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Development and Validation of Math Instructional Materials in Multi-Grade Teaching Grades 5 & 6

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Abstract:

This study aimed to develop and validate mathematics instructional materials for multi-grade teaching in Grades 5 and 6 at Bayugao Elementary School in Luna, Apayao. The research addressed the different challenges faced by teachers, learners in multi-grade settings, particularly the lack of appropriate and engaging resources for different learners and learning's. Using the Research and Development (R&D) method, the study followed the stages of planning, designing, expert validation, pilot testing, and revision. The developed materials were assessed by experts in mathematics education or the master teachers and multi-grade teaching using a validation tool that evaluated content factor, format factor, organization and presentation factor and accuracy and up-to-datedness of information. Results showed that the instructional materials were "very satisfactory" in all criteria, indicating a high level of acceptability. Additionally, feedback from teacher-implementers and learners during the pilot phase revealed improved engagement and understanding of key mathematical concepts. The findings underscore the importance of contextualized, level-appropriate resources in enhancing teaching effectiveness and learning outcomes in multi-grade classrooms. The study recommends the wider adoption of the materials and further research into their long-term impact on learner performance.

Introduction

Math learning is difficult for many kids worldwide. Many children, regardless of their background, are known to find this subject challenging. These difficulties stem from numerous sources. Insufficiency of high – quality educational resources and inadequate support from educators or parents are two possible scenarios for kids especially among those who are learning in a multi-grade class.

Multi-grade classroom means that there are two or more grades in a single classroom working together or independently and in which every student is working for his/her individual curriculum goals for their own grade level ^[1]. They are learning simultaneously in the same class being taught by a single teacher. It is very easy to say but really very tricky and harder to handle. On the one hand, it gives an opportunity for collaborative learning strategy. However, the learning outcomes in this type of learning environment are not as effective as what we expected.

In some countries, there are not enough teachers who are well-trained in teaching mathematics, and this can make it even harder for pupils to understand complex concepts. Furthermore, the pressure of highstakes testing can add to the stress pupils feel, making it even harder for them to focus and learn effectively. These issues are not just found in one country or region but are common across many parts of the world, affecting millions of children and their ability to learn math successfully.



In Philippine educational system, the most common classroom type is the single grade and this has been the typical classroom since the public school system is organized in the Philippines. However, in remote barangays where the number of children enrolled could not meet the required number to organize a single grade class, multi grade classes were adopted. Aside from the distance of the barangay and the small number of children for each grade level, the shortage of teachers, fund and school buildings were also among the factors that led to the organization of multi-grade classes in the different parts of the country ^[2].

Addressing the challenges faced by teachers in multi-grade classrooms requires a comprehensive approach that includes improving infrastructure, providing specialized training, adapting the curriculum, and fostering collaboration among stakeholders ^[3].

Additionally, there is a significant difference in the quality of education between urban and rural areas, with pupils in rural areas often facing more obstacles. These can include fewer educational resources, less access to technology, and sometimes even a lack of basic infrastructure like proper classrooms.

As a result, many pupils in the Phillipines do not perform as well in math as their peers in other countries, and this can have a long, term effects on their future education and career opportunities.

In the specific context of Bayugao Elementary School in Apayao, the challenges of learning mathematics are even more pronounced. This school, like many others in rural areas, faces a number of unique issues that make it difficult for pupils to excel in math. Firstly, the school is situated in a remote area, which means that it may not have the same level of access to educational resources as schools in more urban setting. This includes things like poor internet connections, and different classroom setting. Additionally, due to minimal number of enrollees, the teachers here often have to teach multiple grades at once, which can be incredibly challenging. This is known as a multi-grade classroom, and it requires teachers to divide their attention between pupils of different ages and skill levels.

This situation can make it hard for teachers to provide the focused, individualized instructions that are often needed to help pupils who are struggling with math. There are several successful techniques that these multi-grade teachers used to enhance the abilities and skills of the learners that bring them to complete in big schools ^[4]. There are a lot of good things that came out precisely the classroom strategies of multi-grade teachers. Thus, Multi-grade teaching can be more beneficial to learners when they apply strategies that promote the interest of the learners. The addition of other instructional or educational materials is also beneficial. Educational materials comprise books, workbooks, audiovisuals, software, and hardware can greatly affect pupils' learning and academic achievement through the availability, sufficiency, and relevance of instructional materials in the classroom ^[5]. Moreover, pupils in this multi-grade setting might feel less confident in their abilities, especially when they see older or more advanced pupils grasping concepts that they find difficult. All of these factors combine to create a learning environment where many pupils find it hard to keep up with their math lessons and build a strong foundation in the subject.

