



Developing and Contextualizing Instructional Materials in Mathematics for Grade 6 Pupils

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Author's contribution

The sole author designed, analysed, interpreted and prepared the manuscript.

Article Information

DOI: 10.9734/AJESS/2020/v13i430341

Editor(s):

(1) Dr. Bashar H. Malkawi, University of Sharjah, United Arab Emirates.

Reviewers:

(1) Abubakar Kabiru, Usmanu Danfodiyo University, Nigeria.
(2) Gbolagade Adeniyi Musibau, Emmanuel Alayande College of Education, Nigeria.
Complete Peer review History: <http://www.sdiarticle4.com/review-history/63774>

Original Research Article

Received 05 October 2020
Accepted 11 December 2020
Published 26 December 2020

ABSTRACT

This study used the descriptive developmental method utilizing the contextualized instructional materials. Respondents were composed of the school principals, master teachers and mathematics teachers who have been considered as experts in the scrutiny and critiquing of the instructional materials, grade 6 pupils who benefitted the developed instructional material were also included as respondents. The data were analyzed using frequency counts, percentage, mean, ranking a weighted mean. T-test was utilized to test the null hypothesis if there is a significant difference between the pre-test and posttest results of the pupils. The research instrument is a survey questionnaire. The assessment of the respondents were based on the different variables mentioned for the evaluation of an effective instructional materials. A five-point Likert' Scale was used to indicate the assessment, these are: Very Acceptable (5), Acceptable (4), Moderately Acceptable (3), Less Acceptable (2), and Not acceptable (1). It can be depicted the variables included in the instructional material had an overall computed mean value of 4.20 and rated as very acceptable. This study found out that there is a significant difference of the pupils' pretest and posttest after using the developed instructional materials. The result depicted that the computed t-value of 28.98 with the degrees of freedom of 49 is greater than the critical value of 1.645 at 0.05 level of significance which means there is a significant difference between the pre-test and post-test mean score of the pupils.

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Keywords: Developing; contextualizing; instructional materials.

1. INTRODUCTION

Instructional materials captivate the learners' attention and improve the performance of the pupils. It is used in the teaching and learning process in order to get the attention of students to initiate learning the "real world". It is a relevant materials utilized by a teacher during mathematics instructional process for the purpose of making the contents of the instruction more practical and less vague. Instructional materials add elements of reality by providing concrete examples to the learning, and it is obvious that mathematics teaching and learning cannot be well accomplished without the use of instructional materials. Mathematics demands upgrading that teacher should adopt innovative techniques and approaches in giving the inputs to the learners. If the country aims for quality education, teachers and learners must work hand in hand with the institution for better results.

In the school where the researcher has been teaching for quite a long period of time, she noted that there is a dearth of instructional materials like workbook especially in Mathematics subject. It is in this light therefore that this study's purpose is to develop an instructional material that will provide direction and contribute to the improvement of quality education of learners in the District of Catubig, Division of Northern Samar, School Year 2013-14. In addition, the researcher observed that pupils could not immediately solve mathematical problems if it is in worded form. She tried to figure out some contributing factors towards the gap between solving mathematical problems in worded form these are: difficulty in understanding word problem due to limited vocabulary, lack of background from the previous lesson, and poor in solving fractions, percentage, and discount rate problems especially that these kind of lessons involved problems in worded form. Hence, there is a need to develop a material that will address the learners' learning gap, with an intervention of providing skills in vocabulary development.

This study tried to find out the acceptability on the contextualized instructional materials in Mathematics 6. Specifically, it sought answer to the following questions: What are the least mastered skills in mathematics 6? What is the extent of utilization of instructional materials in teaching mathematics 6? Based on the findings, what instructional materials may be developed as

assessed by the teachers and school administrators in terms of: Introduction; Objective; Content; Presentation; Usefulness; and Evaluation. How do the pupils performed in their pretest and posttest? and is there a significant difference between the performance of pupils in the pre-test and posttest after using the developed instructional material?

