Elementary School, Camiling East District, Tarlac Province during the school year 2023-2024 through quantitative-descriptive research design. Quantitative-descriptive research design was employed to determine the level of performance in Mathematics of the Grade 6 learners based on the results of the pre-numeracy test during the school year 2023-2024. It was also utilized to look into the perceptions on the factors affecting the level of performance of the Grade 6 learners in terms of learners' study techniques and learners' attitude towards Mathematics and to what extent these affected their performance in Mathematics. Based on the findings, intervention strategies in Mathematics were proposed to enhance the level of performance in Mathematics of the Grade 6 learners. The sources of data in this study were 2 Grade 6 Mathematics teachers in Matubog Elementary School who provided data to answer the sub-problems raised in the study with 42 Grade 6 learners as subjects of the study. Weighted mean was utilized in the study to treat the data statistically.

Summary of Findings: 1.0 Level of Performance in Mathematics of the Grade 6 Learners Out of 42 Grade 6 learners in Mathematics, 19 or 45.24% are categorized as numerates; 13 or 30.95% are categorized as nearly numerates; and 10 or 23.81% are categorized as non-numerates. 2.0 Perceptions on Factors Affecting the Level of Performance in Mathematics of Grade 6 Learners In terms of learners' study techniques, the Grade 6 learners perceived that the Grade 6 learners' study techniques affected their performance to a "moderate extent" with overall WM of 3.43. In terms of learners' attitude towards Mathematics, the Grade 6 learners "agreed" that their attitude towards Mathematics affected their performance with overall WM of 4.13. 3.0 Proposed Intervention Strategies Intervention strategies were proposed to enhance the level of performance in Mathematics of the Grade 6 learners.

Based on the findings of the study, the following conclusions were drawn: 1. Most of the Grade 6 learners are categorized as numerates which indicates they are able to understand and work with numbers and other mathematical concepts and apply these to solve a variety of problems. 2. Generally, the Grade 5 learners agreed that study techniques and attitude towards Mathematics affect their performance in Mathematics. 3. The proposed Mathematics intervention strategies focused on number and operations, algebra, geometry, measurement, and data analysis and probability for teachers and other study techniques and strategies for learners.

Based on the findings and conclusions drawn, the following recommendations were offered: 1. The proposed Mathematics intervention strategies should be considered for implementation by school authorities concerned to enhance the level of performance of learners in Mathematics. 2. Teachers may organize periodic seminars and workshops for learners, parents, teachers and school authorities designed to promote positive attitudes towards Mathematics. 3. Conduct future sessions or peer tutoring especially for those who have low performance in Mathematics. 4. More innovative interventions should be encouraged to make a significant difference in the level of numeracy skills of learners. 5. Other learning activities should be developed using contextualization, translation, indigenization, and localization. 6. Relevant information, knowledge and skills be equipped to the teachers so that they may address the existing gaps and issues encountered in developing numeracy skills of learners. 7. Other researchers may conduct similar studies on a wider scope to validate the findings of the study.

Keywords: intervention strategies, numeracy skills

INTRODUCTION

Global educational policies and programs have brought significant challenges to many education systems in the world through educational policy in the twenty-first century as the key to global security, sustainability and survival. The effect of globalization on education has called for survival measures of education the world over, and all organizations continuously strive for sustainable development and survival with no let up. Improving the quality in elementary education has a high priority on the educational agenda of many countries. Public education, the cornerstone of our nation's economic vitality, national security, and social and political institutions must provide our children with the knowledge, skills, and habits of mind and body needed to prepare them to become active and productive (Aggrey, 2022).

Mathematics is one subject that pervades life at any age and in any circumstance. Thus, its value goes beyond the classroom and the school. Mathematics as a school subject must be learned comprehensively and with much depth (Capate & Lapinid, 2015).

Mathematics literacy is a wide range of knowledge, understanding and appreciation of what Mathematics can accomplish rather than implying knowledge of various branches of Mathematics or complex mathematical formulas. Mathematics literacy is the ability to understand and apply basic knowledge of Mathematics in everyday life, which means, it entails comprehending and combining mathematical core concepts, terminologies, facts, and skills in response to the external situation's requirement of the real world.

