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# Development and Acceptability of Math Based Reading Module for Enhancing Mathematical Vocabulary of Grade VI Pupils: Inputs in the Brigada Pag-Basa Reading Program 2022

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***Abstract: The study focused on determining the acceptability of the Reading Module in Mathematics: in enhancing the Mathematical Vocabulary for Grade Six Pupils of Kapalaran Elementary School during the conduct of BE Brigada Pag-basa School year 2022.***

***The study's respondents were the thirty (30) selected Grade Six pupils in Mathematics subject of Kapalaran Elementary School using simple random sampling utilizing the fish bowl technique, and twenty (20) selected teacher respondents using stratified sampling technique. More so, the researchers used quasi-experimental and descriptive method of research. The level of acceptability of the developed reading module was assessed in terms of its content, clarity, appeal to the target user, originality, knowledge questions, applicability, and format using the descriptive method of research.***

***The study found out that there is an increase in the posttest means score of the grade six pupils at after being exposed to the Reading Module which means that the respondents gained more Vocabulary Understanding and their performance in will be improved. Then, the null hypothesis was rejected for the significant difference on the level of Vocabulary Understanding of grade six pupils at before and after exposure to the reading module in mathematic VI as revealed by the pretest and posttest with respect to the different topics. Finally, the Reading Module in Mathematics were found 'Much Acceptable. The study concluded that the pupils obtained a high performance in the post-test as revealed by the respondents with the used of the Reading Module in Mathematics VI. Lastly, the Reading Module in Mathematics VI is an effective tool for reading intervention and in elevating the progress of vocabulary and understanding on the part of the pupils.***



## 1. INTRODUCTION

### **Context and Rationale**

Reading is necessary for success in the many different societal industries. Reading comprehension is highly regarded and critical for social and economic progress. The majority of kids learn to read fairly well. Teachers in the Philippines are particularly concerned about the high number of kids who may have limited prospects in life due to their reading proficiency, which is insufficient to fulfill the needs of an increasingly competitive market. The growing need for literacy is largely indicative of the current reading difficulties. The standards for better literacy in a modern culture are always rising, with more severe repercussions for individuals who don't meet them. (Fountas and Pinnell: 2008).

The introduction of competitive reading skills development for kids is important, the Philippine educational system that made a great change and reform by mandating the Republic Act No. 10533 Section 10.3 also known as Enhanced Basic Education Act of 2012 which states that “The production and development of locally produced teaching and learning materials shall be encouraged. This mandate provides basis on the importance of developing reading intervention materials in the schools.

The approval of these reading materials shall be devolved to the regional and division education until in accordance with national policies and standards.” In connection of this, the goal of K to 12 program is to provide and create a functional basic education system that will produce productive and responsible individuals equipped with necessary and essential skills and competencies for life-long learning. The kind of educational environment boosts the researcher to make a reading module materials that can be used during reading remediation program which could provide and aid for the pupils at risks in reading and to improve their performance in Mathematics.

In the study of Baylon (2018) emphasized that the utilization of instructional materials promotes better understanding of the lesson and made students performed better, too. He added that, to achieve high performance in Mathematics, teachers should have a profound understanding of mathematical concepts that they will be teaching to their learners. They should also consider all the factors that might affect the learners. On the other hand, student’s involvement in learning Mathematics is very important. They should have a positive attitude toward the subject. All stakeholders in the learning process must be active and responsible in their actions for the achievement of their goal.

In the MELC (Most Essential Learning Competencies) Mathematics VI in its content standards has 14 major learning topics. The researcher narrowed down the content standards and these topics was the bases of the reading materials developed. There were 14 selections created in the reading Math Module. The researcher created a reading material with 5 knowledge questions in the selected competencies, bearing in mind that it should be the content of the reading material for integrating mathematics lesson in reading interventions. The reading materials and questions were carefully crafted to cater to all types of learners.

One of the current problems of the Mathematics teachers in Kapalaran Elementary School is on how to improve the numeracy rates of the pupils and reading ability of grade VI learners. Therefore, the researcher finds a way on how to improve the performance of the pupils, this is through the development of Math Reading Module that will surely help in improving the



performance of grade six pupils in Mathematics and reading ability. This research may be used in planning for benchmarking more content reading based materials and be used as part of instructions in conducting classes or as a supplement to facilitate learning.

