Volume 13 • October 2019
Print ISSN 2244-1824 · Online ISSN 2244-1816
DOI: https://doi.org/10.7719/irj.v13i1.780

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PROJECT CLMM (Contextualized Learner Material in Mathematics) an Input on Pupils Academic Performance

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Originality: 100% • Grammarly Score: 100 • Plagiarism: 0%

ABSTRACT

Mathematics subjects are always regarded as one of the most difficult courses to teach and learn. The proponent, in collaboration with the Learning Resource Management Division, comes up with an idea of contextualizing the learning resource material in Mathematics. This descriptive-quantitative study focused on the implementation of Project CLMM and its input on pupils' academic performance of Grade 6 pupils in Puting Lupa ES, Hornalan ES, Majada Out ES, Paciano ES, JRMS, and Calamba ES. Data collected were the results of the pretest and posttest and first grading grade in mathematics and the feedback of CLMM.The result showed that there was a significant difference existed between the pretest and posttest of the pupils' respondents by 34.62%. Increased on the number of high performing pupils while decreased in the number of low performing pupils were evident. Some of the items on the CLMM need to modify like engage yourself. The results implied that CLMM was properly implemented and help improve the academic performance of pupils in mathematics.

Keywords **—** Mathematics, Contextualized, Mean Percentage Score, descriptive-quantitative design, Philippines

INTRODUCTION

Mathematics subjects are always regarded as one of the most difficult courses to teach and learn. Based on the SDO Monitoring and Evaluation section results of the Periodical test, every grading period, only a few schools reached the 75% proficiency level standard of quality education. Several interventions have been introduced and implemented in teaching Mathematics, but still, the 75% proficiency level standard of quality education has not been reached. Studies reveal that the pupils find difficulties in learning Mathematics because of its abstractness. Pupils cannot fully understand Math concepts and ideas because teachers failed to contextualize the topic. Math can be better understood if the pupils can experience by themselves the competencies that should be learned.

In the face of these challenges, contextualization is viewed as a possible way to address and resolve the problems of deficiencies in instructional materials and to make teaching and learning relevant and responsive in this area. As stipulated in the Implementing Rules and Regulations (IRR) of RA 10533, the provision in the use of locally produced teaching and learning materials is encouraged as long as it is approved by the division or regional education unit and is in accordance with the national policies and standards (DO No.43, s. 2013).

The National Education Academy of the Philippines, being an arm of DepEd, responds to the demand for professional competencies in the education community. Relative to this, DepEd Region IV-A, through HRDD, conducted an instructional leadership program for Division and District Supervisors, which aims to enhance the competencies of educational leaders in instructional supervision, curriculum implementation, learning resource, contextualization, monitoring and evaluation and provision for technical assistance.

Moreover in the pursuant of Republic Act 10533, An Act Enhancing the Basic Education by Strengthening its Curriculum, particularly in section 5 paragraph (d) and (h) the DepEd-CALABARZON reiterates the use of Curriculum and Learning Management Framework Guide and Tools in localizing/indigenizing and contextualizing materials as reference. Being an Education Program Supervisor in Math, she was driven to develop contextualized learning materials in Math, believing that it will help increase the pupils' achievement.

With these foregoing insights, the Division of Calamba City recognizes the need to contextualized instructional materials for the benefit of its ultimate stakeholders – the learners. The proponent, in collaboration with the Learning Resource Management Division, comes up with an idea of contextualizing the

learning resource material in Mathematics. By way of contextualizing Math discussions and activities in the form of activity sheets, teachers and learners will have more time in harnessing their math potentials and skills. To determine the effectiveness of the developed contextualized learners' material, the proponent will implement Project CLMM.

FRAMEWORK

Facilitating Student Learning Through Contextualization

Mathematics is recognized widely as being great importance internationally both for the economic well-being of nations and because of the need for mathematically and scientifically literate citizenry. Tabago (2011) said that no subject in the curriculum today has drawn greater attention than mathematics but sad to know that the present state of mathematics education as assessed by renowned scientists both in local and international circles is "discouragingly poor."