2. MATERIALS AND METHODS

The descriptive developmental method of research was employed in the study utilizing the respondents composed of the school principals, master teachers and Math teachers who have been considered as experts in the scrutiny and critiquing of the instructional materials including the Grade 6 pupils who benefitted the developed instructional materials. The data were analyzed using frequency counts, percentage, mean, ranking a weighted mean.

T-test was utilized to test the null hypothesis if there is a significant difference between the pre-test and posttest of the pupils. After the pretest, the researcher will develop a workbook that will be taught based on the usual approach in teaching mathematics. After the completion of the interventions in teaching identified least mastered skills in mathematics, a post test will be conducted to grade 6 pupils if the level of performance increase. This design was appropriate to this particular study because it described the present status of the pupils' performance level and how the proposed instructional materials make a difference on the pupils' learning achievement.

Respondents of this study are the Teachers and School Administrators of Catubig I District, Catubig, Northern Samar. There are 9 or 11.25 percent School Administrators; and 21 or 26.25 percent teachers; and 50 or 62.50 Grade-six pupils of Catubig I District, Catubig, Northern Samar with a total 80 of respondents. The research instrument used in this study is a survey questionnaire. The assessment of the respondents was based on the different variables mentioned for the evaluation of effective instructional materials. A five-point Likert' scale was used to indicate the assessment, these are: Very Acceptable (5), Acceptable (4), Moderately Acceptable (3), Less Acceptable (2), and Not acceptable (1). Pre-test was given to determine the effectiveness of the instructional materials to identify the amount of competencies learned by the pupils.

To determine the profile of the respondents, the following statistical tools for the interpretation of results according to sub-problems were used: Frequency, for the actual responses to a specific item/question in the questionnaire where the respondents picks his choice; Percentage used as descriptive statistics which describes a part of the whole. Mean Performance Score used to determine the performance rating of the pupils in the pre-test and post-test; Weighted Mean used to get the average frequency of the responses in each weighted item. 'Likerts' Scale was used to determine the extent of utilization of instructional materials in teaching mathematics 6; and T-test, used to determine the significant difference between the pre-test and post-test mean scores of the pupils.

3. RESULTS AND DISCUSSION

This section tried to answer the problem identified of the study.

Sub-Problem No. 1: What are the least mastered skills in Mathematics 6?

Table 1 reveals the least mastered skills in Mathematics of Grade 6. As revealed in this study there are five (5) least mastered skills of Grade 6 pupils in Mathematics and all of them are rated as average. These are: difficulty in understanding word problems with an MPS of 56.45, rank 1; poor in mathematical vocabulary with an MPS of 56.13, rank 2; lack of background of the previous lessons with an MPS of 55.80, rank 3; inability to solve problems involving fractions with an MPS of 55.20, rank 4; and poor in skills in solving percentage and discount rates problems with an MPS of 55.14, rank 5.

Sub-Problem No. 2: What is the extent of utilization of instructional materials in teaching Mathematics 6 in the District of Catubig?

Table 2 shows the extent of utilization of instructional materials in teaching Mathematics 6. It can be shown from the data that books assessed by the respondents were very much utilized with a weighted mean of 4.58, ranked 1; while journals with weighted mean of 3.95 ranked 2, were rated as much utilized; magazines got a weighted mean of 3.35 ranked 3; compact disc with weighted mean of 2.8 were rated as fairly utilized; internet got a weighted mean of 2.48 ranked 5, rated as poorly utilized; and instructional materials with a weighted mean of 1.40, interpreted as not utilized.

It was shown from Table 3.1 presented that the instructional materials were not utilized were perceived by the respondents in teaching Mathematics in Grade 6. Teachers should encourage designing and developing instructional materials to address the shortage of textbooks and other instructional supplementary materials to improve the performance of the learners. It was found out from the preceding Table 3.1 that both teachers and school administrators perceived that there were several instructional materials utilized by the teachers in teaching their subject. But the degree of utilization displayed that the use of instructional material was not utilized because their materials were not readily available for utilization. Henceforth, there was a valid reason to design and develop instructional materials in teaching Mathematics in Grade 6.