### **Innovation, Intervention And Strategy**

The researcher used the developed reading module in mathematics for the enhancement of mathematical vocabulary of the brigada pag-basa participants, a remediation reading program of grade six pupils. The developed reading modules were made as means to improve the mathematical vocabulary of grade VI learners as preparation in the face to face classes in Mathematics subject. The reading module were based on the MELC content standards. The researcher focused on the developing of reading module that enhances mathematical vocabulary of the Brigada pag-basa participants. The lessons that are included in reading module were: Quarter 1 consisting of Fractions and Decimals. Quarter 2 consists the Ratio and Proportion, Percent, exponent, and integers. Quarter 3 consists of Solid figures, Expression and Equation, rate and speed, and area of plane figures. Quarter 4 consist of Volume of solid figures, meter reading, pie graphs and experimental probability. The reading module has 15 total reading selections and each selection has 5 knowledge questions.

Furthermore, the level or degree of acceptability of the Reading Module in Mathematics VI was also checked and analyzed with the verbal interpretation of Very Much Acceptable, Much acceptable, fairly acceptable, partially acceptable and Not acceptable.

The researcher requested permission from the principal to use the created reading module for grade six students in boosting mathematics vocabulary after completing the face and content validation form.. The reading program was conducted by the researcher with the help of his co-teachers in Kapalaran Elementary School during the conduct of Brigada Eskwela- Brigada Pag-basa 2022. Pretest and posttest were done to identify if reading module could really help in improving the mathematical vocabulary of the respondents. Finally, the data gathered from the results of the pre-test and post-test were tabulated, analyzed subjected to appropriate statistical tool and lastly it was interpreted.

### **Action Research Questions**

This The purpose of the study was to address whether the reading module titled “Reading Module in Mathematics VI”. Specifically, it yielded answers to the following questions:

1. What is the level of mathematical vocabulary of the pupils before and after exposing in the reading module as revealed by the pre-test and post test results?
2. Is there a significant difference between the Vocabulary Understanding of the students after exposing to the developed Reading Module as revealed by the post test results?
3. What is the quality level of acceptability based on the checklist of applicability and

quality in terms of:

- a. content
- b. clarity
- c. appeal to target user
- d. originality
- c. knowledge questions



e. applicability

f. format

4. Based on the findings of the study, what plan of action may be proposed to further enhance and improve the performance of Grade Six pupils in Mathematics?

## **2. ACTION RESEARCH METHODS**

This chapter outlines the study's subject or participants, data collection techniques, and data analysis strategy.

### **A. Participants**

The respondents of the study were the thirty (30) selected Grade Six Participant of BE Brigada Pag-basa 2022. The thirty (30) selected respondents were chosen using simple random sampling utilizing the fish bowl technique.

The researcher used the performance of the respondents in Mathematics as revealed on the pretest and posttest scores to establish whether the pupils had an improvement through the Reading Module in Mathematics VI. As such, the following scales were used:

<b>Scale</b>	<b>Verbal Interpretation</b>
8.01 – 10.00	Very High (VH)
6.01 – 8.00	High (H)
4.01 – 6.00	Average (A)
2.01 – 4.00	Low (L)
00.00 – 2.00	Very Low (VL)

A 10 - item multiple choice test was constructed and administered to the Grade VI BE Brigada Pag-Basa participant. The pre-test and post results were utilized for the testing of vocabulary enhancement of the participants.

The researcher used the Mopera questionnaire to assess the generated reading module in mathematic VI's content, clarity, attractiveness to the target user, originality, knowledge questions, application, and format (2011). To make it work with the current reading material, several changes were made. Both the experts who verified the constructed reading module and the panel members of the current study validated the updated questionnaire checklist.

The scale used in the questionnaire-checklist to determine the acceptability are as follows:

<b>Scale</b>	<b>Range</b>	<b>Verbal Interpretation</b>
5	4.20 – 5.00	Very Much Acceptable (VMA)
4	3.40 – 4.19	Much Acceptable (MA)
3	2.60 – 3.39	Fairly Acceptable (FA)
2	1.80 – 2.59	Partially Acceptable (PA)
1	1.00 – 1.79	Not Acceptable (NA)

The topics or lessons included in reading module were: Quarter 1 which consists of Fractions and Decimals. Quarter 2 consists the Ratio and Proportion, Percent, exponent, and integers.



Quarter 3 consists of Solid figures, Expression and Equation, rate and speed, and area of plane figures. Quarter 4 consist of Volume of solid figures, meter reading, pie graphs and experimental probability. The reading module has 15 total reading selections and each selection has 5 knowledge questions.

### **B. Data Gathering Methods**

The study aimed to develop a Reading Module in Mathematics VI. The study was conducted at Kapalaran Elementary School during the implementation of Brigada Eskwela 2022 – Brigada Pag-basa school year 2022 – 2023.

