

Effectiveness of Remedial Activities in Teaching Numeracy in Improving the Performance of Identified Grade 6 Non-Numerates

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Abstract—Pupils' Academic Performance is the basis on how teachers start remediation activities to their pupils through interventions and strategized methods of increasing student retention of learning and performance. Jackson (2016) found out that instructors who conducted remediation used instructional techniques and activities that matched effective practices. And it is evident in the result of the pre-test numeracy performance of the Grade 6 pupils that there are more number of non-numerates. Intervention activities must be formulated to help improve the numeracy performance of the pupils. Hence, this research study is crafted to evaluate the effectiveness of remedial activities in teaching numeracy in improving the performance of these identified non-numerates. It was revealed in this study that there is a significant difference in the pre-test and post-test performances of the identified Grade 6 non-numerates before and after the utilization of remedial activities. Provision of additional learning support materials and activities during remedial classes is effective in improving the performance of the identified non-numerates.

Keywords — *Effectiveness, Remedial Activities, Teaching Numeracy, Improving, Performance, Grade 6 Non-Numerates*

I. Introduction

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 (Layug, et al. 2021). According to the Journal of Physics: Conference of Series, “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.

In the words of Adler (2015), Mathematics is the handmaiden of science, is also the art which expresses beauty through a system of definitions, axioms, and theorems. It is one of the most important tools men has forged in his quest to understand and control his environment. Since

Mathematics is an indispensable tool for technological age, it is the role of mathematics teachers to provide opportunities to pupils to learn materials which may be considered new or modern.

The Department of Education aims to develop learners who are numerates and who can apply numeracy skills for various purposes (RM No. 280, s. 2021). To achieve this, critical thinking and problem solving need to be emphasized in the teaching of Mathematics as well as in the design of assessment tools.

Since numeracy skills are the foundation towards learning of all mathematical competencies across grade levels, the need to assess how much of it is already in the learners is of prime importance. To help Mathematics teachers and curriculum implementers get an idea about the numeracy skills and levels of their learners in the four fundamental operations, the DepEd Regional Office VIII, through the Curriculum Learning and Management Division, and in partnership with the different Schools Division Offices, developed a regional numeracy test which was first administered to the learners in June 2019.

During the start of every school year, the school is mandated to conduct the pre-test on numeracy to all pupils to get the baseline and be able to determine who of the pupils need immediate intervention in numeracy. In Puerto Bello Elementary School of Merida District, the Grade 6 teacher adviser has conducted numeracy test to all pupils during the 2nd month of the opening of classes in the current school year. It was revealed that among the 35 pupils enrolled in the class, 2 pupils were identified as high numerates, 13 moderately numerates and 20 non-numerates. This means that most of the pupils were not able to master the four fundamental operations and they need intervention to address such problems.

Most failures in Mathematics are due to the sole memorization with devoid understanding. Pupils lack the application of skills and techniques which help the pupils develop their critical thinking, reasoning power and creative minds which they use in working independently in any kind of Mathematics activities (Wallit, 2016).

In the previous school year where pupils were staying at home and they are learning using the modules, most of them also were identified non-numerates. The fact that these pupils have no face-to-face interactions, so the Math teachers only gave them a separate learning activity sheet where numeracy tests are to be answered with the supervision of their parents or learning facilitators. Upon knowing the result, the teacher immediately provided additional remedial activities using learning activity sheets. It was not emphasized in the result of the activities if the pupils really answered the test or only the learning facilitators, which means that the purpose of providing such was not addressed.

Now that face-to-face classes have been implemented by all schools in the district, the same problems occur. A remedial program was introduced to the pupils where remedial activities will be given and constant practice of answering numeracy tests with time constraints will be employed. Thus, it is in this premise that the researcher decided to conduct this study to evaluate the

effectiveness of remedial activities in teaching numeracy as an avenue to improve the performance of the identified Grade 6 non-numerates. A proposed improvement plan will be formulated based on the findings of the study.