Table 1. Least mastered skills in mathematics in Grade 6

Least Mastered Skills	Respondents		Verbal interpretation	Rank
	Mean	MPS		
1. Difficulty in understanding word problems	6.45	56.45	Average	1
2. Poor in mathematical vocabulary	6.13	56.13	Average	2
3. Lack background of the previous lesson.	5.80	55.80	Average	3
4. Poor in solving problems involving fractions.	5.20	55.20	Average	4
5. Poor in skills in solving percentage and discount rates problem.	5.14	55.14	Average	5

Legend:

MPS	Descriptive	Equivalent
96	-100%	Mastered
86	-95%	Closely Approximating Mastery
66	-85%	Moving Towards Mastery
35	-65%	Average
15	-34%	Low
5	-14%	Very Low
0	-4%	Absolutely No Mastery

Table 2. Extent of utilization of instructional materials in teaching mathematics in Grade 6

Instructional materials	School heads/ master teachers		Mathematics teachers		Composite mean		Rank
	WM	VI	WM	VI	WM	VI	
1.Books	4.55	VMU	4.60	VMU	4.58	VMU	1
2.Journals	3.60	MU	4.30	MU	3.95	MU	2
3.Magazine	3.20	FU	3.50	MU	3.35	FU	3
4.Compact Disc	2.25	PU	3.35	FU	2.80	FU	4
5.Internet	2.20	PU	2.75	FU	2.48	PU	5
6. IMs	1.40	NU	1.40	NU	1.40	NU	6

Legend:

Scale	Numerical Value	Descriptive Value
5	4.20-5.00	Very Much Utilized (VMU)
4	3.40-4.19	Much Utilized (MU)
3	2.60-3.39	Fairly Utilized (FU)
2	1.80-2.59	Poorly Utilized (PU)
1	1.00-1.49	Not Utilized (NU)

These findings and observations were corollary to the statement of Hall cited by Hidalgo [1], which in facing educational crisis; teachers should continually provide remedial activities. Teachers should provide and develop better instructional materials, study guides and workbooks to supplement the textbooks. This will help the teacher to have his/her materials on hand in promoting cooperative learning activities among his/her students. The use of instructional materials will contribute to the interest and enthusiasm of the pupils to learn.

Sub-Problem No. 3: Based on the findings, what instructional materials may be developed as assessed by the teachers and school administrators in terms of:

3.1 Introduction

Table 3.1 showed the respondent’s assessment on the instructional reading materials as to introduction.

Table 3.1. Assessment on the instructional materials as to introduction

Criteria	School Heads/Master Teachers		Mathematics Teachers		Composite Mean	
	WM	VI	WM	VI	WM	VI
1. Give the insights and ideas what the activities are all about.	4.35	VA	4.20	VA	4.28	VA
2. Provides background of the concepts and information about the topic to be experimented.	4.10	A	3.95	A	4.03	A
3. Arouses the interest of the pupils to perform the activities.	4.25	VA	4.15	A	4.20	VA
4. Attracts pupil’s attention.	4.40	VA	4.30	VA	4.35	VA
5. Stimulates pupils to learn more.	4.15	A	3.95	A	4.05	A
Overall Mean	4.25	VA	4.11	A	4.18	A

Legend:

Option	Scale	Descriptive	Equivalent
5	4.20-5.00	Very Acceptable	(VA)
4	3.40-4.19	Acceptable	(A)
3	2.60-3.39	Moderately Acceptable	(MA)
2	1.80-2.59	Less Acceptable	(LA)
1	1.00-1.79	Not Acceptable	(NA)

As shown in the data, most of the criteria were assessed by the respondents as very acceptable and two are acceptable. These are: the introduction gives insights and ideas what the activities are all about (WM=4.28); provide background of the concepts and information about the topic to be experimented (WM=4.03); arouses the interest of the pupils to perform the activities (WM=4.2); attracts pupil's attention (WM=4.35); and stimulates pupils to learn more (WM=4.05). In general, the computed overall mean value of 4.18 was rated by the respondents as acceptable as to introduction.