In the news aired on TV5, Filipino students spend more hours studying Mathematics than their Asian counterparts, but the country still lags behind in the subject, Senate Minority Leader Alan Peter Cayetano said.

"Despite allotting the most time to mathematics education in elementary in Southeast Asia, Philippines continues to rank poorly in comparison to other countries in the region," Cayetano said in a statement. Cayetano cited a study by the South East Asian Ministers of Education Organization (SEAMEO), which said the Philippines allot more time to mathematics at 1,100 minutes per week, as compared to Brunei's 810 minutes, Singapore's 540 minutes, and Malaysia's 360 minutes.

He then compared this to the country's ranking in the annual Global Competitiveness report that pegged the quality of mathematics education in the country at 112th out of 139 countries in 2010-2011 and 115th out of 142 countries in 2011-2012."With the amount of time we spent learning science, shouldn't we be performing better compared to our neighbors?"

Mathematical literacy is a core that functions as a critical gatekeeper for participation in many aspects of modern society. Research has shown that the way Mathematics is taught at school is highly associated with the students' achievement and interest levels. Declining interest in Mathematics and the need to raise the educational standards of youth in this discipline set a critical agenda for the revision of the pedagogical practices (Meletiou-Mavrotheris, 2014).

Educational institutions seek innovative strategies to counter the long-fought problem of low students' performance in mathematics. Several studies conducted had revealed that a good foundation on basic mathematical concepts increases the numeracy rate of countries. Hence, it is essential to develop programs that will address the mathematical needs of students (Estonanto et al., 2017).

Instructional material is a preeminent factor toward academic performance. It is remarkable for the teacher to develop instructional material to guide the student in their academic performance. With the presence of this instructional material, the learning process can be fun because of the healthy exchange of information from the student and teacher (Quisumbing et al., 2017).

Faculty members are encouraged to develop their instructional materials and utilize varied instructional aids to enhance student learning. Teachers are invigorated to utilize different methods, strategies, and techniques of teaching, including the use of IMs, equipment, technology, and others to facilitate effective teaching, including and develop a positive attitude towards mathematics among students. Varied learning activities be prepared by teachers to help students with a negative attitude and low self-efficacy beliefs be able to revert them to a more favorable attitude and beliefs. (Prado, Tan, & Capuyan, n.d.)

K to 12 Mathematics Curriculum

In the Philippine Education setting, Mathematics subject is being taught from kindergarten up to college level. That is why it is very necessary to equip the students with all the knowledge and skills required, from the basic up to the complex lessons as to prepare them in the real world after graduation. The curriculum makers designed an outline of what topics must be included for each level, which is commonly known as K to 12 Curriculum Guide. It is considered the bible of a teacher. This is the document that the teacher must study religiously as the source of all content standards, performance standards, learning competencies, and learning codes. It defines the general and specific learning goals that students are expected to learn and learning competencies for the teachers to be accomplished. In other words, it is the basis of the daily lessons. Furthermore, this Curriculum Guide must be organized according to the learning area with the list of objectives and competencies from Grade 1 up to Grade 12.

The study of Bajar-Sales, Avilla, and Camacho (2015) entitled "Metacognition as Correlates to Achievement in Mathematics using Predict-Explain –Observe-Explain (PEOE) Approach also tries out an instructional material to third-year students. Results also showed that PEOE activities she advised are effective in teaching Mathematics.

Trends in Mathematics Education

Mathematics is recognized widely as being of great importance internationally both for the economic well-being of nations and because of the need for mathematically and scientifically literate citizenry. Tabago (2011) said that no subject in the curriculum today has drawn greater attention than mathematics but sad to know that the present state of mathematics education as assessed by renowned scientists both in local and international circles is "discouragingly poor."

Developing an instructional design is one of the more effective ways of making the teaching and learning process become more effective (Shambaugh, 2001).

More so, the power of an inquiry-based approach to teaching and learning is its potential to increase intellectual engagement and foster deep understanding through the development of a hands-on, minds-on, and 'research-based disposition' towards teaching and learning. Inquiry honors the complex, interconnected nature of knowledge construction, striving to provide opportunities for both teachers and students to build test and reflect on their learning collaboratively.