The researchers used quasi-experimental and descriptive method design. The descriptive method design was used to determine level or degree of acceptability of the developed Reading Content, clarity, appeal to the intended audience, creativity, knowledge questions, application, and format of the module. The researcher developed reading materials from the MELC Content Standards. A 15 reading selection with 5 multiple item questions was constructed.

The researcher also evaluated and interpreted the findings from the pretest and posttest using the relevant statistical methods after completing the content validation form and requesting authorization from the principal's office to implement the Reading Module in Mathematics VI.

### **C. Data Analysis Plan**

The researchers used descriptive statistics such as the mean, standard deviation, t-test, and mean difference as the basis of the interpretation and analysis of data.

The following statistical instruments were used to methodically interpret the study's data:

To determine the level of Vocabulary understanding of the Grade Six Pupils before and after exposure the Reading Module as revealed by the pretest and posttest scores with respect to different topics; mean and standard deviation were utilized.

Dependent t-test was used to examine whether there was a significant difference between the learners' performance on the pretest and posttest outcomes.

Mean gain was utilized to assess the Reading Module's acceptability level for Mathematics VI.

## **3. DISCUSSION OF RESULTS AND REFLECTION**

This page provides an analysis and interpretation of the information received to address the issues discussed in the preceding chapter.

Table 1 presents the mean results on the level of Vocabulary Understanding of grade six pupils at before and after exposure to Reading Module in Mathematics as revealed by the pretest and posttest with respect to the different topics.



Table 1 Level of Vocabulary Understanding of Grade Six Pupils at Before and After Exposure to the Reading Module in Mathematics VI as Revealed by the Pretest and Posttest with Respect to the Different Topics  
Level of Performance of Learners as Revealed in their Pretest and Posttest Results.

Score	Grade (Percent)	Verbal Interpretation	Pretest		Posttest	
			f	%	f	%
9-10	90 and above	Very High (VH)	-	-	2	6.67
7 – 8	85-89	High (H)	-	-	17	56.67
5 – 6	80 -84	Average (A)	2	6.67 %	11	36.66
3 – 4	75-79	Low (L)	18	40%	-	
0 – 2	below 75	Very Low (VL)	3	53.33%	-	
Total			30	100	30	100
Highest Score			5		34	
Lowest Score			0		13	
Mean			1.60		31.2	
Mean Percentage Score			16%		68.7%	
Std. Deviation			1.59		1.17	

The post test reveals the increase in scores, with 2 or 6.67% of the total rising to 11-3.66, translating to 80-84, which is viewed as average, and the remaining 17 or 56.67% receiving 7-8, translating to 85-99, which is interpreted as high. A mean of 31.2 is produced by the highest score of 9 and the lowest score of 4. The score distribution is relatively close to the mean score, with a mean percentage score of 68.7 and a standard deviation of 1.17.

The table also showed that there is an increase in the posttest mean scores of the pupils after being exposed the Reading Module in Mathematics VI which means that the respondents gained more Vocabulary Understanding and assumed to have an effect in their performance in Mathematics during face to face classes. Also, the Reading Modules gives a big change in the performance of the pupils in their reading comprehension which can elevate their performance in Mathematics and English subjects.

This supports the study of Lim (2016) said that when compared to the control group, which received traditional lecture training, the performance of the experimental group—who received modular instruction—performed much better. Based on the cited studies, it is determined that word problem solving is best taught using modular learning in math classes.

The outcome suggests that the learners' performance has improved as a result of their exposure to the reading module. Therefore, it also suggests that the math-based reading modules are useful reading materials for Brigada Pag-basa 2022.

The results of the t-test on the significant difference between the learners' level of performance prior to and following exposure to the created math-based reading module are shown in Table 2.



The results of the t-test on the significant difference between the learners' level of performance prior to and following exposure to the created math-based reading module are shown in Table 2.

**Table 2 Significant Difference between the Level of Performance of the Learners Before and After Exposure to the Developed Module**

Test	N	Mean	SD	t-value	p-value	Verbal Interpretation
Posttest	30	31.180	1.804	-21.27	2.096	Significant
Pretest	30	7.460	2.082			

The derived t-value of 2.096 does not surpass at 0.05 level of significance, hence the null hypothesis is rejected. As seen in the table, statistical analysis revealed that there is a significant difference between the students' performance on the pretest and posttest.