This shows that the introduction is to be included in the prepared instructional materials which are to give advance information with the content of the topic, direction, and understanding the concept and application on what to do and arouse the interest of the learners. This finding was supported by the study of Sumutha et al. [2] in her Methods of Teaching Mathematics in which teachers should conduct a variety of motivational techniques, teaching methods, and strategies in order for the learners to be invigorated throughout the lesson, and come up with quality learning. Further, teachers were encourage to use worksheets because it develops self-learning at the pupils' own pace.

3.2 Objectives

Table 3.2 presented the respondent's assessment on the acceptability of the instructional materials as to objectives.

As shown in the data, the school heads, master teachers and English teachers assessed most of

the criteria as acceptable and the other one as very acceptable; the objectives were clearly stated (WM=4.42); the objectives represented the competencies provided in the subject (WM=4.13); the objectives were relevant to the content activities and feedback (WM=4.13); the objectives were specific, measurable, attainable, realistic and time-bounded (SMART) (WM=4.13); and the objectives provided directions to the learners and to the learning content (WM=4.10). The computed overall mean value of 4.18 was rated by the respondents as acceptable as to objectives.

This implies that the objectives are to be included in the proposed instructional materials to pinpoint the competencies of the topics which are relevant, specific, measurable, time bounded and provide complete direction to the learners as what to do and how to do it in order to perform certain activity or tasks. This finding is relative to the study of Pagonas cited by Antipolo [3], that it was emphasized that any teaching activity objective are necessary. This instructional objective should be appropriate with the teachers' resources and should match with the required tasks. It is imperative to note that instructional materials must have to be evaluated and properly validated to enhance greater and more learning for the development of the learners.

3.3 Content

Table 3.3 portrays the respondents' assessment on the acceptability of the workbook as instructional materials as to content.

Table 3.2. Assessment of the instructional materials as to objectives

Criteria	School heads/ master teachers		Mathematics teachers		Composite mean	
	WM	VI	WM	VI	WM	VI
1. The objectives are clearly stated.	4.45	VA	4.40	VA	4.42	VA
2. The objectives represent the competencies provided in the subject.	4.40	VA	3.85	A	4.13	A
3. The objectives are relevant to the contents, activities and feedback.	4.25	VA	4.00	A	4.13	A
4. The objectives are specific, measurable, attainable, realistic and time-bounded (SMART).	4.15	A	4.10	A	4.13	A
5. The objectives provide directions to the learners and to the learning content.	4.25	VA	3.95	A	4.10	A
Overall Mean	4.30	VA	4.06	A	4.18	A

Table 3.3. Assessment of the instructional materials as to content

Criteria	School heads/master teachers		Mathematics teachers		Composite mean	
	WM	VI	WM	VI	WM	VI
1. Contents are parallel with the objectives.	4.50	VA	4.40	VA	4.45	VA
2. Provide adequate and accurate ideas and information.	4.25	VA	3.95	A	4.10	A
3. Practical applications are provided.	4.30	VA	4.10	A	4.20	VA
4. The content is up to date.	4.30	VA	4.20	VA	4.25	VA
5. Necessary illustration and graph are provided.	4.25	VA	4.15	A	4.20	VA
6. The approach is suitable to a wide range of pupils' abilities.	4.35	VA	3.85	A	4.10	A
7. The content includes adequate development of higher order thinking skills (HOTS) and appropriate for the year level.	4.20	VA	3.85	A	4.03	A
8. The approach is suitable to a wide range of pupils' abilities.	4.45	VA	4.35	VA	4.40	VA
Overall Mean	4.33	VA	4.10	A	4.22	VA

As portrayed in the data, most of the criteria were rated by the two groups of respondents as very acceptable and three was acceptable. These are: contents are parallel with the objectives (4.45); provides adequate and accurate ideas and information (WM=4.10); practical applications are provided (WM=4.20); the content is up to date (WM=4.25); necessary illustration and graph are provided (WM=4.20); the approach is suitable to a wide range of pupils' abilities (WM=4.10); the content includes adequate development of higher order thinking skills (HOTS) and appropriate for the year level (WM=4.03); the approach is suitable to a wide range of pupils' abilities (WM=4.40). Generally, the overall computed mean value of 4.22 was assessed by the respondents as very acceptable as to content.