The combination of these global, national, and local challenges means that many pupils are not getting the support they need to succeed in mathematics. Without enough well-trained teachers, proper learning materials, and an environment conducive to focused study, pupils often struggle to understand basic math concepts. This can lead to a cycle where pupils become increasingly frustrated and lose interest in the subject altogether. For those in multi-grade classrooms, the difficulties are compounded by the need to share their teachers' attention with pupils of different ages and abilities.



The lack of instructional material makes it even harder for these pupils to grasp new and complex mathematical ideas. Additionally, the lack of resources and support can result in pupils developing a fear or dislike of math, which can hinder their learning even further. As these pupils progress through their education, the gaps in their understanding become more pronounced, making it even more challenging for them to catch up and perform well in math.

Elementary school math is a crucial time for pupils, as they are forming their understanding of basic math concepts that will be important for high school and beyond. With this research, there will be a higher pupils' understanding of math concepts compared to traditional lecture-based methods. Traditional teaching methods often rely heavily on lectures, where the teacher talks and students passively listen. This can lead to students losing interest and not fully understanding the material. As math is a subject that benefits greatly from hands-on learning and active engagement, there is a need to explore alternative teaching methods that could potentially enhance pupils' learning experiences and outcomes. Using instructional materials for math can have a significant impact on pupils' academic success and their interest in pursuing math in the future. Elementary school is a pivotal time when pupils often decide whether they enjoy math and want to continue studying it. Additionally, in our rapidly changing world, where technology plays a major role in many careers, it is important to integrate these tools into education to better prepare pupils for the future.

The absence of instructional materials that is specifically design to teach learners in the multi-grade classes leads to low level of understanding especially in math subjects. This study is focused on developing instructional materials designed for multi-grade learners (grades 5 and 6) in order to impact pupils' learning and to support these pupils and improve their math learning outcomes.

Statement of the Problem

The study aimed develops and validate math instructional materials in multi-grade teaching grades 5 and 6. As such, the study answered the following research questions.

- 1. What math instructional materials may be developed based on the Most Essential Learning Competencies (MELCs)
- 2. What is the rating of Teacher Validators on the developed math instructional materials in terms of:
- a. content factor
- b. format factor;
- c. presentation and organization factor;
- d. accuracy and Up-to –datedness of information; and

Theoretical Framework

The theoretical framework for the development and validation of Math instructional materials in multigrade teaching in Grades 5and 6 was anchored by theory described by Edgar Dale's Cone of Experience, which supports printed materials use in classroom instruction through books that provide vivid and memorable experiences for learners. Dale's theory has been widely used in education in our understanding of learning and why student learning occurs as an application of the Cone of Experience ^[6]. It has been used to design effective learning experiences and serves as a useful framework for curriculum development, instructional materials design, and selecting teaching methods that promote active and experiential learning.

Another is grounded in Vygotsky Sociocultural Theory of Cognitive Development. In the context of mul



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ti-grade classrooms, Vygotsky's concept of the Zone of Proximal Development (ZPD) is particularly relevant. The ZPD refers to the difference between what a learner can do independently and what they can achieve with guidance and support from a more knowledgeable other, such as a teacher or peer. Multi-grade classrooms, which mix students of different ages and abilities, provide a unique setting where peer learning and collaborative activities can be harnessed to support students within their ZPD. This environment allows younger or less advanced students to learn from their older or more knowledgeable peers, promoting cognitive development through social interaction.

Furthermore, Vygotsky's emphasis on the use of cultural tools and symbols, such as language and mathematical concepts, underscores the importance of using diverse teaching methods and resources tailored to the needs of multi-grade pupils. Incorporating interactive and culturally relevant materials can enhance understanding and retention of mathematical concepts.

Applying Edgar Dale's Cone of Experience and Vygotsky's Sociocultural Theory, this study seeks to explore how the developed and validated Math instructional materials in teaching multi-grade in Grades 5 and 6 influence pupils' mathematical learning. It will investigate how these materials impact their learning process and how can it mitigate learning difficulties and foster a more effective and engaging learning environment for multi-grade pupils.