Mathematics has a vital part in the lives of students according to Layug (2021). It offers students job choices across many content areas of sciences, technologies, engineering and Mathematics. It helps to promote critical thinking and address student difficulties. This makes them successful in the future in various ways.

Mathematics has been one of the vital components of the educational system. Its objectives and goals are practical and useful to daily life. Thus, learners who undertake formal education are required to pass the subject to achieve higher level of understanding and application. In the elementary grades, convincing learners that they can do Mathematics and helping them enjoy it are important goals. Elementary school learners need at least on how Mathematics instruction each day.

Mathematics as a discipline requires constant practice and study to have full understanding of the subject. However, it has been considered a rational discipline of excellence and one of the most useful and fascinating discussions of human knowledge. Every individual has his own strengths and weaknesses, so it is necessary for Mathematics teachers to provide learning materials which can be used by the learners for a better learning of the subject.

One of the key abilities that a pupil must achieve is numeracy. Being numerate entails being able to identify numbers with confidence, having counting abilities, being able to recognize numbers, being able to use simple operations and problem-solving, and being able to apply these techniques to understand complex concepts. The key to understanding and developing in Mathematics is mastering them. It is one of the teachers' primary areas of concentration along with literacy (Pitogo and Oco, 2023).

Numeracy is the set of abilities that a learner needs to perform mathematical operations. It involves identifying and comprehending the world's mathematical processes. As learners advance, their number-matching, familiarity and critical thinking skills become highly developed. These abilities enable students to use arithmetic to make informed decisions and solve problems (Magtolis, 2023).

A strong foundation in numeracy is vital for every child and young person since it strengthens their ability to engage in education, attain their full potential, and fully participate in society. Hence, the Department of Education (DepEd) reiterated that numeracy skills are the cornerstone of lifelong learning (DepEd Order No. 12, Series of 2015). These skills do not develop naturally, necessitating careful planning and instruction. For this matter, the management of instruction along this discipline is guided by goals that are set to be realized.

Numeracy enables the development of mathematical knowledge and skills required for integrated and active involvement in any community, as well as adaptation to expected changes. It entails recognizing and comprehending Mathematics' function in the world, as well as possessing the attitudes and capacities to use mathematical knowledge and skills effectively (Alcantara, 2022).

In this changing world, those who understand and can do Mathematics will have significantly enhanced opportunities and options for shaping their futures. Numeracy skills are becoming increasingly important in the workplace due to rapid technological advancements. It is now recognized as a critical employability skill as more workers take on more complex tasks. To do meaningful work in a global and increasingly automated economy, all require a citizenry with higher levels of numeracy.

In a society that has become technically oriented, innumeracy has replaced illiteracy as the principal education gap. Based on the results of the Program for International Student Assessment (PISA, 2018) and Trends in International Mathematics and Science Study (TIMSS, 2019), Filipino students performed poorly, ranking near the bottom of the rankings in both scientific and mathematical literacy. The results pointed to a major crisis in the country's basic education system.

The international assessment results reflect the urgency of improving the quality of basic education in the Philippines. The battle for quality basic education will be fought and won inside the classroom by the teachers. With this, the ZK to 12 Reform has changed the landscape of teacher quality requirements in the Philippines. It also provides the general goal of basic education. This goal is to develop 21st century learners by providing them basic competencies and numeracy, critical thinking and learning skills, and desirable values to become productive, efficient, technologically wise, socially aware, patriotic, and responsible citizens. This is why Alestre (2016) emphasized that it is important for teachers to continue to professionalize themselves and one way of doing this is through proper training.

According to Capuyan (2019), along with training as means to cope up with the needs of learners for quality education, fully competent teachers must develop strong mathematical content knowledge and be armed with mathematical pedagogical knowledge and management skills. As a result, Elementary Mathematics teachers are expected to possess sound numeracy key skills. They must display an appropriate mathematical disposition and value their professional development.

