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The Performance of Grade Seven Students Through Numpa (Numeracy Project Assessment) in Remedial Teaching in Tañong National High School

An Action Research Presented to the Department of Education as Grantee of Basic Education Research Fund (BERF) 2016

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Abstract - This action research aims to develop an intervention and effective instructional strategies. The respondents of this research are the Grade 7 students of Tañong National High School. The main objective of this research is the enhancement of learner's performance in the level of 4F's (Four Fundamental Operations). Data from the respondents' were treated carefully through weighted average mean and percentage scores.

The Quarterly Examination of students is the key point to measure their performance.

Mathematics Department of Tañong National High School found out that the Grade 7 level has Low Mastery Level while the rest of the grade levels fall on Average Mastery Level. Their Mastery Level has an increased of 1% as compared from their First Quarter Examination. However, based on the Second Quarter results their level of achievement is in Low Mastery Level only. It means that the students have partial understanding and application of the skills that are fundamental for proficient work.

In this study, only the data for the pre-test and post-test were used.The study showed that the achievement of the students, who undergo the remediation program, significantly increased, revealing a better performance.

Results of the study could provide a basis on school remediation program for the succeeding grading periods, as well as the other subjects.

Keywords: remediation program, Four Fundamental Operations, achievement, mastery level, intervention

Chapter 1

INTRODUCTION

CONTEXT AND RATIONALE

With the implementation of the K to 12 curriculum, the Mathematics department constructs a device test called "4 F's Test" to assess the learners' basic operations. The result of the test has been used to determine the Mastery Level.

Numeracy is the capacity to reason and to apply simple numerical concepts. Basic numeracy skills consist of comprehending fundamental operations like addition, subtraction, multiplication and division.

It is believed that techniques in learning Mathematics are of different strategies and ways. Thus, it is students-centered approach. Students are catered using drill-practice, and demonstration-prompt-practice (Mercer & Miller 1992). These ways are combination of teacher demonstration of the skill (input) and applied by the students (output). Remediation practice is injected if these two did not work. It is said that remediation is the process of filling up what is lack or what to improve in teaching-learning process (Moscardini 2009).

Designing or choosing remedial approach or strategy for the learners with difficulties is not an easy task because every student has distinctive features in learning. The researcher has chosen this remedial class as strategy and technique to address the

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issue on increasing the level of mastery on numeracy (Basic Fundamental Operations) because it has been the way towards improving the performance of the students from emerging to mastered.

Delisle and Berger (1990); Witmore (1980) believed that there is something in intrinsic motivation/stimulus and remedial strategies as they focused on student's strength. It should be combined: the stimulus and strategies. Stimulus are used to push students learn Mathematics willingly, and the most fitted strategies which is really part of the teacher himself. It is said that if the students are interested to learn, the higher the chance the strategies are effective.

The philosophy of assessment based on the Department of Education (DepEd) Order No. 73 s. 2012, Guidelines on the Assessment and Rating of Learning Outcomes Under K to 12 Basic Education Program stated that assessment shall be used primarily as a quality assurance tool to track student progress in attainment of standards, promote self-reflection and personal accountability for one's learning, and provide a basis for profiling the student's performance.

Considering appropriate and motivating instructional materials is believed better of too much and complex teaching pedagogy. Students are seen as easily get bored species. Their listening span is usually short. It is believed that the shortest the process, the fastest the mastery has on the part of the students. It is of value if the instructional materials are appropriate and motivating (Bottge et al. 2006).

Remedial programs are the alternative for promoting students and teachers in closing achievement gaps. The utilization of remediation may benefit all involved citizens under the No Child Left Behid Act of 2008.

Villanueva A.(2015); Salandanan (2009), pointed out that assessment and evaluation of pupils' learning in the ultimate test of one's teaching effectiveness. Some instruments and procedures provided to serve as pattern in gathering and interpreting data in other valuable information. Decisions arrived that could help in future planning of the lesson especially in the choice of appropriate teaching methodology.

BACKGROUND OF THE INTERVENTION

This program will work the combination of the use of learning modules and guided learning materials which the Mathematics teachers will give considering the competencies that are needed to be enhanced.

Tañong National High School, the idea of remedial class that aim to develop potential learners to become teacher's assistant in increasing the 4F's Mastery level of the learners who are educationally at risk and in support to No Filipino Child Left Behind of 2008. Remedial teaching program conduct every tuesdays and thursdays during 11:00-12:00pm for afternoon teachers and 1:30 – 2:30pm for morning teachers facilitated, monitored and supervised by the Math teachers and CI Team.

As reflected in the learners performance, majority of the learners fall under the developing in mastery level. To address the issue on the performance of the learners, this program was launch.