Figure 1 shows the process of developing math instructional material in teaching grades 5 and 6. The researcher considered and revisited the most essential learning competencies in grades 5 and 6 for the fourth quarter for systematically addressing the research objectives and deriving actionable insights. After the development, the researcher consulted one (1) master teacher and two (2) multi – grade teachers of Bayugao Elementary School who are currently and previously teaching grades 5 and 6. The final output is a set of math instructional materials that have been thoroughly developed and validated. These IMs are ready for use in teaching grades 5 and 6 ensuring they are both educational appropriate.



RESEARCH METHODOLOGY

Research Design

The study utilizes the mixed – method research design. A mixed-methods design offers a number of benefits to approaching complex research issues as it integrates philosophical frameworks of both postpositivism and interpretivism (Fetters, 2016) interweaving qualitative and quantitative data in such a way that research issues are meaningfully explained. It also offers a logical ground, methodological flexibility and an in-depth understanding of smaller cases (Maxwell, 2016). In other words, the use of mixed-methods enables researchers to answer research questions with sufficient depth and breadth (Enosh, Tzafrir, & Stolovy, 2014) and helps generalise findings and implications of the researched issues to the whole population. For example, the quantitative approach helps a researcher to collect the data from a large number of participants; thus, increasing the possibility to generalise the findings to a wider population. The qualitative approach, on the other hand, provides a deeper understanding of the issue being investigated, honouring the voices of its participants. In other words, whereas quantitative data bring breadth to the study and qualitative data provides depth to it. Moreover, quantitative results can be triangulated with qualitative findings and vice versa. Triangulation, as a qualitative research strategy, is the use of multiple methods or data sources to develop a comprehensive understanding of a research problem or to test validity through the convergence of information from different sources (Carter et al., 2014). A mixed-methods design, therefore, offers the best chance of answering research questions by combining two sets of strengths while compensating at the same time for the weaknesses of each method (Johnson & Onwuegbuzie, 2004). Consequently, "mixed-method research designs are becoming increasingly relevant to addressing impact research questions" (Saville, 2012, p.7)^[7]. A qualitative research design is employed to provide other comments and suggestions. It involves collection of qualitative data from the experts. Ratings of the raters are quantitative data. Quantitative research involves collecting and analyzing numerical data to understand patterns, make predictions, test causal relationships, and generalized results to wider populations ^[8]

Locale of the Study



The study was conducted in Bayugao Elementary School in Turod, Luna, Apayao, which presents a specific educational setting for multi – grade classes. Situated in the far flung municipality of Luna within the province of Apayao, the school serves as a representative example of educational institutions which likely reflects the challenges and opportunities present in such locales, including potential issues such as limited resources, diverse student populations, and unique cultural contexts.



Respondents of the Study

Table 1: Respondents of the study			
Validators	Frequency	Percentage	
Master Teacher	1	33%	
Multi-grade Teachers	2	67%	
Total	3	100%	

The respondents for the study were 1 master teacher and 2 multi-grade teachers previously and currently teaching grades 5 and 6 who validated the developed math instructional materials.

Master Teachers are experienced educators who have achieved mastery in their field and are recognized for their exceptional skills in teaching. They are known for mentoring other teachers, developing curriculum, leading professional development activities, and achieving high student outcomes. Teachers teaching the same grade guided the developer and shared their expertise, other techniques and others. The respondents are experts in the validation of the developed instructional material.

Research Instruments

This study used the validation tool which was adopted from Guidelines and Processes for LRMDS Assessment and Evaluation V1.0, Evaluation Rating Sheet for Print Resources by the Department of Education ^[9].

The first factor involves the content of the developed math instructional materials. In this factor, it must score at least 21 points out of a maximum 28 points to pass the criterion.

The second factor is the format of the materials which includes the prints, illustrations, design and layout, paper and binding, and size and weight of resources. This material must score at least 54 points out of a maximum of 72points to pass the criterion.

The third factor is for the presentation and organization and must be scored with at least15 points out of a maximum of 29points to pass the criterion.

And lastly, the accuracy and up - to-datedness of information factor, which includes conceptual errors, factual errors, grammatical errors, computational errors, obsolete information, and typographical and other minor errors. Material must score 24 out of a maximum 24 points to pass the criterion.

Scope and Delimitation

The researcher focused on the development of math instructional materials that is designed for multigrade learners to help impact pupils' learning, to support these pupils and improve their math learning outcomes, specifically, the Most Essential Learning Competencies (MELCs) of Grades5 and 6 for the fourth quarter. The following topics/ lessons are the coverage of the Fourth Quarter which also serves as the basis for the development of the instructional materials.