OBJECTIVE OF THE STUDY

This study aims to improve the pupils' achievement in Mathematics by 5% MPS and enhance the competence of school heads in giving technical assistance and gather feedback on the utilization of CLMM.

METHODOLOGY

Research Design

This study utilized the descriptive design of research to gather data concerning the contextualized material in Mathematics and suggested feedback to improve the learning material.

Descriptive research is a study of status and is widely used in education, nutrition, epidemiology, and the behavioral sciences. Its value is based on the premise that problems can be solved and practices improved through observation, analysis, and description. The most common descriptive research method is the survey, which includes questionnaires, personal interviews, phone surveys, and normative surveys. Descriptive research generates data, both qualitative and quantitative, that define the state of nature at a point in time. This chapter

discusses some characteristics and basic procedures of the various types of descriptive research (Koh & Owen, 2000).

In this study, the research assessed the result of pre-test and post-test of the pupils after using the contextualized learning material and find out if the pupils' achievement in mathematics was improved and gather feedback in the utilization of CLMM.

Research Site

The site of the study are elementary schools from East and West District of Schools Division Office of Calamba City.

Participants

The participants of the study were Grade 6 pupils and teachers of Putting Lupa ES; Hornalan ES; Majada Out ES; Paciano ES; Calamba ES; and JRMS during the School Year 2019-2020. There were one hundred eighty pupils (180) and six (6) mathematics teachers subjected to Project CLMM.

Instrumentation

The pre and post-test was the main instrument of the study. It's composed of 50 items using multiple choices. The instrument underwent validation and constructed a table of specifications based on the curriculum guide of Mathematics 6. The second instrument came from Learning Resource Materials Division (LRMD) in order to gather feedback from the contextualized learning material.

Data Collection

After the final draft of the main instrument, a Letter of Request to the Schools Division Superintendent Endorser by the Chief of Curriculum Implementation Division (CID) in the conduct of survey to the participants. Data were gathered before and after the implementation of CLMM. Each school participants have introduced the objectives of Project CLMM and assured the confidentiality of the data gathered.

Ethical Considerations

The researcher considered the gender, religion, and status of the participants and voluntary participants. The name of the pupils' participants will not be revealed.

Statistical Analysis

After data gathering, the researcher retrieved the data and tallied based on the objectives of the study. In analyzing the pre-test and post-test, the researcher computed the mean percentage score (MPS) using the formula of MPS=Mean/ Perfect Square x 100.