ACTION RESEARCH QUESTIONS

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This study sought to answer the following questions:

1. What is the pretest performance in Math of Grade 7 students in terms of:
   - 1.1 Addition
   - 1.2 Subtraction
   - 1.3 Multiplication
   - 1.4 Division

2. What is the post-test performance in Math of Grade 7 students in terms of:
   - 2.1 Addition
   - 2.2 Subtraction
   - 2.3 Multiplication
   - 2.4 Division

3. Is there a significant difference in the pretest and post-test performances among the Grade 7 students?

4. What program can be proposed that will enhance the performance of the learners in the basic operations?

Hypothesis

There is no significant differences among the scores of the respondent in the pre-test and post-test performance among the Grade 7 students.

Chapter 2

ACTION RESEARCH METHOD

This chapter, research methodology includes research locale, research population and sample, data gathering procedures and statistical treatment data.

RESEARCH DESIGN AND POPULATION

Research Locale

This study was conducted in Tañong National High School in Brgy. Tañong in the City of Malabon for the school year 2017 – 2018. As one of the Math teachers of this institution, the researcher choose this locale in preparation for the upcoming years to focus in the National Achievement Test (NAT).

Population and Sample

The research population in this study were Grade 7 students of Tañong National High School. There were ninety-nine (99) males and ninety-four (94) females a total of 193 students who took the 4 F's Test on July 10, 2017 .

Section	No. of Students
Rizal	**39**
Bonifacio	**34**
Del Pilar	**26**

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Mabini	**25**
Luna	**25**
Jacinto	**22**
Diego Silang	**22**
TOTAL	**193**

STATISTICAL TREATMENT DATA

The data collected were all descriptive data, including the pre-test and post-test scores of the assessment.

A Z-test was used to evaluate the effectiveness of the tool of the achievement of the respondents', Mean, Standard Deviation, and MPS (Mean Percentage Score) were also used for analysis.

Scale of Mastery Level

MASTERY LEVEL DESCRIPTIVE EQUIVALENT
EMERGING (0% - 20%)
DEVELOPING (21% - 40%)
ACHIEVING (41% - 60%)
APPROACHING MASTERY (61% - 80%)
MASTERED (81% - 100%)

Simple Mean

Sample Mean

$$\bar{x} = \frac{\Sigma x}{n}$$

where Σx is sum of all data values

n is number of data items in sample

Percentage Score

$$\% = \frac{f}{N} \times 100$$

Where: % = Percent
f = Frequency
N = Number of cases

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Standard Deviation

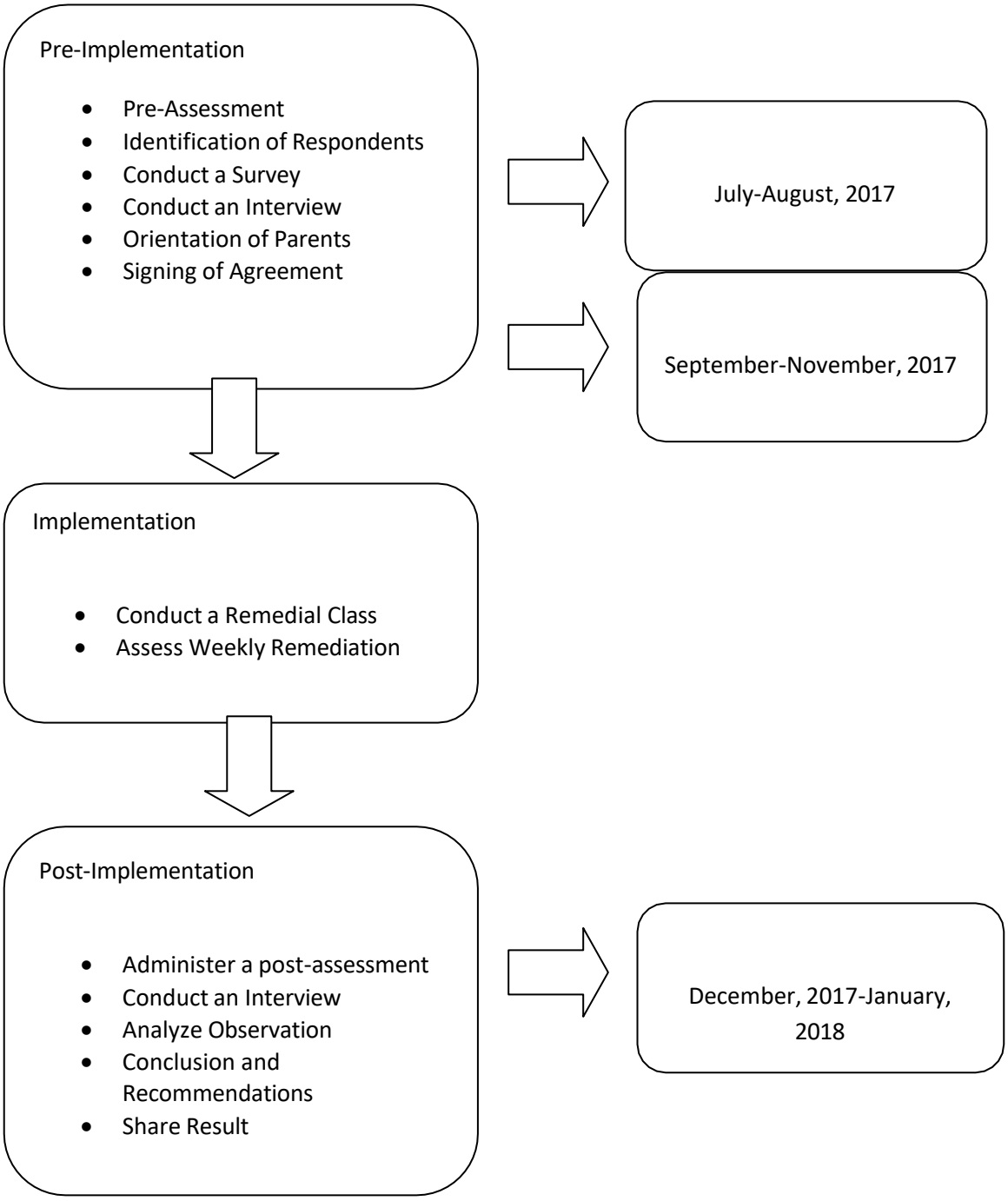
$$sd = \sqrt{\frac{\Sigma x^2 - n\bar{x}^2}{n-1}}$$

