



FACILITATING THE DEVELOPMENT OF CONCEPTUAL UNDERSTANDING IN MATHEMATICS FOR GRADE 5 LEARNERS

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Abstract :

This study assessed the performance level of the Grade 5 learners in Niñoy Elementary School on the Mathematics Achievement Test. It also determined the validity and reliability of the achievement test in terms of index of difficulty and index of discrimination. The results of which was utilized as a basis for proposing achievement test in mathematics for Grade 5.

The descriptive method of research was used in the study. The researcher observed the steps in the construction of an appropriate, valid and reliable test taking into consideration the needs of Grade 5 learners in mathematics. Subsequently, the initial test items were constructed and these were subjected to face validation for improvement, to a try-out for an item analysis to determine indices and levels of difficulty and discrimination, to further improvement based on the results and to a reliability test.

Ninety-five (95) learners test results in mathematics achievement test were analysed. The results of which were used as bases to develop and propose an achievement test for Grade 5 learners.

Based on the findings, the following conclusions are drawn. The Grade 5 learners in Niñoy Elementary School had a low performance in the Achievement Test. The Achievement Test in Mathematics, based from the summary of the indices and levels of difficulty and discrimination, were not valid and not reliable. The proposed Achievement Test in Mathematics possessed high level of reliability based from the computed Pearson r . Based on the findings and conclusions drawn, the following recommendations are offered. The school administrators should conduct school level in-service training to enrich the mathematics curriculum by preparing suitable materials that well address the weakness of the learners noted. The school administrators should send mathematics teachers to seminars and implement what had been learned in the seminars and must be monitored and evaluated continually by the school activities to determine their effectiveness. The proposed remedial instruction program should be implemented in the school to address the weaknesses of Grade 5 learners in the different mathematics areas/skills in ELC. Other researchers in Mathematics similar to this study be conducted in other school / district / divisions to validated the findings of this study. Considering that the proposed achievement test was especially designed to address the needs of the Grade 5 learners in Niñoy Elementary School and that the test was subjected to try-outs to the target learners, and subsequently improved, administrators can initiate the application of the test to be used by the learners in other schools. Other researcher may use the proposed test as their guide in conducting a similar study to produce effective mother tongue-based achievement test in mathematics. Research may be needed to develop guidelines and principles on how to design effective tests.

INTRODUCTION

Mathematicians aim to simplify problem-solving by applying systematic approaches to similar challenges. Mathematics plays a fundamental role in daily life, and a deeper conceptual understanding of the subject can contribute to higher academic performance. This study seeks to assess students' level of understanding in mathematics and its impact on their academic performance.

Mathematics encompasses both calculation skills and competence in mathematical reasoning, but neither alone fully defines the subject. Research suggests that many students perceive mathematics as mere symbol manipulation without meaningful comprehension. True mathematical understanding requires not only conceptual knowledge but also the ability to articulate concepts and their interconnections. Students demonstrate conceptual understanding by grasping the deeper meaning behind mathematical principles. According to Ay et al. (2016), conceptual comprehension enhances students' learning potential and fosters greater engagement in mathematics.

Mathematical understanding can be distinguished from neighborhood concepts skills and knowledge for example as follows: mathematical knowledge answers the question of what and one may remember mathematical facts. Mathematical skills answer the question how'' which includes, for example, the traditional calculation skill. Only mathematical understanding answers the why''- question; it allows one to reason about mathematical statements. These are fixed to a certain person, a certain mathematical topic, and a special environment.

The search for ever-expanding attainment appears to be a basic instinct of mankind. This desire for excellence pervades every aspect of our lives. It is our nature to start far beyond our present stage into an ever-expanding vision of opportunity. Targeting high expectations for ourselves carries with it enormous responsibility and low achievement leads to frustrations in both the individual and society. This quest for excellence is one of the fundamental applications of developed civilizations.

The key principles of education are quality, equity, effectiveness, efficiency, and participation. Quality instruction ensures that as students' progress through the educational system, they develop essential skills and competencies aligned with learning objectives. Equity guarantees that all learners have equal opportunities to enroll in school and access education, ensuring that every school-age child who wishes to study has a place in the system. Effectiveness focuses on the role of teachers in guiding, facilitating, and instructing students to develop skills that enable them to apply their learning in real-life situations. Efficiency emphasizes equipping students with the knowledge and problem-solving skills necessary to navigate daily challenges successfully. Lastly, participation underscores the importance of keeping students in school from enrollment through the different levels of education, with the expectation that those in the formal school system should at least complete elementary education.