This implies that the contents of the proposed materials are adequate in substance and form both content and context that can formed with the objective of each topic. It appear that the context reflect that the most important element of the instructional materials development is directed toward the goal, learners, context and learning environment. This finding is corollary to the finding of SEAMEO- INNOTECH as cited by Bedaure [4], and Mijares [5], the idea of using workbook as a strategy for learning within the context of education is relatively recent. One of its functions is to upgrade the contents of the curriculum guide from the old materials that must be replaced with the updated information relevant to the learning needs.

3.4 Presentation

Table 3.4 depicts the respondent's assessment on the acceptability of the workbook competency based instructional materials as to presentation.

It can be depicted from the data that three out of six criteria were assessed as very acceptable and the other three were acceptable. These are: presents topics relevant to the life of the pupils (WM=4.30); topics are presented in logical and orderly sequences (WM=4.13); the writing style of the material is conversational and friendly (WM=4.10); they are based on the step-by-step mastery of skills as provided in every activity (WM=4.20) exercises/activities are sequenced from simple to more complicated ones (WM=4.38); and the topics are sequenced so as to be congruent with learning objectives (WM=4.18). In general, the computed overall mean value of 4.22 was assessed as very acceptable as to presentation.

It was revealed that the context especially the presentation will motivate the pupils to formulate new concepts that can be useful for technical advancement and it should be taken into consideration. This implies that the presentation of each lesson in the workbook are well organized and comprehensive appropriate to the target learners. This finding is relative to the study of Mendiola as cited by Aquino [6] that the comprehensibility was the strongest point of the development of instructional workbook.

Table 3.4. Assessment of the instructional materials as to presentation

Criteria	School heads/master teachers		Mathematics teachers		Composite mean	
	WM	VI	WM	VI	WM	VI
1. Presents topics relevant to the life of the pupils.	4.35	VA	4.25	VA	4.30	VA
2. Topics are presented in logical and orderly sequences.	4.15	A	4.10	A	4.13	A
3. The writing style of the material is conversational and friendly.	4.20	VA	4.00	A	4.10	A
4. They are based on the step-by-step mastery of skills as provided in every activity.	4.25	VA	4.15	A	4.20	VA
5. Exercises/Activities are sequenced from simple to more complicated ones.	4.45	VA	4.30	VA	4.38	VA
6. The topics are sequenced so as to be congruent with learning objectives.	4.25	VA	4.10	A	4.18	A
Overall Mean	4.28	VA	4.15	A	4.22	VA

3.5 Usefulness

Table 3.5 reveals the respondent's assessment on the acceptability of the workbook competency based instructional materials as to usefulness.

As reflected in the data, most of the criteria were assessed as acceptable and the other three were acceptable. These are: the materials prepare the pupils to think logically and critically (WM=4.43); the concepts in the materials are simple and comprehensible (WM=4.23); the

material provides opportunity for the development/ enhancement of knowledge and skills in English (WM=4.05); the learning contents provide adequate information on the topics presented (WM=3.98); they encourage the pupils to become actively involved in the learning activities (WM=4.23); the materials stimulate the learner to become intelligent (WM=4.10); and the activities seek to relate new learning from previous learning (WM=4.33). The computed overall mean value of 4.20 was assessed as very acceptable.

