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Department of Education
REGION IV-A CALABARZON
SCHOOLS DIVISION OF RIZAL
SAN MATEO SUB-OFFICE
GUINAYANG NATIONAL HIGH SCHOOL

**SNUMBOOK AS HOME TASKS FOR AN ENHANCED NUMERACY LEVEL
OF GRADE 7 STUDENTS**

An Action Research
Presented to the
DepEd Division of Rizal

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ABSTRACT

Supporting the mandate of DepEd's MATATAG program particularly the "Make the curriculum relevant to develop competent, job-ready, active, and responsible citizens" and aligned with the Republic Act No. 10533, also known as the "Enhanced Basic Education Act of 2013," Section 10.3 (Production and Development of Materials), the researcher conduct this study to see the effects of SNUMBOOK (Skills Numeracy Book) in grade 7 students of Guinayang National High School for SY 2023-2024

The study aimed to determine if SNUMBOOK could improve student's numeracy levels. Following the numeracy assessment, the researcher identified the students who are emerging numerates and non-numerates. The identified students were given SNUMBOOK as intervention. After the utilization of the material the respondents took posttest. The one-group pretest-posttest quasi experimental design revealed that students scored significantly higher on the post-test after using the SNUMBOOK. The Wilcoxon test indicated that the SNUMBOOK had a positive significant effect on students' numeracy levels.

The areas improved through the SNUMBOOK with parental involvement are increased practice and reinforcement, support and encouragement, and communication. The materials provided an avenue for the teachers and parents to show support and encouragement for the students as the latter are provided with practices and reinforcements while SNUMBOOK also opened good communication between the parents and the teachers as the two partnered up in helping the students to progress through SNUMBOOK.

Therefore, the use of SNUMBOOK is highly recommended to be adopted in all grade levels for it caters students who are emerging numerates and non-numerates.

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- The Researcher

CONTEXT AND RATIONALE

In the modern day, Mathematics is of utmost significance. It enhances human thinking and reasoning, helping us understand ourselves and our surroundings better. Crowe (2022) states that math is essential not just in school but also in everyday tasks like shopping and financial planning. Creswell (2020) adds that people with strong math skills excel in logical thinking, problem-solving, and creativity. Engaging with math improves reasoning, analytical thinking, and practical skills necessary for personal and professional success.

As students advance through their educational experience and make the transition into adulthood, a strong grasp of mathematics is essential. Future mathematical literacy development depends on grasping fundamental ideas and recognizing patterns. Recent results from the Program for International Student Assessment (PISA) 2022 however, show that Filipino kids' proficiency in Mathematics is worrying. Only 16% of Filipino students achieved at least the basic level of proficiency in Mathematics according to Chi (2023). This means that only about one out of five Filipino students who participated in PISA "can interpret and recognize how a simple situation can be represented mathematically without direct instructions. According to Desiderio (2022) and Suralta (2022), the pandemic's difficulties have made learning setbacks for students even more severe.

Despite the Department of Education's introduction of the Basic Education Learning Continuity Plan (BE-LCP) to prevent pandemic interruptions, many Grade 7 children beginning the 2022–2023 school year lack the requisite numeracy abilities. This emphasizes the significance of programs like the DepEd's MATATAG agenda, which aims to improve educational capabilities and get students ready to be capable and responsible members of society.

Instructional materials play a crucial role in academic performance. It's essential for teachers to create these materials to support students' academic progress. These materials make learning enjoyable by facilitating a healthy exchange of information between students and teachers (as cited in Quisumbing et al., 2017).

In line with Section 10.3 (Production and Development of Materials) of Republic Act No. 10533, also known as the "Enhanced Basic Education Act of 2013," specifies that the production and development of locally created teaching and learning materials shall be encouraged. National policy dictates that the approval of these materials will be managed by regional and division education units.

To address challenges in numeracy and to conform with the Republic Act No. 10533, the researcher developed the SNUMBOOK, a series of home-based tasks designed to enhance numeracy levels of students. Modeled after successful programs like KUMON, the SNUMBOOK caters specifically to public school students who may require additional support to meet numeracy level expectations.

ACTION RESEARCH QUESTIONS

This research explored the effect of SNUMBOOK for Grade 7 Math students of Guinayang National High School for the school year 2023-2024.

Specifically, this research answered the following questions.

1. What is the numeracy level of the students in the pretest and post-test?
2. Is there a significant difference between the mean scores of the pretest and posttest of the students?
3. What were the areas improved through SNUMBOOK with Parental Involvement at Homes?

PROPOSED INNOVATION, INTERVENTION AND STRATEGY

As DepEd works on addressing the problem of the basic skills of students in basic education, many studies identifying the effectiveness of interventions just like the research of Layug are conducted. Pelayo (2023) also conducted an effectiveness study of the intervention for grade 9 non-numerates. She takes note that the pre-test conducted to check the numeracy skills of the grade 9 students showed that most grade 9 students are identified as non-numerates. In her study, she concluded that conducting remedial classes and providing additional learning support materials and activities are effective interventions to combat non-numeracy.