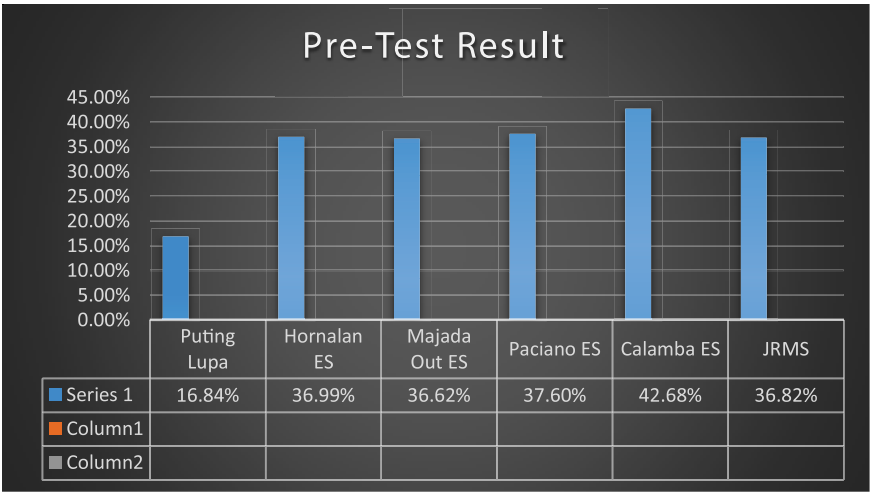
RESULTS AND DISCUSSION

Content of the Learning Material in Mathematics 6

From the First Quarter Number and Number Sense from Lesson 1: Adding Simple Fractions and Mixed Numbers with Regrouping to Lesson 32: Creating Problems Involving Division without or with of the other operations of Decimals/ Mixed Decimals. The Second Quarter Number and Number Sense from Lesson 33: Expressing One Value as a Fraction of Another Given their Ratio and Vice-Versa to Lesson 67: Solving Routine and Non-Routine Problems Involving Basic Operations of Integers using Appropriate Strategies and Tools. The Third Quarter Geometry Pattern and Algebra, Measurement from Lesson 68: Visualizing Solid Figures to Lesson 88: Solving Word Problems Involving Measurement of Surface Area. Lastly, the Fourth Quarter Measurement, Statistics, and Probability from Lesson 89: Determining the Relationship of the Volume between Rectangular Prism and a Pyramid to Lesson 115: Creating Problems Involving Experimental and Theoretical Probability.

Table 1. Pre-Test of the Respondents' Schools in Grade 6 Mathematics

Schools	Pre-Test(MPS)
Puting Lupa ES	16.84%
Hornalan ES	36.99%
Majada Out ES	36.62%
Paciano ES	37.60%
Calamba ES	42.68%
JRMS	36.82%
Average	34.59%

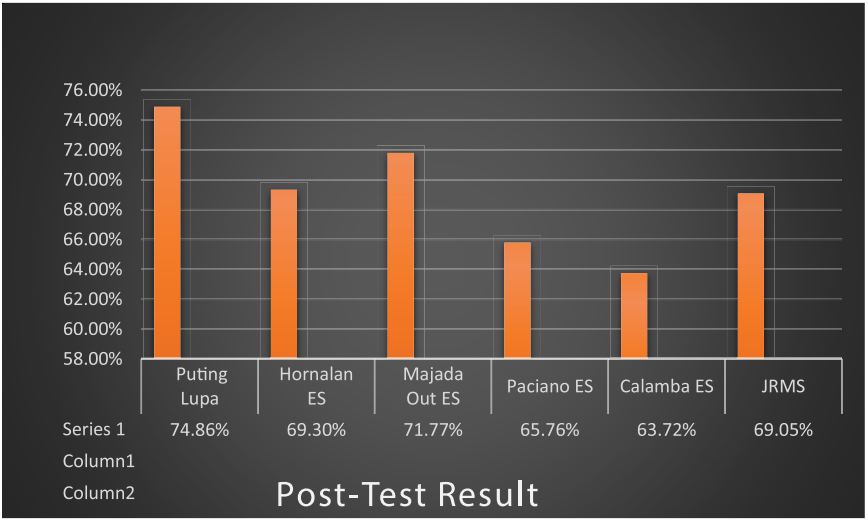


Graph 1. Pre-Test of the respondents' schools in Grade 6 Mathematics

Table 1 and Graph 1 show the results of Pre-Test in six (6) elementary schools in Calamba City. The results of the Pre-Test indicate that all school respondents have problems in their mathematics subjects. Perhaps the competencies are not being taught properly.

Table 2. Post-test of the Respondent Schools in Grade 6 Mathematics

Schools	Post-Test(MPS)
Puting Lupa ES	74.86%
Hornalan ES	69.30%
Majada Out ES	71.77%
Paciano ES	65.76%
Calamba ES	63.72%
JRMS	69.86%
Average	69.21%



