Effectiveness of Remedial Intervention to the Performance of Grade 3 Pupils in Mathematics

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Abstract —Mathematics has a vital part in the lives of the pupils because everyday people use Math in their day-to-day activities. It offers pupils' job choices across many content areas of sciences, technologies, engineering, and mathematics. It helps promote critical thinking and address pupils' difficulty. However, despite of the many advantages that Math gives to the people who use them, still there are challenges and issues that teacher met in the class. After the two-year of being in pandemic, many pupils suffer learning loss in terms of academic learning. As a result, many pupils were identified non-numerates given the assessment on the mastery of the four fundamental operation. The fact that this study was conceptualized to evaluate the effectiveness in the implementation of remedial intervention utilizing puzzles, window cards, video-based activities and parallel test materials written in the learning activity sheets in improving the performance of the Grade 3 pupils in Mathematics. A quasi-experimental research design employing the pre-test and post-test Mathematics test taken from the Regional-Based Numeracy Assessment as provided in Regional Memorandum No. 279, s. 2019 and utilizing the learning materials and activities in the conduct of the intervention. Simple percentage and t-test of mean difference were the statistical tools used to interpret the result of the study. The study revealed a significant difference in the pre-test and post-test performances of the Grade 3 pupils before and after implementation of remedial intervention utilizing the puzzles, window cards, video-based activities and parallel test materials written in the learning activity sheets. The learning materials, strategies, approaches, activities, regular practice, exercises and the learner itself contribute in the attainment of the educational goals of the pupils in improving the performance in Math. Thus, making the remedial intervention an effective strategy in improving the performance of the pupils in Mathematics.

Keywords — Effectiveness, Remedial Intervention, Performance, Grade 3 Pupils, Mathematics

I. Introduction

At the onset of COVID-19 pandemic, all public schools implemented the modular distance learning modality. The learners are learning at home utilizing the self-learning modules as their materials in accomplishing the activities provided for their learning to continue. Seldom did the teachers have to meet their pupils due to strict implementation of boarders. Pupils must rely on their experiences and that of their learning facilitators in answering the activities in the modules. Thus, less expectation of positive learning outcomes and quality education is hampered to be acquired by the pupils.

On the other hand, the COVID-19 pandemic has a positive impact on some of the curriculum writers and educators. The fact that self-learning modules have limited activities which will assist the pupils in learning the concepts, the teachers must be innovative in creating interventions. Most of them have crafted literacy and numeracy interventions to help and assist learning at home.

The mere fact that after the two years of implementing modular learning, pupils are expected to undergo difficulties and challenges in learning especially the Grade 3 pupils at present where their foundation years in learning was deprived due to this pandemic. It was found out that pupils have literacy and numeracy gaps. Some of the Grade 3 pupils were unable to answer basic Mathematics problems. Some have forgotten the sounds of the letters of the alphabet. These real scenarios of the pupils in field have caused educational leaders to create and formulate plans to help our pupils achieve the required competencies they needed for the grade.

During the start of every school year, the school is mandated to conduct the numeracy assessment to get the baseline data and to identify pupils in need of immediate intervention. This data is needed by curriculum planners to provide alternative learning materials and create possible teaching strategies and approaches. Through Regional Memorandum No. 280, s. 2021, the Department of Education Regional Office No. 8 had crafted numeracy tools to help teachers in assessing the numeracy performance of the pupils. It was revealed on the result of the assessment that among the 26 Grade 3 pupils enrolled in Tanauan II Central School 12 were identified non-numerates and 14 are moderate numerates. The result was so alarming which motivates the researcher to conduct this study for she believes that numeracy skills are the foundation in learning Mathematical concepts.

In the analysis of the result of the pre-assessment, it was revealed that 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). With this, remedial instruction has been the intervention used by the researcher to address the challenges meet by the pupils in learning numeracy. Hoping that this approach will greatly help the pupils to improve their numeracy performance.