Table 3.5. Assessment of the instructional materials as to usefulness

Criteria	Head teachers/ master teachers		Mathematics teachers		Composite mean	
	WM	VI	WM	VI	WM	VI
1. The materials prepare the pupils to think logically and critically.	4.30	VA	4.25	VA	4.28	VA
2. The concepts in the materials are simple and comprehensible.	4.30	VA	4.15	A	4.22	VA
3. The material provides opportunity for the development/enhancement of knowledge and skills in English.	4.30	VA	4.25	VA	4.28	VA
4. The learning contents provide adequate information on the topics presented.	4.25	VA	4.10	A	4.17	A
5. They encourage the pupils to become actively involved in the learning activities.	4.20	VA	4.05	A	4.13	A
6. The materials stimulate the learner to become intellectual.	4.20	VA	4.10	A	4.15	A
7. The activities seek to relate new learning from previous learning.	4.20	VA	4.10	A	4.15	A
Overall Mean	4.25	VA	4.14	A	4.20	VA

Table 3.6. Assessment of the instructional materials as to evaluation

Criteria	School heads/master teachers		Mathematics teachers		Composite mean	
	WM	VI	WM	VI	WM	VI
1. The evaluation presented is congruent to the objectives and topic presented.	4.55	VA	4.30	VA	4.43	VA
2. The evaluation really assesses the learning of students.	4.35	VA	4.10	A	4.23	VA
3. The evaluation had a very clear purpose as to what to be evaluated among the learner.	4.10	A	4.00	A	4.05	A
4. The evaluation varies in difficulty.	4.10	A	3.85	A	3.98	A
5. Provide sufficient evaluation to monitor pupil's skills and performance.	4.30	VA	4.15	A	4.23	VA
6. The directions in the evaluation are clearly presented and understandable.	4.20	VA	4.00	A	4.10	A
7. The evaluation is enough for each topic.	4.40	VA	4.25	VA	4.33	VA
Overall Mean	4.29	VA	4.09	A	4.19	A

This shows that the instructional material presented is really useful and appreciated by the respondents which they believe that in their own way pupils could easily performed various tasks on the development of skills and application of knowledge that promote critical and independent learning.

3.6 Evaluation

Table 3.6 reveals the respondent's assessment on the assessment of the instructional material as to evaluation.

As revealed in the data, most of the criteria were assessed by the respondents as very acceptable and the three criteria as acceptable, these are: the evaluation presented is congruent to the objectives and topic presented (WM=4.43); the evaluation really assesses the learning of students (WM=4.23); the evaluation had a very clear purpose as to what to be evaluated among the learner (WM=4.05); the evaluation varies in difficulty (WM=3.98); provide sufficient evaluation to monitor pupil's skills performance (WM=4.23); the directions in the evaluation are clearly presented and understandable (WM=4.10); and the evaluation is enough for each topic (WM=4.33). The overall computed mean value of 4.19 were assessed by the two groups of respondents as acceptable as to evaluation.

This implies that the assessment procedure given in the evaluation in each activity was systematically provided. Applications of concepts and principles learned from experimentation and investigation were included and presented in a

simple manner that would enhance the skills and knowledge of the pupils. This finding was supported by the study of Puchner, L. Taylor A., O' Donnell, B., S K [7] that teaching learning process can use manipulative, and workbook necessary in the assessment of learners' performance.

4. SUMMARY

Table 4 reveals the summary of the respondents' assessment on the instructional materials based on the aforementioned variables.

It can be depicted from the table that for the variables included in the instructional material, three of the variables were assessed by the respondents as very acceptable and the other three are acceptable. These are: introduction (WM=4.18); objectives (WM=4.18); content (WM=4.22); presentation (WM=4.22); usefulness (WM=4.20) and evaluation (WM=4.19) with an overall computed mean value of 4.20 and rated as very acceptable.

This implies that all the variables mentioned were rated by the experts and Math teachers as "very acceptable" which means that all of it will be used and will be included in the developed workbook.

Sub-Problem No. 5 How do the pupils perform in their pre-test and post-test?

Table 5 reflects the performance of the pupils in their pre-test and post-test after using the workbook.