Numeracy is the knowledge, skills, behaviors and dispositions that students need in order to use Mathematics in a wide range of situations. It involves recognizing and understanding the role of Mathematics in the world and having the dispositions and capacities

to use mathematical knowledge and skills purposefully. While much of the teaching of concepts and skills to support numeracy happens in the Mathematics learning area, it is strengthened as students take part in activities that connect their learning in the Mathematics classroom within the context of other curriculum areas.

Teachers who can effectively demonstrate management skills such as planning and creating an effective strategy, good communication skills, decision making, leadership skills, problem-solving skills, time management, conceptual skills, controlling, motivating, and leading, whether consciously or unconsciously, appear to be better teachers. They encourage learners' creativity and curiosity, reward perseverance, intellectual honesty, objectivity, and independent thinking (Mendoza, 2021).

Teachers' management skills strengthen their numeracy skills such as knowing and understanding, estimating, computing and solving, visualizing and modeling, representing and communicating, conjecturing, reasoning, proving, applying, and connecting. With this, mathematical difficulties can be predicted and their impact reduced through effective intervention measures such as in-service training, LAC session, coaching, and mentoring.

In view of the low performance, further studies in numeracy are urgent and imperative. In order to succeed in Mathematics, teachers and learners have to develop numeracy skills. As an advantage, they will demonstrate confidence and competence in using a number which will allow them to solve problems, analyze information and make informed decisions based on calculations.

Cognizant of the importance of Mathematics as a basic subject and alarmed by the prevailing situation as far as learners' performance in this subject is concerned, the researcher decided to propose intervention strategies to improve the performance in Mathematics of Grade 6 learners in Matubog Elementary School, Camiling East District, Tarlac Province during the school year 2023-2024.

Statement of the Problem

This study assessed the level of performance of the Grade 6 learners in Mathematics in Matubog Elementary School, Camiling East District, Tarlac Province during the school year 2023-2024.

Specifically, it sought to answer the following sub-problems:

1. What is the level of performance in Mathematics of the Grade 6 learners?
2. What are the factors affecting the academic performance of the Grade 6 learners as perceived by them in terms of the following:
   - 2.1 Study techniques; and
   - 2.2 Attitude towards Mathematics?
3. What intervention strategies may be proposed to improve the level of performance in Mathematics of the Grade 6 learners?

METHODOLOGY

This chapter presents the research design, the sources of data, instrumentation and data collection, and the tools for data analysis in this study.

Research Design

This study assessed the level of performance in Mathematics of the Grade 6 learners of Matubog Elementary School, Camiling East District, Tarlac Province during the school year 2023-2024 through quantitative-descriptive research design.

Quantitative-descriptive research design was employed to determine the level of performance in Mathematics of the Grade 6 learners during the school year 2023-2024. It was also utilized to look into the different strategies used by teachers to develop numeracy skills of learners. Based on the findings, intervention strategies were proposed to enhance the level of performance in Mathematics of the Grade 6 learners.

Sources of Data

The sources of data in this study were 2 Grade 6 Mathematics teachers in Matubog Elementary School who provided data to answer the sub-problems raised in the study with 42 Grade 6 learners as subjects of the study.

Instrumentation and Data Collection

To gather the data needed in this study, the researcher used the results of pre-numeracy tests in Mathematics of the Grade 6 learners during the school year 2023-2024 to determine their level of performance. A constructed questionnaire was also employed to look into the different strategies used by teachers to develop numeracy skills of learners.

Upon completion of the questionnaire, it was presented to the researcher's adviser. Suggestions were incorporated to improve the instrument. Data gathered were tabulated and interpreted through appropriate statistical tools.

Tool for Data Analysis

Weighted mean was utilized to treat the data statistically.

The formula is:

$$WM = \frac{\Sigma fx}{N}$$

Where:

WM = Weighted Mean

Σfx = the sum of the products per column

N = the number of respondents

To interpret the data, the following reference was used:

Point Values	Statistical Limits	Descriptive Equivalent (DE)	
		Sub-problem no. 2.1	Sub-problem no. 2.2
5	4.50 - 5.00	Full Extent (FE)	Strongly Agree (SA)
4	3.50 - 4.49	Great Extent (GE)	Agree (A)

3	2.50 - 3.49	Moderate Extent (ME)	Undecided (U)
2	1.50 - 2.49	Slight Extent (SE)	Disagree (D)
1	1.00 - 1.49	Not At All (NAA)	Strongly Disagree (SD)

RESULTS AND DISCUSSION

This chapter presents the data gathered and their analysis and interpretation to answer the sub-problems raised in the study.