The result implies that math based reading module is an effective reading remediation material in the improving mathematical vocabulary of the pupils in Mathematics especially to the pupils at risks in Mathematics subject which may lead in eradicating the numeracy in Mathematics. This is parallel with the study conducted by Olorvida (2022) On the E- PIMATH TV: Enhanced The Performance in Mathematics Through Self-Made Tutorial Youtube Videos in which findings depicted that there is an increase in the posttest means score of the grade six pupils at risks after being exposed to the E-PIMATH TV which means that the respondents gained more knowledge and their performance in Mathematics were improved.

The Level of Acceptability of the Developed Reading Module in Mathematics VI as Experts with Respect to Different Criteria.

Table 3 on the next page presents the Level of Acceptability of the Developed Reading Module in Mathematics VI as Experts with Respect to Different Criteria.

**Table 3 The Level of Acceptability of the Developed Reading Module in Mathematics VI as Experts with Respect to Different Criteria**

Content	Teacher	
	Mean	Verbal Interpretation
1. The selection are well arranged to provide clear sequence of understanding.	3.85	MA
2. The different parts aid the pupils in grasping the concept of the reading module in a systematic way.	3.85	MA
3. It provides sufficient repetition of learning through examples to easily understand the concept.	3.2	FA
4. It provides a variety of questions from simple to complex manipulation for mastery of concepts and skill.	3.2	FA
<b>Average</b>	<b>3.53</b>	<b>MA</b>
<b>Clarity</b>		



1.	The reading module is organized and clear.	3.25	FA
2.	Directions are understandable and easy to follow.	3.20	FA
3.	Topics are well explained and become the preparatory stage for the exercises.	3.70	MA
4.	The hierarchy of the exercises is presented from simple to complex.	3.25	FA
<b>Average</b>		<b>3.35</b>	<b>FA</b>
<b>Appeal to the Target User</b>			
1.	It captivates the pupils interest.	3.85	MA
2.	It stimulates the pupils interest in answering the different activities.	3.85	MA
3.	It strengthens the pupils positive attitude about module.	3.85	MA
4.	It is worth of time, effort and energy of the students.	3.25	MA
<b>Average</b>		<b>3.70</b>	<b>MA</b>
<b>Originality</b>			
1.	The design and appearance of the reading module are exceptionally different from other guidebooks.	3.80	MA
2.	The material serves as the new model in teaching research.	4.00	MA
3.	It provides a variety of relevant evaluation measures.	3.85	MA
<b>Average</b>		<b>3.88</b>	<b>MA</b>
<b>Knowledge Questions</b>			
1.	The activities are applicable to the concepts being developed.	4.45	VMA
2.	The reading module leads the pupils to become actively involved in the developing math vocabulary.	3.95	MA
3.	The activities enable the students to assess his mastery of the entire content.	4.00	MA
4.	The activities are made in style wherein there are connection between what the students are learning and what they will learn.	3.25	FA
5.	The students receive immediate feedback for the tasks they asked to do.	3.30	FA
<b>Average</b>		<b>3.79</b>	<b>MA</b>
<b>Applicability/ Usefulness</b>			





1. The reading module takes into account the attitudes and abilities of the students.	3.85	MA
2. The reading module is easy to use and transportable to the place of learning.	3.85	MA
3. The reading module will guide the students in developing vocabulary understanding.	4.45	VMA
4. The reading module is adaptable to any size of the learning group and differences in learning time.	3.85	MA
5. The guidebook teaches and guides the students during actual performance of various learning activities.	3.85	MA
<b>Average</b>	<b>3.97</b>	<b>MA</b>
<b>Format</b>		
1. The font is readable and the font size is fitted for modules.	4.60	VMA
2. The words that are used are appropriate to the level of the pupils.	4.60	VMA
3. The spacing is enough.	4.60	VMA
4. The style of the writing and topic presentation make the guidebook enjoyable to read.	4.55	VMA
<b>Average</b>	<b>4.59</b>	<b>VMA</b>

Legend: VMA= very much acceptable, A= acceptable

The characteristics of the Reading Module in relation to various criteria and the precise degrees of acceptability as judged by experts are shown in Table 3. It demonstrates how highly accepted all of the Reading Module's specific characteristics are. It also suggests that the reading module is a very effective educational tool that can raise students' performance.

Table 4 Summary Table on the Level of Acceptability of the Developed Math Based Reading Module by the Experts with Respect to Different Criteria

Criteria	Teacher	
	Mean	VI
Content	3.53	MA
Clarity	3.35	FA
Appeal to the Target User	3.70	MA
Originality	3.88	MA
Knowledge Questions	3.79	MA
Applicability/ Usefulness	3.97	MA
Format	4.59	VMA



<b>Overall</b>	<b>3.83</b>	<b>MA</b>
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Legend: VMA= very much acceptable, A= acceptable

The average score across all categories is 3.83, as shown in table 4, with a verbal interpretation of very acceptable. This indicates that the reading module met all of the requirements and was well received by both the responders who were students and the experts..

