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The Numeracy Level of Grade 5 Non-Numerates through T-Math Module

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Basic Education Research Theme: Teaching and Learning

Abstract:-

➢ ***Purpose:***

This study aimed to determine the learners' numeracy skills before and after using the T-Math Module to 5th Grade Non-Numerates of Bula Elementary School.

➢ ***Design/Methodology/Approach:***

The researchers utilized experimental design, one group pre-test and post-test design to determine the effect of T-Math Module to the pupils. Division Numeracy Test was conducted to identify the pre- test and post-test results. To treat the data statistically, weighted mean and paired t- test was used.

➢ ***Findings:***

The mean scores were 10.8 in the pre-test and 16.2 in the post test. The increase of 5.4 vindicated that there was an improvement in pupils' numeracy skills. Also, the computed t-value (3.8929) was compared to the p-value (0.0002), there was a significant difference in the performance of the selected Fifth Graders.

➢ ***Research Limitations/Implications:***

The study was limited on fifth graders' numeracy level upon exposure to T-Math Module. It zoomed-in the skills of the pupils in areas of four fundamental operations. It implies that the pupils show mastery in performing the four-fundamental operations in mathematics upon exposure to T-MATH Module.

➢ ***Originality/Value:***

Through the use of T-Math Module a significant increase in the pupil's numeracy skill was displayed. As a result, T-Math Module was highly recommended.

Keywords:- *Four Fundamental Operations Skill, T-Math Module, Numerates, Non-Numerates*

I. INTRODUCTION

Numeracy skills are important mathematical skills that include a variety of capabilities to understand and analyze numerical information, to make the right conclusions and decisions, and apply in daily life the concepts and ideas of mathematics.

The Department of Education issued the findings of the recently held national assessment through DepEd Order No. 173, S. 2019 and reveal that there are still many early grade learners struggling to meet the learning standards in early language, literacy and numeracy.

Similarly, it reflects to the findings of the school-based pre-assessment for numeracy held at Bula Elementary School. Approximately 81.39% or 35 learners of Grade 5 level fell under non-numerates category on the said assessment. It implies that these children were falling behind their peers and they were at risk of failure. The population of students considered at high risk of numeracy failure was also increasing compared to the previous assessments. To address the concern, the researchers utilized T-Math Modules as intervention for those learners.

A. Research Questions

The main goal of the study was to assess the efficacy of T-Math Modules among Grade 5 Non-Numerates pupils of Bula Elementary School. Specifically, the study aims to answer the following;

- What is the pre-numeracy mean score of the respondents before the exposure to T-Math Module?
- What is the pre-numeracy mean score of the respondents after the exposure to T-Math Module?
- Is there a significant difference between the pre-and post-numeracy mean scores of the respondents?

B. Hypothesis

- H_o*:* There is no significant difference between the pre-and post-numeracy mean scores of the respondents.

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II. BRIEF REVIEW OF RELATED LITERATURE AND STUDIES

A. Numeracy Skills

A study made by Villanueva (2015) mentioned that, skills and knowledge in Mathematics is one basic need of students specifically in addition, subtraction, multiplication, and division. The involvement of using mathematical skills and processes positively to resolve ordinary life problems. Many careers require a strong foundation in numeracy skills, such as engineering, finance, and data analysis. Having stable numeracy skills can help individuals excel in these fields and increase their job prospects.

Meanwhile, a study also addressed that numeracy skills are important mathematical skills that include a variety of capabilities to understand and analyze numeric information, to make the right conclusions and decisions, and apply in daily life the concepts and ideas of mathematics (Belleza, 2020). Strong numeracy skills can also lead to academic success. Students who have stable numeracy skills are better equipped to understand and apply mathematical concepts in other subjects, such as science and technology. Also, it involves the ability to analyze and interpret data, which is a crucial component of critical thinking.