Level of Performance in Mathematics of the Grade 6 Learners

This section presents the level of performance in Mathematics of the Grade 6 learners in Matubog Elementary School, Camiling East District, Tarlac Province based on their assessment in Mathematics during the school year 2023-2024 to answer sub-problem number 1.

In line with this, Table 1 presents the level of performance of the Grade 6 learners based on their performance in Mathematics during the school year 2023-2024.

TABLE 1
Level of Performance in Mathematics of the Grade 6 Learners

Performance Rating	*f*	%
• Numerates	19	45.24
• Nearly numerates	13	30.95
• Non-numerates	10	23.81
TOTAL	**42**	**100%**

In this study, the numeracy level referred to was the result of pre-numeracy test. It was categorized as numerates (75-100 points); nearly numerates (50-74 points); and non-numerates (0-49 points).

As shown in Table 1, out of 42 Grade 6 learners, 19 or 45.24% are numerates; 13 or 30.95% are nearly numerates and 10 or 23.81% are non-numerates. Numerates are able to understand and work with numbers and other mathematical concepts and apply these to solve a variety of problems. Nearly numerates still need to understand numbers while non-numerates are unfamiliar with mathematical concepts and methods. They are unable to use mathematics.

These results revealed that many of the learners are in need of intervention or programs in order to develop their skills and improve their numeracy level.

These results imply the need to develop the numeracy skills of the Grade 6 learners for them to enhance their level of performance in Mathematics. A strong foundation in numeracy is vital for learners since it strengthens their ability to engage in education, attain their full potential, and fully participate in society. The Department of Education (DepEd) reiterated that numeracy skills are the cornerstone of lifelong learning (DepEd Order No. 12, Series of 2015). To succeed in Mathematics, teachers and learners have to develop numeracy skills. As an advantage, they will demonstrate confidence and competence in using a number which will allow them to solve mathematical problems, analyze information and make informed decisions based on calculations.

Perceptions on Factors Affecting the Level of Performance in Mathematics of Grade 6 Learners

This section presents the perceptions of the Grade 6 learners on the factors affecting their level of performance in Mathematics in Matubog Elementary School, Camiling East District, Tarlac Province in terms of learners' study techniques and learners' attitude towards Mathematics and to what extent these affected their performance to answer sub-problem number 2. The data are presented in Tables 2A and 2B.

Learners' Study Techniques

Table 2A presents the perceptions on Grade 6 learners' study techniques and to what extent these affected their performance.

TABLE 2A
Perception on Learners' Study Techniques

Indicators	WM	DE
• Reading some text before the session of the class	3.25	ME
• Recognizing key points when there are made in lecture	3.67	GE
• Comparing your notes after class	2.75	ME
• Testing yourself	3.42	ME
• Doing the assignments regularly	3.83	GE
• Taking notes during class hours	3.75	GE
• Studying hard at night	3.33	ME
Overall WM	**3.43**	**ME**

Legend: WM=Weighted Mean

Point Value	Statistical Limit	Descriptive Equivalent (DE)
5	4.50-5.00	Full Extent (FE)
4	3.50-4.49	Great Extent (GE)
3	2.50-3.49	Moderate Extent ME)
2	1.50-2.49	Slight Extent (SE)
1	1.00-1.49	Not At All (NAA0

It can be gleaned in Table 2A that the Grade 6 learners used different study techniques to learn Mathematics which affected their academic performance with an overall weighted mean of 3.43. This means that their study techniques moderately affected their performance in Mathematics.

The results revealed that doing the assignments regularly is the highest with a weighted mean of 3.83 and interpreted as "great extent." Most of the respondents take notes during class hours (WM=3.75) and recognized key points when these are made in lecture (WM-3.67). These affected their academic performance to a "great extent." However, among the learners' study techniques, the lowest two and often used by the Grade 6 learners are reading some text before the session of the class (WM=3.25) and comparing notes after class (WM=2.75), both described as "moderate extent."