Σ = 'the sum of'
x = the arithmetic mean
n = the number of data

Z – Test

$$z = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\frac{\sigma_1^2}{n_1} + \frac{\sigma_2^2}{n_2}}}$$

WORK PLAN



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Chapter 3

RESULTS AND REFLECTIONS

This chapter presents the data gathered by the researcher from the respondents through pretest and post-test.

Based on the data gathered from the respondents, the following are the findings of the study:

Scores and the Mean of the Pretest of Grade 7 Table 1
Summary of the Means of the Pre-Test of Grade 7
on Basic Four Fundamental Operations

Number of Sample	Basic Four Fundamental Operations	MEAN	S.D.	MASTERY LEVEL	Mastery Level
62	ADDITION	7.26	1.56	72.60	Approaching Mastery
62	SUBTRACTION	6.11	1.76	61.10	Approaching Mastery
62	MULTIPLICATION	4.13	1.82	41.30	Developing
62	DIVISION	3.38	1.15	33.80	Developing

The table above shows the performance of Grade 7 students. These were given before the beginning of the remediation program. The pre-test contained 10 items per operation, with a total of 40 item questions. It is shown that the highest mean score is 7.26 (Addition) and describe as approaching mastery level with the standard deviation of 1.56 while the lowest mean of 3.38 described as developing with a standard deviation of
1.15 (Division).

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This supports the idea of Moscardini 2009; Gurganus 2007; Fuchs 2001; Mercer & Miller 1992 that students are helped to understand mathematical concepts using a concrete-representation-abstract sequence which is based on teacher-centered approach.

Scores and the Mean of the Post-test of Grade 7 Table 2
Summary of the Means of the Post-Test of Grade 7
on Basic Four Fundamental Operations

Number of Sample	Basic Four Fundamental Operations	MEAN	S.D.	MASTERY LEVEL	Mastery Level
62	ADDITION	8.97	1.17	89.70	Mastered
62	SUBTRACTION	8.55	1.47	85.50	Mastered
62	MULTIPLICATION	7.05	1.32	70.50	Approaching Mastery
62	DIVISION	5.65	1.16	56.50	Achieving

The table above shows the performance of Grade 7 students in the post-test in four fundamental operations.

This was given after the Remediation Program. This served as one of the main data of the study. The post-test contained 10 items per operation, with a total of 40 items questions.

Table 2 shows that the highest mean score obtained was in the addition, 8.97 and described as mastered with the standard deviation of 1.17, while division operation obtained the lowest mean of 5.65, described as achieving level with a standard deviation of 1.16.

The findings, as emphasized by Delisle and Berger (1990); Witmore (1980), that remedial strategies are effective as they focus on students'

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strengths to create thier intrinsic motivation while remediation is done in a safe environment so that the learners can make their own understanding of knowledge.

Table 3.1 Test of Significant Difference among the Mean Scores in the Pretest and Post-test of Grade 7 students in Addition

	Mean	SD	Computed z-value	Critical Value	df	Decision	Interpretation
Pre-test	7.26	1.56	6.905	1.96	61	Reject the null hypothesis	Significant
Post-test	8.97	1.17					

Table 3.1 shows that the mean has improved in the post test results in addition operation. Similarly, the computed z-value is greater than the critical value which means that there is a significant difference among the mean score in Addition because of the remediation program.