It is in the rationale that the researcher who is currently a Grade 6 teacher in the above mentioned local, would like to delve worthy research undertaking that will benefit herself, the school she is currently teaching and that of her Graduate Program she is enrolled at.

This study evaluates the effectiveness of remedial activities in teaching numeracy in improving the performance of the identified Grade 6 non-numerates of Puerto Bello Elementary School of Merida District, Leyte Division for School Year 2022-2023. The findings of the study were the basis for the proposed improvement plan.

Specifically, this study sought to answer the following questions:

1. What is the pre-test numeracy performance of the Grade 6 pupils before the utilization of remedial activities in teaching numeracy?
2. What is the post-test numeracy performance of the Grade 6 pupils after the utilization of remedial activities in teaching numeracy?
3. Is there a significant difference in the pre-test and post-test numeracy performance of the Grade 6 pupils before and after the utilization of remedial activities in teaching numeracy?
4. What improvement plan can be proposed based on the findings of this study?

II. Methodology

Design. This study employed the quasi-experimental research design utilizing the pre-test and post-test to evaluate the effectiveness of remedial activities in teaching numeracy in improving the identified Grade 6 non-numerates for School Year 2022-2023. Puerto Bello Elementary School, Merida District, Leyte Division is the main locale of the study. The 33 identified non-numerates in Grade 6 who are currently enrolled in the said locale are the main respondents of the study. A numeracy test for Grade 6 provided by DepEd Region 8 is the tool used to determine the pre-test and post-test performance of the Grade 6 pupils. Moreover, remedial learning activity sheets were formulated to be utilized during the remedial instructions. These activity sheets included mastery of the four fundamental operations and accomplished by the pupils during the conduct of remedial instruction. A matrix of activities was crafted to guide the teacher-researcher the flow of her study. This research focused on evaluating the effectiveness of remedial activities in teaching numeracy in improving the performance of the identified Grade 6 non-numerates through the pre-test and post-test and its significant difference. A Proposed Improvement Plan based on the findings of the study is the output.

Sampling. There are 33 identified Grade 6 non-numerates involved in this study. The research instruments and interventions were administered face-to-face with consent from the Local IATF and strictly following the prescribed Health Protocol during the limited face-to-face classes.

Research Procedure. The researcher prepared the research design and tools utilized in the study. Approval and recommendation from the Panel of Examiner of the Graduate Studies was sought. A letter request to conduct this study was forwarded to the Office of the Schools Division Superintendent. Upon approval, permission from the District Supervisor and School Head was secured before the actual gathering of data. Orientation of the participants and administration of the pre-test was done face-to-face after the approval of the permit from the parents of the respondents. After accomplishing the pre-test, intervention was given within four weeks. The utilization of remedial learning activity sheets during remedial instructions was emphasized in the study. After the four-week intervention, the post-test was administered. Results of the tests were collected. Data were tallied and submitted for statistical treatment. Analysis and Interpretation of Data. Making of Proposed Improvement Plan followed.

Ethical Issues. The researcher properly secured the permission to conduct the study from the authorities through written communication. In the formulation of the intervention materials that was used in the study, the use of offensive, discriminatory or other unacceptable language was avoided. The respondents' names and other personal data were not included in this study to protect their privacy. Participation of the respondents was also voluntary. Orientation was conducted for the respondents with their parents. In the orientation, issues and concerns were addressed and consent to be included in the study were signed. The researcher-maintained objectivity in analyzing and discussing the results. All authors whose works were mentioned in this study were properly quoted and was acknowledge in the reference.

Treatment of Data. The Simple Percentage was employed to evaluate the pre-test and post-test numeracy performance of the Grade 6 pupils before and after the utilization of remedial activities. **t-Test of Mean Difference** was used to determine the significant difference in the pre-test and post-test performances of the Grade 6 pupils.