These results imply that despite the fact that the Grade 6 learners have different study techniques, they still find difficulties in Mathematics. The learners must develop the best study techniques that will suit their capabilities in order to learn Mathematics. The learners may fail to maintain higher level of achievements in Mathematics due to a particular study habit. It is therefore desirable that the learners should be motivated toward such habits of study by which they may score good grades with better understanding of the subject matter.

Learners' Attitude Towards Mathematics

Table 2B presents the perceptions of the Grade 6 learners' attitude towards Mathematics and to what extent these affected their performance.

TABLE 2B
Perception on Learners' Attitude Towards Mathematics

Indicators	WM	DE
• Mathematics gives me the pleasure of creating something.	4.75	SA
• Mathematics allows me to develop good reasoning.	4.67	SA
• Working with Mathematics allows me to acquire a well-balanced personality.	4.83	SA
• When I start solving, I feel completely in the dark.	3.75	A
• If I can't find the solution, I feel defeated.	4.08	A
• When confronted with a problem, I want to give up right away.	3.75	
• Mathematics is doing something that I am told to do and that I have to keep doing over and over, like a machine.	3.83	A
• I am confident that I can learn Mathematics.	3.53	A
• I am always under a terrible scenario.	3.92	A
• I am comfortable expressing my own ideas on how to look for solutions to a difficult problem in Mathematics.	4.17	A
Overall WM	**4.13**	**A**

Legend: WM=Weighted Mean

Point Value	Statistical Limit	Descriptive Equivalent (DE)
5	4.50-5.00	Strongly Agree (SA)
4	3.50-4.49	Agree (A)
3	2.50-3.49	Undecided (U)
2	1.50-2.49	Disagree (D)
1	1.00-1.49	Strongly Disagree (SD)

Table 2B revealed that the Grade 6 learners strongly agreed that working with Mathematics allow them to acquire a well-balanced personality with WM=4.83; Mathematics gives them the pleasure of creating something with WM=4.75; and Mathematics allows them to develop good reasoning with WM=4.67.

On the other hand, the Grade 6 learners agreed that they are always under a terrible strain in a Mathematics class with WM=3.92; they do something that they are told to do and keep doing over and over with WM=3.83; and when confronted with a problem, they want to give up right away with WM=3.75. When the learners start solving, they agreed that they feel completely in the dark and if they cannot find the solution, they feel defeated. These resulted to weighted means of 3.75 and 4.08. However, the learners also agreed that they are comfortable expressing their own ideas on how to look for solutions to a difficult problem in Mathematics with WM=4.17. They are all confident that they can learn Mathematics as shown in the weighted mean of 3.53.

These results indicate that the Grade 6 learners have positive attitude towards Mathematics. Positive attitudes towards Mathematics denote interest or feeling towards studying Mathematics. However, even if the learners try to develop positive attitudes in Mathematics, they find a hard time learning the subject.

Proposed Intervention Strategies

Mathematics intervention strategies were proposed to enhance the level of performance in Mathematics of the Grade 6 learners to answer sub-problem number 3. The proposed intervention strategies dealt with number and operations, algebra, geometry, measurement and data analysis and probability for teachers and other study techniques and strategies for learners.

SUMMARY

This study assessed the level of performance in Mathematics of the Grade 6 learners of Matubog Elementary School, Camiling East District, Tarlac Province during the school year 2023-2024 through quantitative-descriptive research design.

Quantitative-descriptive research design was employed to determine the level of performance in Mathematics of the Grade 6 learners based on the results of the pre-numeracy test during the school year 2023-2024. It was also utilized to look into the perceptions on the factors affecting the level of performance of the Grade 6 learners in terms of learners' study techniques and learners' attitude towards Mathematics and to what extent these affected their performance in Mathematics.

Based on the findings, intervention strategies in Mathematics were proposed to enhance the level of performance in Mathematics of the Grade 6 learners.