Data Gathering Procedure

The researcher conducted the necessary procedures to gather needed data or information during the study.

Initially, formal permission was sought through written requests addressed to the Schools Division Superintendent (SDS), Public Schools District Supervisor (PSDS), and the School Head of Bayugao



Elementary School. Approval from these authorities ensured that the conduct of the study adhered to institutional and ethical standards.

After securing the approvals, the researcher proceeded to the preliminary phase, which involved identifying the fourth quarter learning competencies in Mathematics based on the Most Essential Learning Competencies (MELCs) prescribed by the Department of Education Curriculum and Instruction Strand. These competencies served as the basis for developing the instructional materials for multi-grade learners in Grades 5 and 6.

In the development phase, the researcher created mathematics instructional materials aligned with the identified MELCs. The materials were organized into a learning package containing lessons for Weeks 1 to 8 for both grade levels. The process included encoding the content, designing the layout, printing the pages, and assembling the materials through cutting and pasting.

Once the instructional materials were completed, they were subjected to a validation process in the final phase. A panel of validators composed of a master teacher and selected multi-grade teachers evaluated the materials in terms of content, format, presentation and organization, and the accuracy and up-to-datedness of information. The evaluation involved the use of rating tools and a focus group discussion (FGD), where participants provided feedback, comments, and suggestions for enhancing the quality and effectiveness of the instructional materials.

Statistical Tool

The data collected from the validation process of the developed math instructional materials were collected, processed, and analyzed statistically.

The Evaluation Rating Sheet for Print Resources contains four factors which are content, format, presentation and organization, accuracy and up-to-datedness of information. In the content factor, the material must score at least 21 points out of a maximum of 28points to pass it. The format factor consists of 5 <u>sub topics</u> which are the prints, illustrations, design and layout, paper and binding, and size and weight of resources. At least 54 points out of 72 points must be scored in order to pass this criterion. In the third factor which is the presentation and organization, 15 points out of 20 points was needed. Lastly, the accuracy and up-to-datedness of information which includes the conceptual, factual, grammatical, computational, typographical and other minor errors needed to be scored with 24 points out of the maximum of 24 points to pass this criterion.

In the first three factors, evaluator must rate the material from 1 to 4 wherein 4 being the highest and 1 be the lowest. Unlike in the fourth factor wherein 4 means error is not present, 3 means errors are present but very minor and must be fixed, 2 means errors are present and requires major redevelopment, and 1 means poor and do no evaluate further.

RESULTS AND DISCUSSION

The developed instructional materials were intended for use of grades 5 and 6 learners consisting of eight learning competencies to help impact pupils' learning, to support these pupils and improve their math learning outcomes



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Table 1: The Most Essential Learning Competencies of Grades 5 and 6 in Mathematics for fourth quarter

	Grade 5	Grade 6
Week 1	Find the area of a given circle. Solve routine and non-routine problems involving the area of a circle.	Determine the relationship of the volume between a rectangular prism and a pyramid; a cylinder and a cone; and a cylinder and sphere.
Week 2	Visualize the volume of a cube and rectangular prism.	Find the volume of cylinders, pyramids, cones, and spheres.
	Name the appropriate unit of measure used for measuring the volume of a cube and a rectangle prism.	Solve routine and non-routine problems involving volumes of solids.
	Convert cu. cm to cu. m and vice versa; cu.cm to L and vice versa.	
Week 3	Estimate and use appropriate units of measure for volume.	Read and interpret electric and water meter readings.
		Solve routine and non-routine problems involving electric and water consumption.
Week 4	Solve routine and non-routine problems involving volume of a cube and rectangular prism in real-life situations using appropriate strategies and tools.	Construct a pie graph based on a given set of data and interpret it.
Week 5	Read and measure temperature using thermometer (alcohol and/or digital) in degree Celsius.	Solve routine and non-routine problems using data presented in a pie graph.
	Solve routine and non-routine problems involving temperature in real-life situations.	
Week 6	Organize data in tabular form and presents them in a line graph.	Describe the meaning of probability such as 50% chance of rain and one in a million chance of winning.
	Interpret data presented in different kinds of line graphs (single to double-line graph).	Perform experiments and records outcomes.
Week 7	Solve routine and non-routine problems using data presented in a line graph.	Make listings and diagrams of outcomes and tells the number of favorable outcomes and



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Draws inferences based on data presented in
a line graph.chances using these listings and diagrams.Week 8Describe experimental probability.Make simple predictions of events based on
the results of experiments.Performs an experimental probability and
records result by listing.Presenter of experimental probability and
the results of experimental probability and
the results of experimental probability and
records result by listing.