Researchers found that many students still struggle with conceptual understanding, nevertheless. According to Molina (2014), this is because students Frequently use short cuts to solve mathematical issues rather than understanding the underlying meaning and concept. According to the same study, if a student has a high degree of conceptual knowledge, they will likewise perform at a high level. In a similar vein, Istikomah (2019) emphasized that learners' higher accomplishment results from their knowledge mathematical concept.

They frequently grow afraid of failing the class. They are prone to feeling anxious and uneasy, so it is obvious that they have a math phobia. Considering this major issue in mathematics education, the researcher investigated more studies on conceptual comprehension and understanding (knowledge transfer abilities and a thorough understanding of the mathematical language), students' attitudes toward mathematics, and mathematical performance. Its purpose was to improve students' procedural and problem-solving arithmetic skills before examining how it affected their conceptual knowledge in Grade 5 at Niñoy Elementary School, municipality of Aguilar. In order to ascertain whether there is a substantial correlation between students' academic performance and their conceptual understanding and attitudes towards mathematics, the researcher did this study. In order to create a bridge program for incoming Grade 5.

Theoretical Framework

These efforts aim to enhance a child's physical skills and abilities while supporting their emotional and social development by fostering self-confidence, spontaneity, curiosity, and self-discipline. They also contribute to the child's cognitive growth by strengthening conceptual and verbal skills. Additionally, they help establish patterns of success and build confidence, creating a positive foundation for future learning. Furthermore, these initiatives promote healthy relationships by improving the child's ability to interact positively with family members and others while also strengthening the family's capacity to support the child through challenges. They encourage responsible attitudes toward society and create opportunities for collaboration between communities and underprivileged groups in addressing social issues. Ultimately, these efforts seek to instill a sense of dignity and self-worth in both the child and their family.

As stated in presidential Decree 603 (The Child and Youth Welfare Code of the Philippines) which elevates the children's protection "The Child is one of the most important assets of the nation".

Moreover, Article 73 of the said decree states this provision: "To further promote the welfare of the children of working mothers and in keeping with the constitutional provision on the maintenance of an adequate system of education, nursery and kindergarten schools shall be maintained whenever possible".

Likewise, Article 75 of the said Decree further stressed the responsibility of providing adequate classrooms and facilities including playgrounds, space and facilitate for sports and physical development activities.

Similarly, Batas Pambansa 232 or the Education Act of 1982 in Section 9 emphasizes the rights of learners in schools, to with:

The right to receive, primarily through competent instruction, relevant quality education in line with national goals and conducive to their development as person with human dignity.

Conceptual Framework

The 1987 Constitution of the Republic of the Philippines upholds the right to education and the vital role of youth in nation-building. Section 1 states that "the State shall protect and promote the rights of all citizens to quality education at all levels and take appropriate steps to make education accessible to all." Additionally, Article 2, Section 5 emphasizes the State's commitment to fostering the physical, intellectual, and social well-being of the youth, recognizing their crucial contribution to the nation's development.

There have been worries that learning mathematics outside of the classroom context could impair inquiry-based learning strategies for mathematics in several ways, particularly in mathematics education. First, as mentioned by Sullivan et al. (2020), explicit explanations followed by repeated practice are advantageous for using video technology, particularly instructional videos that may be created in advance and shared through a weblink. In contrast, inquiry-based approaches to learning mathematics call

instructional analogy, their use in mathematics classroom will motivate the teachers in handling the subject well by directing the students on how to apply mathematics in their day-to-day living. This is because the two strategies could help the teacher in entry behavior testing, introducing novel concepts, teaching difficult concepts and provision for active involvement of the learners.

The findings of this study will help school learners to remove some of the social boredom towards mathematics and that their achievement depends on their own active participation not only their teachers. Thus, the learners will appreciate the need for their involvement in mathematics activities in their classroom and this may help them to acquire both mathematics skills and mathematics knowledge which will enhance capacity building and sustainable development. In other words, the learners will be enabled towards achievement of national goals for mathematics education. The knowledge of the use of mathematical puzzle games and bridging analogy teaching will help the curriculum planners to apply the strategies when reviewing mathematics curriculum. Thus, the curriculum should be organized in such a way that it will enhance capacity building and sustainable development. Also, the goals of the curriculum planners will be re-directed towards more on acquisition of performance skills in mathematics than on acquisition of knowledge. To achieve this aim, government and other education authorities will realize the importance of organizing seminars and regular workshops on mathematics to educate the in-service teachers on this need.