The sources of data in this study were 2 Grade 6 Mathematics teachers in Matubog Elementary School who provided data to answer the sub-problems raised in the study with 42 Grade 6 learners as subjects of the study.

Weighted mean was utilized in the study to treat the data statistically.

Summary of Findings:

1.0 Level of Performance in Mathematics of the Grade 6 Learners

Out of 42 Grade 6 learners in Mathematics, 19 or 45.24% are categorized as numerates; 13 or 30.95% are categorized as nearly numerates; and 10 or 23.81% are categorized as non-numerates.

2. 0 Perceptions on Factors Affecting the Level of Performance in Mathematics of Grade 6 Learners

2.1 In terms of learners' study techniques, the Grade 6 learners perceived that the Grade 6 learners' study techniques affected their performance to a "moderate extent" with overall WM of 3.43.

2.2 In terms of learners' attitude towards Mathematics, the Grade 6 learners "agreed" that their attitude towards Mathematics affected their performance with overall WM of 4.13.

3.0 Proposed Intervention Strategies

Intervention strategies were proposed to enhance the level of performance in Mathematics of the Grade 6 learners.

CONCLUSIONS

Based on the findings of the study, the following conclusions were drawn:

1. Most of the Grade 6 learners are categorized as numerates which indicates they are able to understand and work with numbers and other mathematical concepts and apply these to solve a variety of problems.
2. Generally, the Grade 5 learners agreed that study techniques and attitude towards Mathematics affect their performance in Mathematics.
3. The proposed Mathematics intervention strategies focused on number and operations, algebra, geometry, measurement, and data analysis and probability for teachers and other study techniques and strategies for learners.

RECOMMENDATIONS

Based on the findings and conclusions drawn, the following recommendations were offered:

1. The proposed Mathematics intervention strategies should be considered for implementation by school authorities concerned to enhance the level of performance of learners in Mathematics.
2. Teachers may organize periodic seminars and workshops for learners, parents, teachers and school authorities designed to promote positive attitudes towards Mathematics.
3. Conduct future sessions or peer tutoring especially for those who have low performance in Mathematics.
4. More innovative interventions should be encouraged to make a significant difference in the level of numeracy skills of learners.
5. Other learning activities should be developed using contextualization, translation, indigenization, and localization.
6. Relevant information, knowledge and skills be equipped to the teachers so that they may address the existing gaps and issues encountered in developing numeracy skills of learners.
7. Other researchers may conduct similar studies on a wider scope to validate the findings of the study.

REFERENCES

Aggrey, Ruby (2022). "The Impact of Globalization on Education: A Blessing or a Curse." International Education Journal.

Alcantara, Arnel A. (2022). "Management of Numeracy Instruction in Public Elementary Schools in the Division of Batangas Province". International Journal of Research in Engineering, Science and Management.

Alestre, L. (2016). "The Meaning of Training and Seminars to Public School Teachers: Some Stories to tell". International Journal of Advancements in Research and Technology.

Capate, Romee Nicker A. & Lapinid, Minnie Rose C. (2015). "Assessing the Mathematics Performance of Grade 8 Students as Basis for Enhancing Instruction and Aligning with K to 12 Curriculum". DLSU Research Congress.

Capuyan, Dennis (2019). "Mathematics Remedial Program for Elementary Learners in Cebu City, Philippines". American Research Journal of Humanities and Social Science.

Layug, Girlie D. (2021). "Teachers' Interventions in Improving Numeracy Skills of Grade 7 Students in Baguio City National High School". 4th International Conference on Advanced Research in Teaching and Education.

Magtolis, Dionesio A. (2023). "Effectiveness of Project Renrich in Improving the Numeracy Skills of Grade 5 Learners." Psychology and Education: A Multidisciplinary Journal.

Mendoza, Ma. Jo-Ann A. (2021). "The Development of Numeracy Skills of Primary Grade Pupils Through Mother Tongue-Based Multilingual Education: A Phenomenological Study". United International Journal for Research and Technology.

Pitogo, Shallinie D. and Oco, Richard M. (2023). "Pupils' Numeracy Skills and Mathematics Performance." International Journal of Multidisciplinary Research and Publications.