As a result, it implies that the respondents share the same opinion that the mathematics-specific reading module is suitable and can improve mathematical vocabulary. The outcome suggests that the Reading Module is an effective instructional resource with regard to the many factors discussed in the study.

## 5. SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

This page presents the summary of findings, the conclusions drawn and the recommendations offered.

### Summary of Findings

Based on the analysis and interpretation of the data, the following findings are hereby summarized:

#### 1. Level of Vocabulary Understanding of Grade Six Pupils at Before and After Exposure to the Reading Module in Mathematics VI as Revealed by the Pretest and Posttest

There is an increase in the posttest means score of the grade six pupils participant to BE Brigada Pag-basa 2022 after being exposed to the math based reading module which means that the respondents gained more vocabulary understanding and their performance in Mathematics

#### 2. Significant Difference between the Level of Performance of the Learners Before and After Exposure to the Developed Math Based Reading Module

The null hypothesis was rejected for the significant difference on the level of performance of grade six pupils at risks before and after exposure math based reading module as revealed by the pretest and posttest with respect to the different topics.

#### 3. Level of Effectiveness of E-PIMATH TV with Respect to Different Topics in Decimals.

The Math Based Reading Module in Enhancing Math were found 'Much Acceptable'.

## 6. CONCLUSIONS

Based on the findings, the following conclusions are derived:

1. The pupils obtained a high performance in the post-test as revealed by the respondents with the used of math based reading module.
2. There is a significant difference on the level of performance of grade six pupils before and after exposure to Math Based Reading Module as revealed by the pretest and posttest.



3. The Developed Math Based Reading Module in Enhancing Mathematics Vocabulary is an effective reading program in elevating the progress of learning and understanding on the part of the pupils.

**Recommendations**

The following recommendations are hereby offered:

1. The Reading module may be used by the Mathematics teachers to enrich pupils’ performance in Mathematics.
2. Teachers may utilize more innovative strategies and techniques to develop the students’ competence in Mathematics.
3. Teacher may continue his/her devotion in teaching the pupils to improve and develop their skills in Mathematics
4. The teacher may exert more time in remediating the pupils so that pupils can develop their skills in solving varied problems in Mathematics.
5. Parallel research maybe conducted considering other variables.

**Action Plan**

Key Area Thrust	Programs/ Projects/ Activities	Objectives	Duratio n/ Time Frame	Responsib le Unit/Person	Budgetary Requireme nts	Success Indicator
	Project IRPM (Intensive Remediation Program in Mathematics)	To intensify the skills of the pupils in Mathematics through remediation program.	August 2022 – October 2022	School Head, Math Teachers, Parents, and Pupils	Php 500 MOOE	100% of the pupils together with the Mathematics teachers, parents and school head participated in the said program
	Project I - NuSP (Improving Numeracy Skills of Pupils )	To improve the numeracy skills of the pupils through varied	August 2022 – October 2022	School Head, Math Teachers, Parents, and Pupils	Php 500 MOOE	100% of the pupils together with the Mathematics teachers,



		activities like DD Card, Skip Counting Numbers, Memorization, Problem Solving etc.				parents and school head participated in the said program
	Project MIP (Most Improved Pupil)	To select the most improved pupil in order to recognize his/her achievement in Mathematics.	October 2022	School Head, Math Teachers, Parents, and Pupils	Php 500 MOOE	100% of the pupils together with the Mathematics teachers, parents and school head participated in the said program
Teacher's Development	Submit action research to District Office Research Department	To share on a formal conference the result of the conducted action research	February 2023	Administrator Researcher District Officer	Php 1000.00	Researcher presented the research in District Level as well as in Division Conference

**Financial Report**

Expenditures	Estimated Amount	Total Amount	Source of Fund
Materials Used: ❖ Survey Questionnaire (google form)	Php 0.00	Php 0.00	Donation from LGU thru Taytay Youth Development Office



Manuscript (Soft Copy) ❖ Printing of the Reading Module for pupils	Php 1,000	Php 1,000	Donation from LGU thru Taytay Youth Development Office
❖ Miscellaneous/Transportation (None) ❖ Contingency (None)	Php 500	Php 500	Donation from LGU thru Taytay Youth Development Office
	Total Php 1,500	Php 1,500	

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