Rather than relying solely on traditional remediation, the intervention utilized the SNUMBOOK (Skills Numeracy Book), a collection of enrichment activities provided to students. This allowed them to engage in exercises at home with parental assistance. The SNUMBOOK consists of ten booklets designed to enhance mastery in the topics identified as least mastered in the Numeracy Assessment. These topics include number discrimination, missing numbers, addition and subtraction, multiplication and division, word problems, geometric patterns, and geometric visualization. It was validated by parents, Math teachers and Master teachers of San Mateo. The respondents unanimously agreed that the SNUMBOOK meets students' needs is well-organized and methodical and is aligned with the Department of Education's curriculum criteria.

After the identification of students who are emerging numerates and non numerates orientation of parents were done. During the orientation it was emphasized the importance of involvement of parents in the use of the material. The booklet is given every after the remedial session and will be accomplished at home with the presence of their parent or guardian. Parental involvement in these home tasks is crucial for a child's success and the development of their mathematical abilities. Since these activities occur at home, parents are responsible for creating a supportive learning environment, closely overseeing their child's work, establishing, and maintaining a consistent schedule, monitoring progress, and encouraging a growth mindset.

The teacher will help parents and students create a consistent schedule for completing the tasks. Additionally, the teacher will give detailed instructions on how students should review their work before submission. It is also the teacher's responsibility to track student progress, monitor their development, and encourage critical thinking after each assignment.

ACTION RESEARCH METHODS

The study employed two research designs: the descriptive and quasi-experimental method of research.

A. Participants and/or other Sources of Data and Information

The researcher included 30 students based on their numeracy levels from a Numeracy Assessment. All students identified as non-numerate or emerging numerates were selected.

B. Data Gathering Methods

The study was conducted during the second quarter of the 2023-2024 school year. Permission was obtained from the Division Office of DepEd-Rizal.

A pretest-posttest design was used with one group of students. The students took the test using NUMAT (Numeracy Assessment Tool) of Department of Education-RIZAL. Students identified as non-numerate or emergent numerates were given the SNUMBOOK as their material. After completing the SNUMBOOK exercises, students took a posttest. Interviews were also conducted with parents to gather data on their involvement and the improvements observed through the SNUMBOOK.

C. Data Analysis

The study utilized a descriptive research methodology and experimental one group pretest-posttest design. The descriptive method, as described by Atmowardoyo (2018) is employed to systematically characterize the current phenomena being studied. Its purpose is to provide a qualitative description of the study and to compare the results of the respondents. Relatively, the methodology was appropriate for this study because it sought to describe the level of numeracy of the students. A experimental one group pretest-posttest design was utilized in this study. Thomas (2020), experimental design aims to establish a cause-and-effect relationship between an independent and dependent variable, it was utilized to validate the effectiveness of the SNUMBOOK and its potential as tasks at home in enhancing the academic achievement and numeracy of grade 7 students.

The researcher employed data gathering instruments such as pretest and posttest assessments. The Wilcoxon signed-rank test will assess the significant differences between pretest and posttest results.

RESULTS AND DISCUSSIONS

1. Numeracy Level of the Respondents the During the Pre-test and Posttest

Table 1: Numeracy Level of the Respondents During the Pre-test and Posttest

Score	Descriptor	RESPONDENTS			
		Pretest		Posttest	
		F	%	F	%
76 – 100	Above Numerate	0	0.0	17	56.67
51 – 75	Numerate	0	0.0	12	40.00
26 – 50	Emerging Numerate	28	93.33	1	3.33
0 – 25	Non-numerate	2	6.67	0	0
Total		30	100.0	30	100.0
Mean		41.77		74.40	
Standard Deviation		7.46		12.54	
Descriptor		Emerging Numerate		Numerate	

After being immersed to the developed SNUMBOOK, 17 out of 30 or 56.67% of the students fall under **Above Numerate Level**. There are 12 out of 30 or 40.00% of the students fall under **Numerate Level**. The number of participants fall under **Emergent Numerate Level** was reduced to 1 out or 30 or 3.33%, and none of the students of the students fall under **Non-numerate Level** in the posttest. Furthermore, the pretest performance of the students has a mean score of 41.77 and a standard deviation of 7.46, interpreted as **Emerging Numerate**. The posttest performance of the students has a mean score increased to 74.40 and a standard deviation of 12.54 with verbal interpretation of **Numerate**. It can be concluded that the level of numeracy among students have increase.

The current study yielded the same result as the study of Belleza (2023) about the increase of the post-test scores of the students after utilizing learning packets at home with parental involvement. Just like this study, Belleza (2023) invited parents to be hands-on and take charge of the numeracy skills of their children when they do home-based activities.

This result means that the developed SNUMBOOK enhanced the level of numeracy and performance of the students.