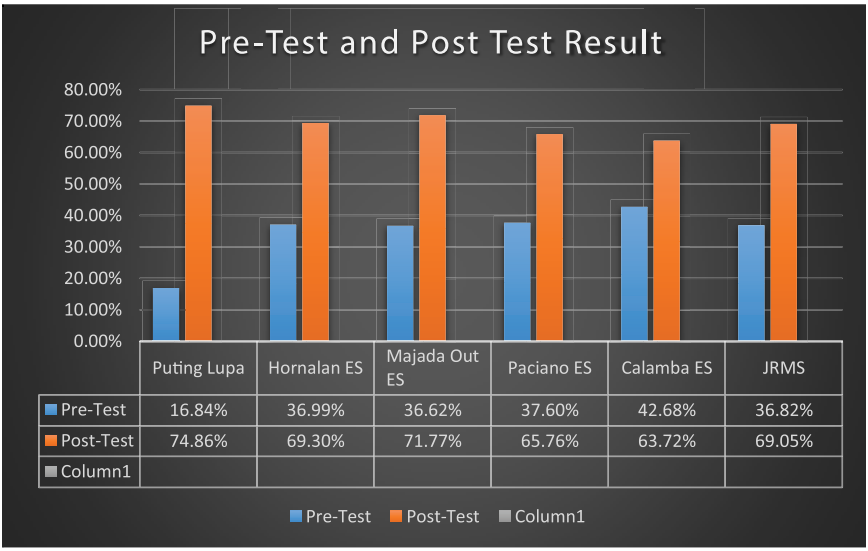
Graph 2. Post-test of the respondent schools in Grade 6 Mathematics

Table 2 and Graph 2 show the results of the post-test of six (6) schools. After one grading period, the MPS was improved.

The data signify that Project CLMM helps improved pupils' achievement in Mathematics. In spite of the MPS increased, still, there is a need to enhance the competence of school heads in giving technical assistance to the math teachers.

Table 3. Comparative Results of the Pre-Test and Post-Test

Schools	Pre-Test(Mps)	Post-Test(Mps)	Difference
Puting Lupa	16.84%	74.86%	58.02%
Hornalan ES	36.99%	69.30%	32.31%
Majada Out ES	36.62%	71.77%	35.15%
Paciano ES	37.60%	65.76%	28.16%
Calamba ES	42.68%	63.72%	21.04%
JRMS	36.82%	69.86%	32.52%
Average	34.59%	69.21%	34.53%



	Puting Lupa	Hornalan ES	Majada Out ES	Paciano ES	Calamba ES	JRMS
Pre-Test	16.84%	36.99%	36.62%	37.60%	42.68%	36.82%
Post-Test	74.86%	69.30%	71.77%	65.76%	63.72%	69.05%
Column1						

Graph 3. Comparative results of the Pre-Test and Post-Test

Table 3 and Graph 3 reveal the difference between Pre-Test and Post-Test of six (6) schools. After the implementation of Project CLMM, increased pupils' achievement was evidence.

It clearly found out that, Project CLMM will help address the problem in Mathematics achievement effectively and efficiently.

Table 4. Consolidated Feedbacks in CLMM

Title/Name of Learning Resource	Page Number	Description of Findings	Recommended Correction	Revision/Redevelopment Put a Check (√) mark	
				Revision	Redevelopment
Mathematics VI	p. 232	• Activities were aligned to the learning competency. • Readable • All activities were doable, and critical thinking skills of the pupils were enhanced • Great help for both pupils and teachers • The exercise in Go further was placed below to improve your skills letter B	• Engage yourself page 45 • Number sentence must be in column A and answer must be in Column B • Align the numbers in the columnar form • Place the table below to go further.		√
	P. 36 and 38	• The columnar of numbers on page 36 engage yourself P38 engage yourself	• Proper tabbing on pages 36 and 38 Engage yourself • Simply terror	√	
	p.21	• Lesson to GMDAS instead of SDAS		√	
		• No error			
		• Quarter 1 of LM in Math pages 1-72 • No error or correction		√	

CONCLUSIONS

Project CLMM found out its input on pupils' achievement in Mathematics, which was proven on the results of the pre-test and posttest given to the respondents' school; thus, CLMM is highly recommended to use in teaching Mathematics because it helps improve the performance Mathematics. In spite of its good effect on pupils' achievement, there is still part of the learning materials to be improved like engage yourself.

TRANSLATION RESEARCH

=The findings of the study could be translated through a journal article for International publications, newsletters—in-service Training (INSET) in the Division and School-Based Learning Action Cell.

ACKNOWLEDGMENTS

This piece of work is wholeheartedly dedicated to my family Rodolfo, King Michael Rudolf, Joseph Cristopher, Vina Marie, and to those who were close to my heart. Second, to the DepEd family of Calamba City, especially mathematics educators.

Special thanks to our Father Almighty.

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