The findings are congruent with (Bottge et al. 2006) “students can learn new concepts when instructional techniques and materials are motivating and appropriate”.

Table 3.2 Test of Significant Difference among the Mean Scores in the Pretest and Post-test of Grade 7 students in Subtraction

	Mean	SD	Computed Z-value	Critical Value	df	Decision	Interpretation
Pre-test	6.11	1.76	8.378	1.96	61	Reject the null hypothesis	Significant
Post-test	8.55	1.47					

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Table 3.2 shows that the mean has improved in the post test results in subtraction operation. Similarly, the computed z-value is greater than the critical value which means that there is a significant difference among the mean score in subtraction because of the remediation program.

The findings are congruent with (Bottge et al. 2006) “students can learn new concepts when instructional techniques and materials are motivating and appropriate”.

Table 3.3 Test of Significant Difference among the Mean Scores in the Pretest and Post-test of Grade 7 students in Multiplication

	Mean	SD	Computed Z-value	Critical Value	df	Decision	Interpretation
Pre-test	4.13	1.82	10.226	1.96	61	Reject the null hypothesis	Significant
Post-test	7.05	1.32					

Table 3.3 shows that the mean has improved in the post test results in multiplication operation. Similarly, the computed z-value is greater than the critical value which means that there is a significant difference among the mean score in multiplication because of the remediation program.

The findings are congruent with (Bottge et al. 2006) “students can learn new concepts when instructional techniques and materials are motivating and appropriate”.

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Table 3.4 Test of Significant Difference among the Mean Scores in the Pretest and Post-test of Grade 7 students in Division

	Mean	SD	Computed Z-value	Critical Value	df	Decision	Interpretation
Pre-test	3.38	1.15	10.943	1.96	61	Reject the null hypothesis	Significant
Post-test	5.65	1.16					

Table 3.4 shows that the mean has improved in the post test results in division operation. Similarly, the computed z-value is greater than the critical value which means that there is a significant difference among the mean score in division because of the remediation program.

The findings are congruent with (Bottge et al. 2006) “students can learn new concepts when instructional techniques and materials are motivating and appropriate”.

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Chapter 4

Conclusion and Recommendations

CONCLUSION

Based from the summary of the findings, the following conclusions are:

1. In terms of the pre-test performance in Math Grade 7, the Division operation obtained the lowest mean of 3.38 that falls under emergent level.
2. In terms of the post-test performance in Math Grade 7, the Division operation obtained the computed mean of 5.65 and interpreted as Approaching Mastery.
3. The pre-test and post-test revealed that there is signficant difference in the pre-test and post-test because the computed value is greater than the critical value. Hence, the hypothesis is rejected.
4. Based from the results, the researcher proposed a program which is remediation program that will help the learners to increase the level of numeracy and enhance the performance of the students in the basic operations.

RECOMMENDATIONS

In the light of the significant findings and conclusions of this study, the following recommendations are pressented:

1. To the Students
    - Be active, attentive and participative during the Math class/Remedial class.
    - Develop a study habit.
2. To the Teachers
    - Prepare learning devices using illustrations, pictures and other presentations to catch the learner's attention.
    - Monitor learner's progress using portfolio.

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- Provide instructional materials to be manipulated by the learners.

3. To the Parents

- Assist their children in studying and cooperate with the school to monitor their children's performance.
- Attend parent conference to update the progress of their children.

4. To the Administrators

Provide updated materials to win the students' interest and to inform them about the changes and innovations in the present situation.

5. To the Future researchers

Explore other possible interventions/programs that would encourage students to enhance their mathematical skills.

REFERENCES

[1] DepEd Order No. 73, s. 2012
[2] Lee-Chua Q. (2015) *Foundations First: Arithmetic Mastery and Algebra Performance.* Ateneo de Manila University, Philippines.
[3] Salandanan, G. (2009). *Teachers Education.* Quezon City Katha Publication Inc.
[4] https://en.wikipedia.org/wiki/Remedial_education
[5] Corpuz, B. (2007). *Principle of Teaching.* Quezon City
[6] Lumogdang, Lumogdang, D. .(2013). *Performance of Grade 7 Students in Four Fundamental Operations in Integers using Computer-Based Learning Approach in Teaching Mathematics among Grade Seven students (Descriptive).* Meycauayan College, Meycauayan Bulacan.
[7] Safer, N. And Fleischman, S. (2006). *How students progress monitoring improves instruction.* Educational Leadership. Vol.5 No.62 pp.81-83
[8] Villanueva, Villanueva A. . (2015). *Numeracy Level Test results' as predictor of students' performance in Mathematics in Lucena City National High School*. Lucena City Quezon

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