The Grade 5 Teacher. The outcome of this study could provide them a better awareness of their duties and responsibilities which are expected of them by the parents of the Grade 5 learners.

The Parents. This study could serve as a source of information relative to the needs of the Grade 5 and of their Grade 5 children.

Learners. The findings and output of this study will improve the delivery of Grade 5 instruction.

The Researcher Herself. The result of this study will provide her a background to improve instruction in primary schools.

Definition of Terms

For better understanding of this study, the following terms are hereby defined operationally.

Niño Elementary School. It refers to the locale of the study wherein the Grade 5 teachers are presently teaching during the time of the study.

Intervention Measures. In this study they refer to the study which is to address the needs of the pre-school children to enhance the teaching of pre-school particularly in Niño Elementary School.

Grade 5 Learners. These are the learners attending elementary education in Niño Elementary School.

Public Schools. These are the government-owned public elementary schools in the Schools Division Office I Pangasinan.

RESEARCH METHODOLOGY

Research Design

This study employed the descriptive method of research in determining the level of performance of the Grade 5 learners in the Mathematics achievement test during the school year 2023-2024. This is sought to determine the validity and reliability of the achievement test used in Grade 5 classes in terms of index and level of difficulty and index and level of discrimination. The results were used as basis for the development and validation of achievement test for Grade 5 learners. It can be said therefore that this study used the descriptive-developmental method of research with the development of the materials following the scientific steps in the development of a good achievement test.

Sources of Data

The research subjects who served as the source of data in this study were the 95 Grade 5 learners in Niño Elementary School in Aguilar District. They represent 100 percent of the total population of the Grade 5 classes.

Instrumentation and Data Collection

The researcher asked permission to use the test results of the Grade 5 learners in Mathematics Achievement test which were tallied, tabulated and statistically treated.

The level of performance in Mathematics of the Grade 5 learners at Niño Elementary School in Aguilar District, based on the results of their Achievement Test during the school year 2023-2024 was first determined. The validity and reliability of the utilized achievement test were also determined.

Based on the level of the performance of the Grade 5 learners, a proposed achievement test was developed, tested and validated.

Tools for Data Analysis

The following statistical tools were used:

1. Mean- in finding the mean the formula used is;

$$x = \frac{AM + (\sum f d)i}{N}$$

Where:

X = the mean

AM = the assumed mean

$\sum fd$ = summation of the product of frequency and deviation

N = the number of learners

i = interval

The performance level of the learners is determined by the mean percentage score with their formula:

$$MPS = \frac{X}{HPS} \times 100$$

Where:

MPS= Mean Percentage Score

X= the mean

HPS= Highest Possible Score

The computed mean percentage scores were compared to 75 percent, the desired performance level set by the Department of Education.

The validity and reliability of the test instrument were determined in terms of its index and level of difficulty, its index and level of discrimination and its consistency.

Validity means the degree to which a test or measuring instrument, measures what it intends to measure. In other words, there is veracity or truthfulness of the responses.

2. Index of Difficulty To answer in part sub-problem 2 and 4, the index of difficulty of the achievement test items and that of the proposed achievement test was determined. The index of difficulty of the items in the achievement test utilized by the Grade 5 teachers in Aguilar and that of the proposed achievement test in the first try-out and of those in the second try-out to answer sub-problem 2 and 4 was likewise determined.

The researcher used the following steps in solving the difficulty;

- a. The scores of the learners were arranged from highest to lowest.
- b. Determine the upper scoring group by multiplying the total number of examinees by 27 percent. The upper 27 percent scoring group were considered the upper group and the lower 27 percent comprised the lower scoring group.
- c. The number of learners in the upper and lower scoring groups who answered the particular item correctly were added and the sum of which was divided by the total number of examinees. The formula is:

$$P = \frac{U+L}{N}$$

where:

P= index of difficulty

U = upper 27 percent of the total number of learners who answered a particular item correctly

L = lower 27 percent of the total number of learners who answered a particular item correctly.

N = number of examinees

In the interpretation, an index of difficulty ranging from 0-0.20 denoted a "very difficult item" that should be discarded outright. An index of difficulty ranging from 0.21-0.80 denoted "moderately difficulty item." A moderately difficult item according to Garrett (1974) has an average difficulty and is considered a good item. An item with an index of difficulty ranging from 0.81 and higher denoted an easy "item." An easy item is a poor item that should be included in the final draft of the test.

