

# **IMPROVING THE BASIC MATHEMATICS OPERATION SKILLS OF PRIMARY GRADE LEARNERS THROUGH REMEDIATION, REINFORCEMENT AND ENHANCEMENT MODEL WORKBOOK**

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## **Abstract**

The learners of Banbanaba Elementary School, Santol District are not spared from the problem of low mathematics performance as reflected in their National Achievement Test results. This action research aimed to improve the basic Mathematics operation skills of the primary grade learners through the use of the workbook. It looked into the level of performance of learners before and after the strategy implementation and the significant differences between the pretest and posttest which were used in gathering the data needed in the study. The materials were reviewed and validated by five master teachers of the district with a rating of 4.6 which is very high. The recommendations and suggestions made by the evaluators were incorporated in the final copy of the tests. The workbook comprised of varied exercises suited to the needs of the learners. Remediation activities were for struggling learners, reinforcement activities to average learners and enhancement activities to fast learners. Respondents of this study were the eighty-nine primary learners. Results found that there were significant differences between pretest and posttest. It was concluded that the Remediation, Reinforcement and Enhancement Model Workbook is effective in improving the basic Mathematics operation skills of primary grade learners. The recommendations of Wenceslao (2009), Castaneda (2010) and Bautista (2010) on the use of instructional materials to improve class performance in science and Mathematics is validated in this study.

**Keywords:** Mathematics, Basic Operation, Instructional Material, Remediation, Reinforcement and Enhancement Model Workbook

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## **1. Introduction**

“At the early stage of education, teachers shall inculcate a strong mathematics foundation for them to become productive individuals in the future and assets of the nation” (Aquino 2003). It is undeniable that mastering mathematics has become more important than ever. Pupils with strong grasp of mathematics have an advantage in academics and in the job market. Therefore, the first grade is a critical point in mathematics education. Achievement at this stage clears the way for pupils to make rigorous high school mathematics and science courses – keys to college entrance and success in the labor force (Madayag, 2011).

The Department of Education orders no. 8 series of 2015 states that “A learner who receives a grade below 75 in any subject in a quarter must be given intervention through remediation or extra lessons from the teacher of that subject”. In response to this mandate, Department of Education Division of La Union initiated the Remediation, Reinforcement and Enhancement (RRE) Program for all learners. The slow learners will undergo remedial activities, the average learners will have reinforcement activities and the fast learners will receive enhancement activities. Mathematics is now taught in the first language of the child. The absence of instructional materials written in the first language poses a problem to teachers in teaching the subject. It has been observed that learners having differences in mathematical ability have difficulty grasping the contents of the subject. While there are few who excel in the subject, there is a need to enhance and reinforce the learning for further mastery. On the other hand, the learners who are encountering difficulty in the subject need to be remediated so they will attain the required competencies in the subject. In the light of the serious problems associated with slow learning in Mathematics, educators need to use appropriate instructional materials as shored up by the instructional theory.

Instructional theory prescribes how to help people learn better (Reigeluth, 2012), thus suggests the utilization of interventions. The focus of this theory is on how to structure material for promoting the education of the people. Such materials include the instructional materials. Instructional materials

are important tools in education. Examples of these tools are workbook supplements, manuals, guidebooks which help clarify the concepts, principles, and techniques contained in the textbooks, by making the student undergo exercises applying the lessons learned. They also provide means of checking whether the students have understood the lessons taught in the classroom. (Ledda, 2006)

Likewise, Salandanan (2001) emphasized that instructional materials offer the best means in which a teacher can provide direction in her student's daily search for new understandings and verifications, particularly by the use of printed materials. Even the best teacher trained in the latest teaching method, well-informed about facts, and aware of the goals of education can still fail in planning and implementing of course if she is lacking in the appropriate materials for teaching. On the other hand, Rivera (2011) stated that mathematics is a subject which is mostly learned by doing. Since the nature of mathematics learning is such that one has to concretize concepts to understand the abstract ideas, mathematics teachers have to concretize their teaching so that the learners can visualize the concepts. Exposure of pupils to rich and varied concrete materials may provide for an easy transition of abstracting the essence or principles in the concepts learned.

As cited by Ancheta (2008), in order 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 so as to capture the learners' attention, spark their interest and develop skills. Honrejas (2000) pointed out that among the elements for quality learning for quality education are the learning materials, the textbooks and supplementary materials. Availability and adequacy of these materials spell adequate and guaranteed content knowledge and information for the learner.