III. Results and Discussion

Table 1
Pre-Test Numeracy Performance of Grade 6 Pupils

Score Range	Description	PRETEST	
		Frequency	%
17-20	Excellent	0	0
13-16	Very Good	0	0
9-12	Good	7	21
5-8	Fair	21	64
0-4	Poor	5	15
Total		33	100
Weighted Mean		6.85	Fair

Table 1 presents the pre-test numeracy performance of the Grade 6 pupils before the utilization of remedial activities in teaching numeracy. It was revealed on the table that among the 33 Grade 6 pupils, 7 got a score of 9-12 which is interpreted as good. This means that only a few pupils have mastered the four fundamental operations. This implies that more activities must be provided to the pupils to attain mastery. Moreover, the table shows that 21 Grade 6 pupils or 64% got a score of 5-8 which is interpreted as fair. This means that these pupils failed to answer all the numeracy tests given. They still lack knowledge of the four fundamental operations which means that when critical or big numbers are to be solved, pupils already find difficulty in accomplishing such. This implies that pupils are beginning to grasp the basic concepts on the four fundamental operations and are still adjusting with the time constraints in accomplishing the activity. Further, it was also shown on the table that there are 5 Grade 6 pupils or 15% got a score of 0-4 which is interpreted as poor. This means that the teacher of these pupils should provide alternative learning materials and activities to address the problem. Moreover, the teacher should provide other forms of assessment to know the root cause of having this poor performance. This implies that these pupils need intervention activities and materials to further learn and achieve numeracy performance. Finally, the table shows the pre-test numeracy performance of the Grade 6 pupils before the utilization of remedial activities in teaching numeracy that the weighted mean is 6.85 which is interpreted as fair. This mean that the grade 6 pupils have limited understanding in numeracy concepts. They did not do very well in the test conducted to them. It shows that they need intervention activities during their lessons on numeracy. This implies that these pupils should be provided with remediation activities, appropriate learning materials and discussion on the concepts of numeracy. Remediation activities were given to the pupils who did not meet the requirements to pass a particular assessment given and were below the mastery level (Asio et al, 2020). Remediation activities as one guarantee educational assistance to those children who are low performers and absentees. This ensures better academic performance for all the children who are at risk of dropping out and failing (Stevens, 2018).

Table 2
Post-Test Numeracy Performance of Grade 6 Pupils

Score Range	Description	POST-TEST	
		Frequency	%
17-20	Excellent	25	76
13-16	Very Good	8	24
9-12	Good	0	0
5-8	Fair	0	0
0-4	Poor	0	0
Total		33	100
Weighted Mean		17.64	Excellent

Table 2 presents the post-test numeracy performance of the Grade 6 pupils before the utilization of remedial activities in teaching numeracy. It was revealed on the table that among the 33 Grade 6 pupils identified as non-numerates, 25 or 76% got a score of 17-20 which is interpreted as excellent. This means that after the utilization of remedial activities, the performance of the identified non-numerates had increased. This implies that the remediation activities provided to them are effective and that it addresses their needs. Moreover, it was also revealed on the table that there are 8 Grade 6 pupils or 24% got a score of 13-16 which is interpreted as very good. This means that these pupils were able to master numeracy skills and the remedial activities given to them also helped improve their performance. This implies that the materials and activities used in the remediation classes have helped them learn the concepts on numeracy well and that they were able to master the skills. Finally, it was revealed on the table that the post-test performance of the Grade 6 identified non-numerates has an average weighted mean of 17.64 which is interpreted as excellent after utilizing the remedial activities. This means that remediation activities have somehow affected the numeracy performance of the Grade 6 pupils. This implies that the activities and instructions given during remedial classes are significant to pupils' need to improve their numeracy performance. As cited by Ancheta (2008), for effective learning to take place, learners should be provided with varied activities. It is apparent that the teacher's role is to be creative and resourceful to be able to tailor instructional materials and instructional activities to the needs and capacities of the learners. What the learners learn depends largely on the skill and ability of the teacher to prepare and use such materials to capture the learners' attention, spark their interest and develop skills.