B. Four Fundamental Operations Intervention

To have skills and knowledge in Mathematics, one should be learning numeracy skills, specifically in addition, subtraction, multiplication, and division. It involves using a range of mathematical skills and processes confidently to solve everyday life problems (Villanueva, 2015). With an understanding of the student's areas of difficulty, teachers can identify a validated intervention program (Fuchs, et al., 2015) that focuses on the types of difficulties with which the student struggles. The researcher is certain that four fundamental operations are the building blocks of mathematics. Without a solid understanding of these operations, it can be difficult to progress to more advanced mathematical concepts. The need of interventions in this field is a must to developed learners' comprehensive mathematical skills.

The type of intervention used will depend on how the student receiving the intervention learns best and which mathematics objective the learner is struggling to understand. The key is early identification and early intervention (Gersten et al., 2015). There were intervention in the four fundamental operations of mathematics is important for building a foundation, improving problem-solving skills, achieving academic success, and achieving career success.

Numeracy is the key for learners to access and make sense of their world. Besides, Pangan (2016) stated that numeracy is the combination of mathematical knowledge, problem solving, and communication skills required by all persons to function successfully within our technological world. The researcher believed that the mastery of the four fundamental operations is important for academic success in mathematics. Students who struggle with these operations may struggle with more advanced mathematical concepts and fall behind in their studies.

C. Provision of Intervention

R.A.10533 or the Enhance Basic Education Act of 2013 Section 5 states that curriculum shall be flexible enough to enable and allow schools to localize, indigenize and enhance the same based on their respective educational contexts. The production and development of locally produced teaching materials shall be encouraged and approval of these materials shall devolve to the regional and division education units.

In response, Project T-Math (Teachers' Materials for Active Teaching Habit) which crafted and reproduced by Curriculum Implementation Division (CID) are Numeracy Modules for Grade 2-6 which main objective is to improve the proficiency level of learners in the four fundamental operations- addition, subtraction, multiplication and division. Overall, mathematical intervention material can be a valuable tool for improving mathematical skills, but its effectiveness will depend on various factors, including the quality of the material and the individual's level of engagement and support

D. Synthesis

It was cited that to have skills and knowledge in Mathematics, one should be learning numeracy skills, specifically in addition, subtraction, multiplication, and division. Similarly, numeracy skills are important mathematical skills that include a variety of capabilities to understand and analyze numeric information, to make the right conclusions and decisions, and apply in daily life the concepts and ideas of mathematics.

With assessment and understanding of the student's areas of difficulty, teachers can identify a validated intervention program that focuses on the types of difficulties with which the student struggles. Different interventions and its importance were discussed and several studies were cited on how to improve the learners' numeracy skill.

One of those is the T-Math Module (Teachers' Materials for Active Teaching Habit), which crafted and reproduced by Curriculum Implementation Division (CID) are Numeracy Modules for Grade 2-6 which main objective is to improve the proficiency level of learners in the four fundamental operations- addition, subtraction, multiplication and division. Its importance and how it helped learners was elavorated.

E. Theoretical Framework

This is action research is anchored to modular theory of learning and performance also known as Packet Learning Theory that contains parts that may be labeled perception, memory, and decision and performance (Kirkpatrick & Church 2007).

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F. Conceptual Framework

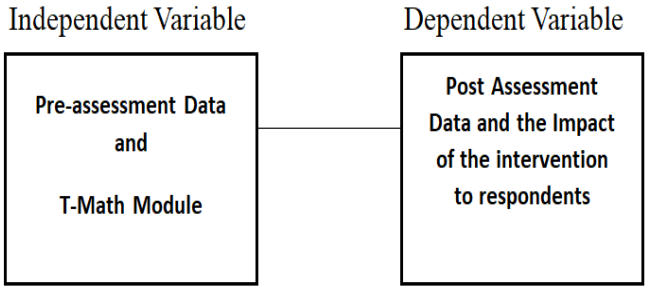

Fig 1 Conceptual Framework

Figure 1 shows the paradigm of the action research. The researcher cast-off this style to test the cause-and-effect relationship of the T-Math Module to the non-numerate learners of Bula Elementary School. The paradigm illustrates the key variables of the study.