Likewise, Balbalec (2009) believed that instructional materials are the main instruments to effective and meaningful learning. Without these, all educational standards and principles are far from being realized. Instructional materials should not only provide new body of knowledge but also avenues to reinforce skills and master concepts in a certain discipline. On the other Samonte, (Modern Teacher, Volume VII, No. 10, March 2008) pointed out that the problems of poor quality education in our country can be attributed to several factors in the teaching-learning process. These include the students and their families, the teachers, the curriculum and instructional materials and school management. Lack of instructional materials contributes a lot to the problem.

In the same manner, Robert Slavin said that students need practice exercises to help new information into long term memory and integrate new with old learning. Practice problem may come from workbooks, work text, textbook and teacher-made materials. Practice in the form of seatwork can be helpful for students if it is given for limited period of time (Manzano, 2004). Studies showed that the use of an instructional material plays a very significant role in enhancing the memory level of the students and makes the teaching – learning process interesting. Different studies have shown that the use of instructional materials successfully decreased the least mastered skills in math subjects; thus, poor achievement was enhanced.

Likewise, the studies of Wenceslao (2009), Quillao (2014), and Rivera (2015) recommended the utilization of instructional materials in Science and Mathematics to improve classroom performance. It is imperative therefore, that adequate instructional materials which can serve as practice exercises will be provided to the learners to ensure mastery of the different competencies.

The researchers had observed that there is a dearth of instructional materials that will reinforce learning such as modules, activity manuals, and skill books. Now that the K to 12 is being implemented and it is explicitly enforced that the mother tongue shall be the medium of instruction, this problem becomes grave especially in the primary grade. Hence this action research was designed to improve the basic mathematics operation skills of primary grade learners through the use of Remediation, Reinforcement, and Enhancement (RRE) Model Workbook.

## **2. Method**

### *2.1. Research Design*

The objective of this study is to improve the basic mathematical operation skills of primary grade learners. The study used the one-group experimental design with the pretest and posttest to determine the level of performance of learners in Math. The tool contains varied activities to address the needs of each learner.

### 2.1. Participants

The respondents of this study were the thirty-three Grade One learners, twenty-seven Grade two learners, and twenty-nine Grade 3 learners of Banbanaba Elementary School, Santol District for the school year 2016-2017 duly recognized by the school registrar and the principal. This school was chosen because it is the school of the researchers. Likewise the grade levels were the advisory classes of the researchers.

### 2.3. Instrumentation

The pretest and posttest were used in gathering the data needed in the study. There were three sets of 30 multiple choice teacher-made questions specifically designed for each grade level. The pretest and posttest were subjected to content validity. These were reviewed and validated by five master teachers of the district with a rating of 4.6 which is very high. The pretest was conducted at the opening of the class while the post test was administered at the end of October to determine the improvement in the learner's performance after the intervention. All of the pupils had their remedial class from Monday to Friday at 1:00 to 1:30 in the afternoon to improve their basic mathematics operation skills through the use of RRE intervention. Pupils took the pretest every Monday. Individual results of the pretest were the basis of identifying the slow, average and fast learners. The learners who got 0-2 scores belonged to the slow learners and were given remediation. Learners who got 3-4 scores belonged to the average learners and were given enrichment activities. The learners who got 5 or a perfect score belonged to fast learners and were given enhancement activities. Results to the pretest were the basis on the conduct of RRE every Thursday. The teacher conducted the pretest every Monday and taught the skill to be developed every Tuesday. The learners were given practice/board exercises every Wednesday. The teacher conducted the RRE activities utilizing the RRE Model Workbook every Thursday and a post test was administered every Friday. This was done for five months. The researchers formulated the RRE Workbook Model for the lessons covered for the first semester.

### 2.4. Data Analysis

This research used a pretest and posttest to determine the level of performance of the learners in Mathematics along the basic operation skills. T-test was used to determine the progress made by the learners. The result of the pretest and posttest were computed and compared. If there was an increase, there is a significant progress.

## 3. Results

Table 1 presents the data of the results of the pretest and posttest using the RRE Model Workbook. The table shows that the pupils got a mean percentage score (MPS) of 27.95 in the pretest. The result implies that the pupils were not able to obtain the desired level of mastery which is 75 % before the RRE intervention.

The table further reveals that the pupils obtained an MPS of 80.08 in the post test. The result means that the pupils have achieved a desirable degree of mastery of the competencies in the post test after the RRE intervention. The result also shows that the RRE intervention were effective in improving the basic mathematical operation skills of the learners.