Difficulty refers to the percentage of getting the right answer of each item. The smaller the percentage the more difficult the item is. Majority criterion (50% plus one) is the basis of interpreting the index of difficulty.

3. Index of Discrimination. Similarly, to answer in part sub-problem 2 relative to the index of difficulty of the achievement test items and that of the items in the proposed achievement test in the first and second try-outs to answer in part sub-problem 2 and 4, was likewise determined. this was derived by subtracting the number of learners in the lower group who answered a particular item correctly, from the upper scoring group and the difference of which was divided by the number of cases.

$$\text{Index of Discrimination} = \frac{RU-RL}{N}$$

where:

RU= right responses of the upper group

RL= right responses of the lower group

N= number of learners in each group

For the interpretation, an item of 0-0.19 denoted a poor item, 0.20 to 0.29 indicated a marginal item, 0.30 to 0.39 indicated a reasonably good and 0.40 and higher, denoted a good item.

A maximum positive discriminating power is revealed by an index of 100. This is obtained only when at the upper group learners chose the correct answer and not in the lower group. Test makers are advised to prepare items at 50% level of difficulty in order that maximum discrimination power can be attained.

Negative discriminating power is obtained when more learners in the lower group get the right answer than the upper group. Moreover, a zero-discriminating power (0.00) is obtained when an equal frequency of the upper and lower groups gets the correct answer. The item having negative and zero discrimination should be improved.

4. Reliability is another quality of a good test in research that is concerned with testing. It refers to the degree of consistency that the results show in two administrations of the test. The scores in the two test administrations showing them to be the same or almost the same manifest this.

There are four methods in testing the reliability of a good instrument test. These methods are: test-retest method; parallel-forms method; split-half method; and internal consistency method.

The researcher opted to use test-retest reliability. In order to measure the test-retest reliability, we have to give the same test to the same test respondents on two separate occasions. The scores on the two occasions are then correlated. This correlation is known as the test-retest reliability coefficient or the coefficient of stability.

The closer each respondent's scores are on the first and second try-outs, the more reliable the test measure and the higher the coefficient of stability will be.

The Pearson correlation coefficient is utilized to measure the retest correlation.

$$r = \frac{\sum xy - \frac{(\sum x)(\sum y)}{N}}{\sqrt{\left(\sum x^2 - \frac{(\sum x)^2}{N}\right)\left(\sum y^2 - \frac{(\sum y)^2}{N}\right)}}$$

where:

r= Pearson r

$\sum X$ = the sum of scores in the X distribution

$\sum Y$ = the sum of the scores in the Y distribution

$\sum XY$ = the sum of the products of paired X- and Y- distribution

$\sum X^2$ = the sum of the squared scores in X- distribution

$\sum Y^2$ = the sum of the squared scores in Y- distribution

N= the number of the paired X- and Y- scores (subjects)

In the interpretation of the coefficient of stability, the following guidelines can be used:

- 0.9 and greater: Excellent reliability
- Between 0.9 and 0.8: Good reliability
- Between 0.8 and 0.7: Acceptable reliability
- Between 0.7 and 0.6: Questionable reliability
- Between 0.6 and 0.5: Poor reliability
- Less than 0.5: Unacceptable reliability

RESULTS AND DISCUSSION

This chapter presents the data gathered on the performance level of the Grade 5 learners in Niñoy Elementary School in Aguilar District in Mathematics based on the results of their Achievement Test, 2023-2024. The data gathered were analyzed and interpreted and served as the basis for the development of achievement test in the teaching of Mathematics.

Table 1
The Level of Performance of the Grade 5 Learners
in the Mathematics Achievement Test

Class Interval	F	D	Fd
35-39	11	3	6
30-34	15	2	4
25-29	39	1	15
20-24	10	0	0
15-19	7	-1	-5
10-14	8	-2	-8
5-9	5	-3	-6
N=95 Mean = 24.48	$\Sigma fd = 56$ MPS=48.96	DepEd Standard = 75%	

Legend:

F= frequency distribution of scores

d= deviation

fd= frequency deviation

Σ = sum of

N= Number of Cases

MPS= Mean Percentage Score

Performance Level of the Grade 5 Learners in Mathematics in the Achievement Test

As seen in Table 1 above, the mean percentage score of the Grade 5 learners was 24.48 equivalent which is equivalent to 48.96 percent. This is far from the 75 percent mastery level set by the Department of Education. This showed that the Grade 5 learners had a low performance in Mathematics Achievement test.