III. SCOPE AND LIMITATIONS

The study aims to determine the pre- and post-numeracy mean scores of the 35 Grade 5 non-numerate respondents. It also aims to know the effect of T-Math Module among the respondents. Division numeracy test was used in the pre and post assessment of the respondents.

IV. METHODOLOGY

A. Research Design

The researchers utilized experimental design, one group pre-test and post-test design to determine the effect of T-Math Module to respondents.

B. Locale of the Study

The study was conducted at Bula Elementary School involving Grade 5 learners who were selected purposively. In the selection of the respondents, the researcher purposively chose the student, with a total of 35 pupils.

C. Population and Sampling

The respondents were the 35 non-numerates of Bula Elementary School, they were purposively selected based on the result of Division Numeracy Test conducted on the beginning of the school year.

D. Data Gathering Procedure

In the collection of data, the researchers determined the pre-test scores of Grade 5 Non-Numerates through Division Numeracy Test. Then, T-Math Module intervention was utilized in the experimentation to test its effectiveness as a mean to increase the numeracy level of the respondents.

The Grade 5 non-numerate learners were subjected for the implementation of the T-Math Module workshop. The T-Math module was used as a training material during the 24 consecutive weeks from beginning of 1st to end of 3rd Quarter of the School Year 2022-2023, after class, for 30 minutes. After the utilization of the intervention post-test was utilized.

E. Statistical Treatment of Data

To address statement of the problem number 1 and 2 weighted mean was used and for statement of the problem number 3 the researchers used paired t-test.

V. RESULTS AND DISCUSSION

This part presents the result of the study based on the gathered data. The researchers made a table to comprehensively illustrate the results.

Table 1 Computed Mean Score of the Pupils before the Implementation of T-Math Module

Highest Score	**19**
Lowest Score	**6**
SD	**6.9**
Mean	**10.8**

The table illustrates the pre-numeracy test data, the highest score among non-numerates in Grade 5 pupil was 19 and a lowest score is 6. The mean score was 10.8 out of 40 item test with the SD of 6.9.

The table show that before the intervention, all respondents were non-numerates. The researcher required these learners to an intervention to improve their four fundamental mathematical skills.

Table 2 Computed Mean Score of the Pupils after the Implementation of T-Math Module

Highest Score	**28**
Lowest Score	**2**
SD	**4.3**
Mean	**16.2**

The table illustrates the post-numeracy test data, the highest score among the respondents was 28 and a lowest score is 2. The mean score was 16.2 out of 40 item tests with the SD of 4.3. There is a certain increase on the respondents' Mean Score after the intervention.

The step-by-step procedure and explicit way of presenting the lesson in T-Math Module increased the students' understanding of the concepts presented to each lesson, that results to increase the mean score on the post test of the study.

Table 3 Computed Difference between the Pre-test and Post-test Scores of the Respondents

Test	Mean	Mean Difference	T-Value	P-Value	Decision	Interpretation
Pre-test	**10.8**					
Post-test	**16.2**	**6.6**	**3.8929**	**0.0002**	**Reject**	**Significant**

Table 3 shows that the mean pre-test score and mean post-test score of the respondents, 10.8 and 16.2 respectively with a mean difference of 6.6. The t-value is 3.8929 while the p-value is 0.0002. Since the p-value is less than 0.05 level of significance the decision is to reject the null hypothesis. Therefore, there is significant difference between the mean pre-test and mean post-test scores of the subjects of the study.

VI. CONCLUSIONS

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

- The respondents were all non-numerates in the beginning of the action research.
- There was a certain increase on the respondents' level of numeracy after they underwent the T-Math module intervention.
- There is a significant difference between the pre-test and post test scores of the respondents.
- T-Math Module is effective in terms of enhancing the numeracy skills of Grade 5 non-numerate pupils.

RECOMMENDATIONS

Based on the findings of the study and conclusions drawn, the following are hereby recommended:

- Assess the learners prior to implementation of the project to know who among the learners are the priority.
- Monitoring of the usage of T-Math Module is a must for its effective implementation.
- Continuous use of the T-Math Module to non-numerates is advice.
- Integrating T-Math Module to other innovative interventions is must be given equal importance.

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