Thus, this study evaluates the effectiveness of remedial instruction in the performance of Grade 3 pupils in numeracy of Tanauan II Central School, Tanauan II District, Leyte Division. 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 3 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 interventions in the performance of Grade 3 pupils in Mathematics in Tanauan II Central School, Tanauan II 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 performance of Grade 3 pupils in Math before the implementation of remedial interventions?
2. What is the performance of Grade 3 pupils in Math after the implementation of remedial interventions?
3. Is there a significant difference in the performance of Grade 3 pupils in Math before and after the implementation of remedial interventions?
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 interventions in the performance of Grade 3 pupils for School Year 2022-2023. Tanauan II Central School, Tanauan II District, Leyte Division is the main locale of the study. The 26 Grade 3 pupils enrolled in the said locale for School Year 2022-2023 are the main respondents of the study. A Regional-Based Numeracy Assessment as provided in Regional Memorandum No. 280, series 2021 which is entitled, Reiteration of Regional Memorandum No. 279 s. 2019 Re: Institutionalization of the Conduct if the Unified Numeracy Test is used as pre-test and post-test before and after the intervention was given. Researcher-made numeracy activities and learning materials which are interactive, colorful, and contextualized was crafted and used during the data gathering as intervention for the study. The learning materials are puzzles, window cards, video-based activities and parallel test materials written in the learning activity sheets. 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 interventions in the performance of Grade 3 pupils 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 26 Grade 3 pupils involved in this study. The research instruments were administered face-to-face with consent from the Local IATF and strictly following the prescribed Health Protocol during the 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 implementation of remedial intervention utilizing puzzles, window cards, video-based activities and parallel test materials written in the learning activity sheets 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 were acknowledged in the reference.

Treatment of Data. Simple Percentage was employed to evaluate the performances of the Grade 3 pupils in Mathematics before and after the implementation of remedial intervention utilizing puzzles, window cards, video-based activities and parallel test materials written in the learning activity sheets. **t-Test of Mean Difference** was used to determine the significant difference in the performances of the Grade 3 pupils in Math.

III. Results and Discussion

Table 1
Pre-Test Performance of Grade 3 Pupils in Mathematics

Score Range	Description	PRETEST	
		Frequency	%
17-20	Excellent	4	15
13-16	Very Good	6	23
9-12	Good	1	4
5-8	Fair	3	12
0-4	Poor	12	46
Total		26	100
Weighted Mean		**8.88**	**Good**

Table 1 presents the performance of the Grade 3 pupils in Math before the implementation of remedial intervention utilizing puzzles, window cards, video-based activities and parallel test materials written in the learning activity sheets. It was revealed on the table that among the 26 Grade 3 pupils tested, 4 or 15% got a score of 17-20 which is interpreted as excellent. This means that these pupils have mastered the skills in numeracy as is evident in the result of the pre-test. This implies that these pupils have a high level of proficiency and skills in working with numerals and other activities pertaining to numeracy which are based on their grade level. It was also shown on the table that there are 6 or 23% Grade 3 pupils who got a score of 13-16 which is interpreted as very good. This means that these pupils achieve the next level of proficiency in numeracy skills. This implies that pupils who achieve very good performance in Mathematics possess a strong foundation in the subject that enables them to engage in mathematical tasks independently with less assistance from the teacher or learning facilitators. Moreover, among the 26 Grade 3 pupils tested, there is 1 or 4% who got a score of 9-12 which is interpreted as good. This means that pupils who have good Math performance possess a functional level of proficiency that enables them to manage routinary mathematical activities and make practical applications in their day-to-day activity. This implies that this pupil still lacks other skills which will develop them into excellent performers. He/she needs remedial intervention activities and practice for his/her performance he improves. Further, it was also shown on the table that 3 or 12% of the Grade 3 pupils got a score of 5-8 which is interpreted as fair. This means that these groups of pupils need remedial activities and refresher teaching for them to recall the concepts discussed. This implies that these pupils acquire the basic skills in Math, but it was not put into practice. They still need further learning and remedial intervention to improve their performance. Finally, among the 26 Grade 3 pupils tested, 12 or 46% of them got a score of 1-4 which is interpreted as poor. This means that these pupils fail to achieve the desired competency for the grade. They were not able

to understand the lessons taught to them and failed to apply the knowledge in Math in their day-to-day activities. This implies that these group of pupils need more interactive, contextualized learning materials and activities to achieve the desired competency for the grade.