One factor that contributes to the learners' low performance is their socio-economic status. Socio-economic status is determined to be a predictor of mathematics achievement. As stated in the study of Saritas and Akdemir (2009), studies repeatedly discovered that the parents' annual level of income is correlated with student's math achievement scores (Eamon, 2005; Jaynes, 2002; Hochschild, 2003; Mcneal, 2001). Socio-economic status was found significant in primary math and sciences achievement scores (Ma and Klinger, 2000).

Parents with high income seem to provide richer instructional resources to their children which may eventually help to improve the math scores of students. As the grade level increases, math students' opinions about the effects of socio-economic status on the math achievement increases. Deficiency of financial resources is reported as a factor that has an effect on their math achievement.

Another factor is the study habits of the learners. Camahalan (2006) revealed on his research study entitled effects of self-regulated learning on Mathematics achievement of selected Southeast Asian Children, that students' low achievement in school is related to their poor study habits. In the same vein, Onwuegbuzie (2005) also conducted a series of studies to find out relationship between study habits and academic success. National Assessment of Educational Progress (NAEP) in 1994 conducted a study to find out the relationship between study habits and academic achievement. Findings of the study revealed a positive correlation between study habit and academic achievements of elementary and secondary school students.

The conceptions attitudes and expectations of the students regarding mathematics and mathematics teaching have been considered to be very significant factor underlying their school experience and achievement (Borasi, 2000). Based on the study on the roles of Attitudes, Perceptions and Family Backgrounds on Students Achievement in Mathematics; student engagement in mathematics refers to students in motivation to learn mathematics, their confidence in their ability to succeed in mathematics and their emotional feelings about mathematics. Student engagement in mathematics play a key role in acquisition of math skills and knowledge-students who are engaged in the learning process will tend to learn more and be more receptive to further learning. Student engagement also has an impact upon course selection, educational pathways and later career choices (Leder, 2003).

The learners' low performance is also attributed to their poor arithmetic ability. Saritas and Akdemir (2009) emphasized that arithmetic ability could also be another predictor of math achievement. Arithmetic ability includes: Skills such as manipulatory mathematical knowledge and concepts in ways that transform their meaning and implications. It allows students to interpret, analyze, synthesize, generalize and hypothesize the facts and ideas of mathematics. Students with high arithmetic ability or mathematical reasoning can engage in tasks such as solving complex problems, discovering new meanings and understanding and arriving at logical conclusions.

The lack of instructional materials to be utilized is another factor. Ramalingam (2002) stressed that instructional media are the devices used as the supplementary material to enhance learners' interest, for effective teaching. They refer to all kinds of aids that are used by the teachers in the teaching and learning processes. Sophisticated modernized materials and computer techniques at large extent has replaced the traditional technique of talk and chalk. The purpose of instructional media in teaching is to stimulate, motivate and to activate the students in learning environment. Effective use of instructional media such as module plays a vital role in teaching and learning processes.

The effectiveness of instructional media is directly related to the excellent performance of the teachers in their instruction. Teachers should learn how to use the media to an extent possible and set appropriate mode of instructional strategies in the classroom especially in teaching Mathematics.

SUMMARY

This study assessed the performance level of the Grade 5 learners in Niñoy Elementary School on the Mathematics Achievement Test. It also determined the validity and reliability of the achievement test in terms of index of difficulty and index of discrimination. The results of which was utilized as a basis for proposing achievement test in mathematics for Grade 5.

The descriptive method of research was used in the study. The researcher observed the steps in the construction of an appropriate, valid and reliable test taking into consideration the needs of Grade 5 learners in mathematics. Subsequently, the initial test items were constructed and these were subjected to face validation for improvement, to a try-out for an item analysis to determine indices and levels of difficulty and discrimination, to further improvement based on the results and to a reliability test.

Ninety-five (95) learners test results in mathematics achievement test were analysed. The results of which were used as bases to develop and propose an achievement test for Grade 5 learners.

The tools for data analysis used was the mean, mean percentage score, index of difficulty, index of discrimination, and Pearson r.

FINDINGS:

1.0. Level of Performance of Grade 5 Learners in Mathematics Achievement Test

The performance level of the Grade 5 learners in the Achievement tests in mathematics was generally low as indicated by the computed mean of 24.48 and when converted to mean percentage scores their performance level was only 48.96 percent. Too low when compared to the standard mean percentage score set by the Department of Education which is 75%.