2. Test of Difference Between the Mean Scores of the Pretest and Posttest in the Numeracy Assessment

Table 4: Wilcoxon: Test of Difference Between the Mean Scores of the Pretest and Posttest in the Numeracy Assessment

Tests	Mean Score	SD	z-value	p-value	Interpretation
Pretest	41.77	7.49	4.78	0.000	Significant
Posttest	74.40	12.19			

Legend: If the p-value is less than or equal to 0.05 level of significance then significant

As apparent from Table 25, the computed p- value of 0.000 is less than the level of significance of 0.05. Therefore, there is sufficient evidence to support that there is a significant difference between the mean scores of the pretest and the posttest of the respondents. There is proof to suggest that the students' performance increased after completing the SNUMBOOK. This aligns with the findings of Songsirisak (2019), suggesting that homework aids in student learning and boosts academic performance. It provides students with the opportunity to practice and review language concepts, leading to improved performance in tests.

The finding proves that SNUMBOOK is a beneficial tool for both teachers and students, successfully enhancing their mastery of numerical abilities, promoting academic progress, and enhancing numeracy level when utilized as tasks to be completed at home with the help of parents.

3. Areas Improved Through the SNUMBOOK with Parental Involvement at Homes

The areas enhanced through the SNUMBOOK with parental involvement include increased practice and reinforcement, support and encouragement, and improved communication. The materials allowed teachers and parents to provide students with practice and reinforcement, while also fostering good communication between parents and teachers, as they collaborated to help students progress using the SNUMBOOK.

The study's findings align with Belleza (2022), which show a significant positive improvement in students' numeracy skills due to the use of an enhanced mathematics learning kit and greater parental involvement at home. This method has been particularly effective for non-numerate learners, even in challenging learning environments. The results suggest that structured parental involvement in using the SNUMBOOK leads to cumulative benefits, improving numeracy skills among learners with low numeracy levels, and enabling them to continue learning basic numeracy at home.

RECOMMENDATIONS

In light of the findings, the following recommendations are hereby offered:

1. Students who struggle with numeracy may utilize the SNUMBOOK due to its ability to accommodate individual learning speeds and enhance their numerical proficiency even at home.
2. Teachers may engage in collaborative efforts to apply the discoveries of the study towards the improvement and enhancing of home tasks.

- School administrators may continue to provide their support, make any required modifications, and guarantee the full implementation of assigning home tasks, as it helps students improve their numeracy levels.
- Other educational institutions in the district may utilize this resource as it has the capacity to assist the students to reach their desired level of numeracy both within the classroom environment and at home.
- Future researchers may carry out a comparative study in different academic disciplines and adapt or improve the content based on the students' requirements.

RESEARCH ACTION PLAN

After the conduct of the study, the researchers developed an action plan to make the result of this study useful.

Objectives	Activity	Persons Involved	Time Frame	Resources Needed
Discuss the results of the study with the DepEd Community	Presentation of the result to the MATH department for continuous utilization of SNUMBOOK	Mary Grace M. Buenviaje	Lac Session	Research Manuscript PPT Presentation
	Presentation of the study with the GNHS Faculty	Mary Grace M. Buenviaje GNHS Faculty	INSET	Research Manuscript PPT Presentation Memo
	Presentation of the study to the District Office through the Research Group of San Mateo District	Mary Grace M. Buenviaje District PSDS District Researchers	1 hour	Research Manuscript PPT Presentation Memo
	Presentation of the study to the Division Research Forum	Mary Grace M. Buenviaje Division Researchers	1 hour	Research Manuscript PPT Presentation Memo
Discuss the results of the study with other stake holders	Presentation of the study to the parents and LGU	Mary Grace M. Buenviaje Division Researchers Parents LGU's	1 hour	Research Manuscript PPT Presentation Memo
Dissemination of the results of the study to other schools for potential adoption of the SNUMBOOK	Distribution of research copies and copies of SNUMBOOK to other schools	Mary Grace M. Buenviaje Division Researchers		Research Manuscript Copy of the material

Financial Report

Activity	Eligible Expenditures	Quantity	Cost in PHP	Source
Pre-Test of the Numeracy Assessment	Bond papers	6 reams	1,200	MOOE
	Black Ink	4 bottles	200	
Pilot Testing	Bond papers	5 reams	1,000	MOOE

	Ink	1 set	200	
Utilization of the SNUMBOOK on Project EASY Math	Bond papers	8 reams	2,000	MOOE
	Ink	Black Ink	200	
Post-Test of the Numeracy Assessment	Bond papers	1 ream	200	MOOE
	Black Ink	1 bottle	50	
Research dissemination expenses	Food	8 Teachers	400.00	MOOE
Research presentation in the district	Registration	1 researcher	200.00	MOOE
Total			5,650.00	

PLANS OR DISSEMINATION AND UTILIZATION

To make research more functional, it should be disseminated and used by others. The research results will be cascaded to the internal and external stakeholder of during parents-teachers meeting and school management committee meeting. With the approval of top management, the results will be presented at various conferences and platform, and research summits for proper dissemination. Copies of the research will be distributed to different schools for reference, especially for the potential adoption of the SNUMBOOK, which could enhance students' numeracy level. Online publication is also being considered to reach a broader audience of researchers for potential replication of the project.

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