Table 2
Post-Test Performance of Grade 3 Pupils in Mathematics

Score Range	Description	POST-TEST	
		Frequency	%
17-20	Excellent	26	100
13-16	Very Good	0	0
9-12	Good	0	0
5-8	Fair	0	0
0-4	Poor	0	0
Total		26	100
Weighted Mean		**19.23**	**Excellent**

Table 2 presents the post-test performance of the Grade 3 pupils in Mathematics after the implementation of remedial intervention utilizing the puzzles, window cards, video-based activities and parallel test materials written in the learning activity sheets. It was revealed on the table that among the 26 Grade 3 pupils, all of them or 100% got a score of 17-20 which is interpreted as excellent. This means that after the implementation of remedial intervention utilizing puzzles, window cards, video-based activities and parallel test materials written in the learning activity sheets, the performance of the pupils has improved. This implies that the remedial intervention is effective. The activities and exercises provided by the teachers and the one-on-one discussion and review contribute in achieving the goals of the pupils to improve their performance in Math. Being attentive and willingness to learn counts in the conduct of remedial intervention.

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

Aspects	Test Scores		Computed T	Critical T	Decision	Interpretation
Grade 3 Pupils in Numeracy	Pre Post	8.88 19.23	1.961	0.817	Reject H_o	Significant

Table 3 presents the test of difference between the scores in the pre-test and post-test performances of the Grade 3 pupils before and after implementation of remedial intervention utilizing the puzzles, window cards, video-based activities and parallel test materials written in the learning activity sheets. It was revealed on the table that based on the analysis and statistical treatment of the data where the level of significance is 5% or the rejection level has its equivalent t-critical value of 0.817 from t-distribution. Based on the data presented the computed value is 1.961 which means null hypothesis is being rejected. Since the computed value is higher than the critical value it means that there is a significant difference in the pre-test and post-test performances of the Grade 3 pupils before and after implementation of remedial intervention utilizing the puzzles, window cards, video-based activities and parallel test materials written in the learning activity sheets. This implies that the remedial intervention conducted by the teachers has helped in improving the performance of the pupils in Mathematics. The attitude and values input by the pupils while learning the lessons in Math has helped in achieving the goals of improve performance. Moreover, the learning materials and the strategies used by the teacher during the conduct of remedial intervention contribute to making the pupils learn and apply their knowledge in Math.

IV. Conclusion

The study revealed a significant difference in the pre-test and post-test performances of the Grade 3 pupils before and after implementation of remedial intervention utilizing the puzzles, window cards, video-based activities and parallel test materials written in the learning activity sheets. The learning materials, strategies, approaches, activities, regular practice, exercises and the learner itself contribute in the attainment of the educational goals of the pupils in improving the performance in Math. Thus, making the remedial intervention an effective strategy in improving the performance of the pupils in Mathematics.

V. Recommendations

1. Utilize the proposed improvement plan formulated.
2. Implement the remedial intervention to improve the performance of pupils.
3. The Department of Education may fully support the continuing professional development of students based on the principle of lifelong learning and DepEd's commitment to the development of teachers' potential for their success in the curriculum.
4. Conduct related free training and seminars to the elementary teachers to help empowered and sustained their knowledge in Math.
5. Teachers must extend extra time in teaching remedial instructions to the struggling pupils to improve the numeracy performance.

6. Teachers must be knowledgeable in providing additional learning support materials to the pupils which are manipulative.
7. Teachers must attend training or LAC sessions on the proper conduct of remedial instructions.
8. School Heads must include remedial instructions in the class program of teachers.
9. Encourage teachers to craft remedial interventions in numeracy.
10. Institutionalize the conduct of remedial instructions in the classroom regularly, and
11. 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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AUTHOR'S PROFILE

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