2.0. Validity and reliability of the mother tongue-based achievement test

2.1. Index and level of difficulty

Out of 30 items, only three (3) had an index of very difficult. Item number 20 had an index of difficulty of 0.19, item number 23 had an index of difficulty of 0.39 and item number 30 had an index of difficulty of 0.11. Twenty-seven (27) of the items had

a "moderate" index of difficulty. The highest index of difficulty is item number 18 which had an index of 0.74.

2.2 Index and level of discrimination

Out of 30 items, two (2) of them are considered "good item." The items which had the highest index of discrimination are items number 3 and 8. Eleven (11) of the total items are considered "reasonably good." Four of the number (4) are considered "marginal" items. Fourteen (14) of the items are considered "poor" items. The item number which had the lowest index of discrimination is item number 30 with 0.02 index.

2.3 Summary of the Indices and Levels of Difficulty and Discrimination of the Achievement Test in Mathematics Out of 30 items, only 53% were included for having a low level of difficulty and a high level of discrimination. A percentage of 47% of the items were discarded for having a high level of difficulty and a low level of discrimination.

2.4 The Reliability of the Achievement Test Utilized by the Grade 5 teachers in Teaching Mathematics

The computed Pearson's r is +0.64, the computed r based from the given interpretation guidelines means there is a questionable reliability of the Achievement Test. It indicated that the achievement test utilized by the Grade 5 teachers in mathematics was not a good instrument to be used by their learners.

3.0. The Proposed Achievement Test in Mathematics for Grade 5 Learners

The proposed mathematics achievement test was based from the performance level of the Grade 5 learners and from the results of the validity and reliability of the achievement test utilized by the learners.

4.0. The Validity and Reliability of the Proposed Achievement Test.

2.1. Index and level of difficulty

Out of 30 items, only one (1) had an index of very difficult. Item number 20 had an index of difficulty of 0.19. Twenty-nine (29) of the items had a "moderate" index of difficulty. The highest index of difficulty is item number 18 which had an index of 0.74.

2.2 Index and level of discrimination

Out of 30 items, two (2) of them are considered "good item." The items which had the highest index of discrimination are items number 3 and 8. Eleven (11) of the total items are considered "reasonably good." Nine of the total number (9) are considered "marginal" items. Eight (8) of the items are considered "poor" items. The item number which had the lowest index of discrimination is item number 25 with 0.03 index.

2.3 Summary of the Indices and Levels of Difficulty and Discrimination of the

Achievement Test in Mathematics

Out of 30 items, only 77% were included for having a low level of difficulty and a high level of discrimination.

A percentage of 23% of the items were discarded for having a high level of difficulty and a low level of discrimination.

2.4 The Reliability of the Achievement Test Utilized by the Grade 5 teachers in Teaching Mathematics

The computed Pearson's r is +1.24, the computed r based from the given interpretation guidelines means there is an excellent reliability of the Achievement Test. It indicated that the proposed achievement test is a good instrument to be used by the Grade 5 learners.

CONCLUSIONS

Based on the findings, the following conclusions are drawn:

1. The Grade 5 learners in Niñoy Elementary School had a low performance in the Achievement Test.
2. The Achievement Test in Mathematics, based from the summary of the indices and levels of difficulty and discrimination, were not valid and not reliable.
3. The proposed Achievement Test in Mathematics possessed high level of reliability based from the computed Pearson r .

RECOMMENDATIONS

Based on the findings and conclusions drawn, the following recommendations are offered:

1. The school administrators should conduct school level in-service training to enrich the mathematics curriculum by preparing suitable materials that well address the weakness of the learners noted.
2. The school administrators should send mathematics teachers to seminars and implement what had been learned in the seminars and must be monitored and evaluated continually by the school activities to determine their effectiveness.
3. The proposed remedial instruction program should be implemented in the school to address the weaknesses of Grade 5 learners in the different mathematics areas/skills in ELC.
4. Other researchers in Mathematics similar to this study be conducted in other school / district / divisions to validated the findings of this study.
5. Considering that the proposed achievement test was especially designed to address the needs of the Grade 5 learners in Niñoy Elementary School and that the test was subjected to try-outs to the target learners, and subsequently improved, administrators can initiate the application of the test to be used by the learners in other schools.

6. Other researcher may use the proposed test as their guide in conducting a similar study to produce effective mother tongue-based achievement test in mathematics. Research may be needed to develop guidelines and principles on how to design effective tests.

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