Table 1. Results of the pre-test and posttest using the RRE model workbook

Grade Level	Pre-Test	Post Test
Grade 1	22.7%	75.9%
Grade 2	28.87%	81.13%
Grade 3	32.27%	83.2%
<b>Total MPS</b>	<b>27.95%</b>	<b>80.08%</b>

Table 2 presents the data of the improved percentage performance after the strategy implementation.

Table 2. Percentage of improved performance after the strategy implementation

Grade Level	Pre-Test	Post Test	Percentage
Grade 1	22.7%	75.9%	53.20%
Grade 2	28.87%	81.13%	52.26%
Grade 3	32.27%	83.2%	50.93%
<b>Total MPS</b>	<b>27.95%</b>	<b>80.08%</b>	

It can be gleaned from the table that there is an increase percentage among the three grade levels. The Grade One learners obtained a percentage of improved performance of 53.20, Grade Two an improved performance percentage of 52.26 and Grade Three improved percentage performance of 50.93. All the test results prove a great leap in the performance of the learners.

Table 3 presents the significant difference in the pretest/posttest of the learners in the basic Mathematics operation skills using RRE Model Workbook.

Table 3. Significant difference in the pretest and post test scores of the learners

Grade level	Mean pretest	Mean Post test	t-value	Interpretation
Grade 1	4.69	15.23	103.94	Significant
Grade 2	8.71	24.44	114.55	Significant
Grade 3	9.82	25.07	127.09	Significant

The table shows that the mean of Grade One during the pretest is 4.69 and 15.23 in the post test. The computed t-value is 103.94, which is less than the critical value of 2.05. Likewise the table reveals that the mean of the Grade Two pupils in the pre-test is 8.71 and 24.44 in the post test. The computed t-value is 114.55 and the critical t-value is 2.04. The p-value signifies a significant difference in the pre-test and post test scores of the learners.

The table also reveals that the pre-test (9.82) and posttest (25.07) scores of the learners and the computed and critical values of t which are 127.09 and 2.05 respectively. The results mean that there is a significant difference between the pre-test and post test scores of the learners.

All the results show significant difference in the pretest and posttest scores of the learners. The results imply that using RRE intervention improved the basic mathematics operation skills of the learners.

#### 4. Discussion

Table 1 shows that the Grade One learners obtained low performance in the pretest but obtained higher performance in the post test, Grade Two learners also obtained low performance in the pretest and improved their performance in the posttest while the Grade Three learners have low performance in the pretest and improved in the posttest respectively. It means further that the pupils are slow in the basic mathematical operation skills before the implementation of the workbook needed in their respective grade levels. The result of the posttest using the RRE Model workbook is very high compared to the pretest results. It implies that the use of the workbook is very effective. The results are similar to the findings of Quillao (2014) and Rivera (2015) that the learners perform below 75 percent in the pretest and above 75 percent in the post test.

Table 2 manifests the percentage of improved performance after the strategy implementation. As indicated in the table, Grade One has the highest increase percentage closely followed by Grade Two. Grade Three has the lowest increase percentage. All the grade levels had an improved percentage performance after the strategy implementation. The result implies further the effectiveness of Remediation, Reinforcement, and Enhancement Model Workbook in the improvement of the basic mathematical operation skills of the learners.

The results run parallel to the findings of Quillao (2014) that the learners' performance in word problem solving improved by 34 percent in the post test.

The results also affirm the findings of Rivera (2015) that the learners' level of competence improved by 16.25 percent in the post test.

Table 3 presents the data on the significant difference in the pre-test and posttest scores of the learners. The table reveals that all the grade level had significant differences in the pretest and post test scores of the learners. The results mean that there is a significant difference between the pretest and post test scores of the learners.

The results affirm the findings of Quillao (2014) that there was a significant difference of the pre-test and post test scores of the learners using the cooperative learning strategies as interventions. Using an intervention to improve the basic mathematics operation skills of the learners is effective.

Moreover, the results of the study is identical to the findings of Rivera that there was a significant difference in the pretest and post test scores of the pupils after the use of an intervention.

It is therefore concluded in this study that the use of the Remediation, Reinforcement, and Enhancement intervention is effective in improving the basic mathematics operation skills of the primary grade learners. The recommendations of Wenceslao (2009) Castaneda (2010) and Bautista (2010) on the use of instructional materials to improve classroom performance in Science and Mathematics is validated in this study.

## 5. Conclusion

Based on the results, it can be concluded that the Remediation, Reinforcement and Enhancement (RRE) Model Workbook is effective in the enhancement of the basic mathematics operation skills of the primary grade learners.

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