Table 4. Summary on the assessment of the instructional materials

Variables	School heads/ master teachers		Mathematics teachers		Composite mean	
	WM	VI	WM	VI	WM	VI
1. Introduction	4.25	VA	4.11	A	4.18	A
2. Objectives	4.30	VA	4.06	A	4.18	A
3. Content	4.33	VA	4.10	A	4.22	VA
4. Presentation	4.28	VA	4.15	A	4.22	VA
5. Usefulness	4.25	VA	4.14	A	4.20	VA
6. Evaluation	4.29	VA	4.09	A	4.19	A
Overall mean	4.28	VA	4.11	A	4.20	VA

Table 5. Pre-test and post-test after using the workbook based instructional materials

Respondents	No. of pupils	Pre-test		Verbal Inter.	Post-test		Verbal Inter.
		Mean	MPS		Mean	MPS	
Grade 6 Pupils	50	25.52	75.50	Moving towards mastery	45.56	95.50	Closely approximating mastery

Table 6. Significant difference in the pre-test and post-test mean score of the pupils

Test	WM	Computed t-value	Critical value at .05	df	Interpretation	Decision
Pre-test	25.52					Reject
Post-test	45.56	28.98	1.645	49	Significant	Ho

It is noted that the mean scores of the pupils had increased from 25.52 to 45.56 which obtained a high performance from 75.50 or moving towards mastery to 95.50 interpreted as closely approximating mastery with a higher performance level in post-test than the pre-test. It can be deduced that the use of the workbook as an instructional materials in teaching has a positive effect on the learning of the pupils.

The use of workbook in teaching Mathematics 6 in the classroom increased the learning achievement of the pupils. The pupils also show high satisfaction towards the material.

Sub-Problem No. 5 is there significant difference between the pre-test and post-test of the pupils after the utilization of the proposed instructional materials?

Table 6 depicts the significant difference in the pre-test and post-test mean score of the pupils.

The result depicted that the computed t-value of 28.98 with the degrees of freedom of 49 is greater than the critical value of 1.645 at 0.05 level of significance which means there is a significant difference between the pre-test and post-test mean score of the pupils. The null hypothesis was rejected.

This indicates that the instructional materials had helped improve the performance of the pupils.

5. CONCLUSIONS

Based on the findings of the study, the following conclusions were drawn:

1. The least mastered skills in Mathematics 6 were the following: difficulty in understanding word problem; poor in mathematical vocabulary; lack of background of the previous lesson; inability to solve involving fractions; poor skills in solving discount rates; and poor in solving percentage problems.
2. The extent of utilization of workbook as an instructional materials used in mathematics is not fully utilized.
3. The respondents' assessment on the developed instructional materials has been identified that there is a necessity to develop a workbook as a supplementary material in teaching mathematics 6 because the experts and Mathematics teachers assessed that workbook as very acceptable.
4. It is noted that the mean scores of the pupils had increased from 25.52 to 45.56 obtaining a high performance from 75.50 or moving towards mastery to 95.50 and interpreted as closely approximating

mastery with a higher performance level in post-test than the pre-test. This indicates that the instructional materials had helped improve the performance of the pupils.

5. The null hypothesis was rejected therefore there is a significant difference between the pretest and posttest after utilizing the developed instructional material. This indicates that the instructional materials had helped improve the performance of the pupils.

6. RECOMMENDATIONS

Based on the results of the study, the following recommendations are given:

1. The least mastered skills of the pupils in Mathematics 6 were identified, teachers must provide interventions to address the needs that affect the academic performance of pupils in order to increase their skills in Math. There is a need to encourage and motivate the teachers to use the proposed workbook as an instructional material that will facilitate and improve pupils' learning. Mathematics Teachers must be innovative in initiating any appropriate instructional materials for every lesson taught.
2. The developed workbook in Math 6 can be shared and highly recommended to the schools, districts and even in the division level as a model workbook which can be used by any teacher.
3. Education administrators, principals, head teachers, as well as master teachers should conduct seminars or training workshops on the importance and current developments and progress in the use of instructional materials in teaching Mathematics.

CONSENT AND ETHICAL APPROVAL

As per international standard or university standard guideline participant consent and

ethical approval has been collected and preserved by the authors.

COMPETING INTERESTS

Author has declared that no competing interests exist.

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