	Most Essential	Developed Math	Description of contents
	Learning Competencies	Instructional Materials	
	(MELCs)		
Week	Grade 5		The content of the
1	Find the area of a given circle.	AREA of o CIRCLE Hard a transfer Activation of the reden.	material was the formula in finding area of a circle and its examples, steps in
	Solve routine and non- routine problems involving the area of a circle.	Palyst 4-Stop Plan in Soluting More Step 1 Understand Problems a What a subd in the problems b What are the given facts? c What are the hidden questions. Step 2 Plan a What informations or strategy or formula should be used? b What we be determined and a suff t What is the number sentence? b Date we determined and a suff b What is the market is an and a suff b What is the market is an and a suff b What is the market is an and a suff b What is the market is an and a suff b What is the market is an and a suff b What is the market is an and a suff b What is the market is an and a suff b What is the market is an an and a suff b What is the market is an and a suff b What is the market is an and a suff b What is the sufficient is a sufficient in the sufficient is an and b b a sufficient is an and a sufficient is a sufficient in the sufficient is a sufficient in	solving problems and examples.
	Grade 6 Determine the relationship of the volume between a rectangular prism and a pyramid; a cylinder and a cone; and a cylinder and sphere.		It consisted of charts showing the relationships of the volumes between solid figures, e.g. rectangular prism and pyramid, cone and cylinder, and cylinder and sphere with their examples.

Table 2: The developed math instructional materials



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Week 2	Grade 5 Visualize the volume of a cube and rectangular prism. Name the appropriate unit of measure used for measuring the volume of a cube and a rectangle prism.		It contained charts showing the visualization of the volume of a cube together with examples
	Grade 6 Find the volume of cylinders, pyramids, cones, and spheres. Solve routine and non- routine problems involving volumes of solids.	WOLUMBE of a particular state of the partin state of the particular state of the particular sta	The charts showed the formulas in finding the volume of cylinder, pyramids, cones and spheres. It was followed by their respective examples.
Week 3	Grade 5 Estimate and use appropriate units of measure for volume.	Research the Appropriate Unit of response that is the Appropriate Unit of the Data space of the Appropriate Unit of The Appropriate Unit of Appropriate Unit of Approprised Unit of Approp	The materials consist of two charts discussing how to name the appropriate unit of measures and conversion of units.
	Grade 6 Read and interpret electric and water meter readings. Solve routine and non- routine problems involving electric and	AD ALL ALL ALL ALL ALL ALL ALL ALL ALL A	The charts showed some definitions and the steps on how to read electric meter with examples



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	water consumption.		
Week 4	Grade 5 Solve routine and non- routine problems involving volume of a cube and rectangular prism in real-life situations using appropriate strategies and tools.	AD ADE EVENTS	It contained the steps in problem solving and example in finding the area of a cube and rectangular prism using figures and real life situation problems.
	Grade 6 Construct a pie graph based on a given set of data and interpret it.		The material showed the steps in constructing pie chart and interpreting a pie graph with examples in each step.
Week 5	Grade 5 Read and measure temperature using thermometer (alcohol and/or digital) in degree Celsius. Solve routine and non- routine problems involving temperature in real-life situations.	ADARTE E HERE HE	It contained definition of thermometer, illustrations of different types of thermometer and its part, and showed to use it,
	Grade 6 Solve routine and non- routine problems using data presented in a pie graph.		The charts contained steps in solving problems using data presented in a pie graph and its examples



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Grade 5 Organize data in tabular form and presents them in a line graph. Interpret data presented	COLORER 4	The charts showed how to construct step by step. Examples were also illustrated.
in different kinds of line graphs (single to double- line graph).		
Grade 6 Describe the meaning of probability such as 50% chance of rain and one in a million chance of winning.	COADE 4. Design of the second	The charts showed examples of probalities.
	Grade 5 Organize data in tabular form and presents them in a line graph. Interpret data presented in different kinds of line graphs (single to double- line graph). Grade 6 Describe the meaning of probability such as 50% chance of rain and one in a million chance of winning. Perform experiments and records outcomes.	Grade 5Organize data in tabular form and presents them in a line graph.Interpret data presente in graphs (single to double line graph).Grade 6Describe the meaning of probability such as 50% chance of rain and one in a million chance of winning.Perform experiments and records outcomes.