Table 3
Test of Difference Between the Scores in the Pre-Test
and Post-Test of the Grade 6 Pupils in Math

Aspects	Test Scores		Computed T	Critical T	Decision	Interpretation
Grade 6 Pupils	Pre Post	6.85 17.64	3.016	0.773	Reject H _o	Significant

Table 3 presents the test of difference between the scores in the pre-test and post-test numeracy performance of the Grade 6 identified non-numerates before and after the utilization of remedial activities. It was revealed on the table that the computed value or t of 3.016 is greater than the critical value of t of 0.773, so null hypothesis is rejected. This means that there is significant difference in the pre-test and post-test numeracy performance of the Grade 6 identified non-numerates before and after the remedial activities. The mean of the pre-test numeracy performance of 6.85 has increased to 17.64 in the post-test after the utilization of remedial activities. This implies that remedial activities provided to the Grade 6 pupils have helped the pupils improve their performance. A remedial class is always an impressive way to solve this common problem. That is why Thilges and Schmer (2020) provided a concept analysis of formal remediation wherein he established a framework for defining the concept, developing measurable outcomes, and describing when to implement the intervention. This is important so that there is a consistent and systematic way of delivering the remedial class. However, Caras (2019) states that there is still a need for direct instruction for students necessary to connect experiences knowing that they are learning. Wright (2011) found out that understudies in remedial course were probably going to be progressively fruitful when an assortment of instructional technique and activities was utilized. Moreover, as Capuyan et al. (2019) revealed, there is a positive relationship between the previous and the current grade levels' grades of pupils attending remediation lessons.

IV. Conclusion

The study revealed a significant difference in the pre-test and post-test numeracy performances of the identified Grade 6 non-numerates before and after the utilization of remedial activities. Provision of additional learning support materials and activities during remedial classes is effective in improving the performance of the identified non-numerates.

V. Recommendations

1. The proposed improvement plan formulated should be utilized.
2. Teachers should produce remedial activities to address the needs of the learners for the improvement of their performance.
3. Teachers should implement remedial instructions to the pupils in need to address their learning gaps.
4. Teachers should provide alternative learning support materials to help them understand the concept correctly and be able to apply the knowledge gained.
5. Teachers must attend training or LAC sessions on the production and crafting of learning resource materials for the remedial lessons to be conducted to the pupils.
6. Teachers must attend training on teaching strategies and methods in teaching numeracy.
7. Teachers should revisit the guidelines and tools in assessing the numeracy performance of the pupils.
8. School Heads should allocate the budget for the procurement of office supplies to be used in the formulation of remedial activities and resources.
9. School Heads should spearhead in the crafting of training design and LAC plan for trainings and LAC sessions for the improvement of teaching-learning process of teachers most especially in the improvement of learning resource materials to be used during remedial classes.
10. School Heads should have a database of students needing remedial instructions and provide appropriate plans to address their learning gaps.
11. School Heads should provide technical assistance to teachers in terms of teaching numeracy skills.
12. School heads should monitor the conduct of remedial instructions and provide technical assistance for the improvement of its implementation.
13. School Heads should regularly monitor the teaching-learning process of teachers.
14. School Heads should maximize the time in providing appropriate technical assistance based on the needs of the teachers in teaching beginning reading.
15. School Heads should submit the crafted learning resource materials for remedial instructions for quality assurance.

16. School Heads should encourage and provide technical assistance for the crafting of innovations and research based on the intervention provided to improve the performance of the pupils; and
17. Future researchers should replicate this study to include different locales and include different variables aside from the mentioned in this study.

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She is teaching for seven years as a multi-grade teacher handling grades 5 and 6 at San Isidro Elementary School in the year 2011-2018. After her seven years of teaching in San Isidro Elementary School, she was transferred to Puerto Bello Elementary School as a grade 6 teacher where she and her family currently residing in the said barangay. She also attended a series of webinars/seminars and trainings to increase her professional growth as a teacher.