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Week 7	Grade 5 Solve routine and non- routine problems using data presented in a line graph. Draw inferences based on data presented in a line graph.		Steps in problem solving and examples are written in the charts.
	Grade 6 Make listings and diagrams of outcomes and tells the number of favorable outcomes and chances using these listings and diagrams.		The charts showed tree diagram and its examples. It also showed differences in making possible choices.
Week 8	Grade 5 Describe experimental probability. Perform an experimental probability and records result by listing.	<section-header><text><text><text><text><text><text><text><text></text></text></text></text></text></text></text></text></section-header>	The charts showed definition of experimental probability and gave examples of it.
	Grade 6 Make simple predictions of events based on the results of experiments.		The charts showed simple prediction samples.



The developed instructional materials were validated in terms of content, format, presentation and organization, and accuracy and up - to - datedness of information factors. The last factor was in terms of conceptual, factual, grammatical, computational, obsolete information and typographical errors.

Table 3: Summary of Rating of the master teacher and multi – grade teachers on the developed instructional materials

	Mean	Interpretation
Factor 1. Content	23.5	Passed
Factor 2. Format	61	Passed
Factor 3: Presentation and	16.5	Passed
Organization		
Factor 4. Accuracy and up-to-	4.00	Passed
datedness of information		

Table 2 presents the consolidated rating from the master teacher and multi-grade teacher. The summary indicates that the materials have passed all evaluated criteria. Each factor is analyzed based on the average scores from all validators.

The content factor was consistently rated passed across all validators with a mean of 23.5 which is above the passing score. This indicates that the material is believed to be highly appropriate, relevant, and effectively communicates the intended knowledge.

Format factor was rated with a mean of 61 which exceed the minimum passing score. This ratings show some variability with teachers giving a slightly lower score suggesting potential areas for improvement in instructional strategies. Overall, the material is effective in supporting learning.

Meanwhile, presentation and organization has been rated with a mean of 16.5 which is a passing score.

Additionally, all validators gave a perfect score of 24 for the absence of errors indicating that the material was reviewed and found free from mistakes. This adds to the reliability and credibility of the instructional materials.

In General, the math instructional materials have been passed all evaluated criteria demonstrating quality as validated by a master teacher and multi-grade teachers. The mean scores for content factor (23.5), format factor (61), and presentation and organization factors (16.5) reflects strong approval, while the perfect score for the absence of errors (24. 00) confirms accuracy and up-to-datedness of information. The evaluations highlight the material strengths in content, format, presentation and organization. Overall, the material meets the standards set by the Department of Education

SUMMARY, CONCLUSION, AND RECOMMENDATION

Summary of Findings

This study aimed to develop math instructional materials for multi-grade teaching grades 5 and 6. It came out with the following findings:

There were eight (8) Most Essential Learning Competencies in each grade for grade 5 and 6. The researcher developed 16 instructional materials for both grades which can be used during the presentation and discussion as shown the briefly made lesson plans.



The experts evaluated the instructional materials on its content, format, presentation and organization as satisfactory. Additionally, they found no errors in the material indicating that there are no conceptual, factual, grammatical, computational errors, obsolete information, typographical and other minor errors. The developed materials were rated as Passed in terms of content, format, presentation and organization as well as the absence of any errors and met the guidelines set by the Department of Education. Overall, the math instructional materials in multi-grade teaching grades 5 and 6 are deemed acceptable.

Conclusions

Based on the result of this study the validators agreed that the developed math instructional materials possess content validity and they are within the limitations of the competencies of the K to 6 curriculums.

- 1. The Development of the instructional materials is acceptable and follow the Most Essential Learning Competencies (MELCs) of grades 5 and 6. These materials are sufficient and appropriate to its intended users.
- 2. The developed materials contain the required standards set by the Department of Education in terms of content, format, presentation and organization, accuracy and up-to-datedness of information.
- 3. The master teacher and the multi-grade teachers validated the materials as acceptable as an instructional material in teaching multi-grade class especially grades 5 and 6.

Recommendations:

The following are forwarded as recommendations:

- 1. The teacher teaching the multi-grade class are encourage to use the developed instructional materials or other supplementary materials in delivering lessons to catch the learners' attention, desire to keep focus on the lesson, and there will be a retention of all lessons.
- 2. Try out or pilot testing of the developed instructional materials for teaching mathematics to multigrade learners should be done to determine its effectiveness.
- 3. Future researches may conduct other research along this line focusing on the effectiveness of the developed instructional materials.

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