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Effectiveness of Distance Learning Approach to the Performance of the Grade 7 Students in Mathematics

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***Abstract* —** This study primarily aimed to determine the effectiveness of distance learning modality on the Grade 7 students' performance in Mathematics. The findings of the study was the bases for a proposed intervention plan. The study utilized complete enumeration in identifying the respondents of the study. This study used the Quasi Experimental method of research to determine the distance learning modality's effectiveness to the performance of the Grade 7 students in Mathematics. The test of difference between the scores in the pretest and posttest of the Grade 7 students in Mathematics. The result shows a little difference in the test percentage of the post-test and the pretest considering that the pretest result is 17.23 while in the post-test is 18.72. It further shows having the little increase resulted to a computed p value which is equal to 1.23 is greater than the level of significance of 0.05, the hypothesis which state that there is no significant difference in the pretest and posttest performance of the Grade 7 students before and after integrating distance learning modality is rejected. The result implies that though there is a little difference in the pretest and post-test result before and after implementing the distance learning modality, it still does not guarantee its effectiveness to increase the performance of the Grade 7 students in Mathematics. There are still possibilities that the usual way of acquiring the knowledge and skills of the Grade 7 students in the delivery of the Most essential learning competencies in Mathematics are still effective considering the result of the pretest that majority of the students have gained good level of performance. Thus, the distance learning modality is not really effective compared to that of the traditional way of delivering the competencies and or teaching mathematics. Moreover still the two strategies could still bring or increase the performance in the Grade 7 students particularly in Mathematics subject.

Keywords — Distance Learning Modality; Academic Performance; Mathematics; Grade 7 Students

I. Introduction

The basic education goal is to provide the school age population and young adult with skills, knowledge, and values to become caring, self-reliant, productive and patriotic citizens. Generally, it aims to provide a well-rounded education that will assist each individual in society to attain his or her potential as a human being, and enhance the range and quality of the individuals within the group. As early as possible, children are taught with the basics such as counting numbers, spelling names, drawing, among many others. This becomes more complicated once an individual enters a more mature phase of life. In today's competitive world, it is imperative to acquire the right degree of learning to equip oneself with the leverage amidst the competition (Department of Education, 2012).

Distance education, also called distance learning, is the education of students who may not always be physically present at a school. Traditionally, this usually involved correspondence courses wherein the student corresponded with the school via post or through a given module. Today, it involves online education and covers Printed Modular Activity. For Tahud National High School, LESF reveals majority of the parent/ guardian favors Distance Modular Printed Learning for their child.

The framework will help create students with stronger mathematical knowledge, skills and value. (Ciriaco, 2012).Dr. Filma Brawner, DOST-SEI Director, added during the 14th Philippine Math Olympiad that the framework of K-12 aims to provide students with mathematical empowerment, among other strengths. It seeks to harness the students understanding of the fundamental ideas of numbers and number concepts, measurement, geometry, probability, data analysis, patterns, functions and algebra (Ciriaco, 2012).

Home schooling refers to the education of learner's at home or at a variety of places other than at home. It is usually conducted by a parent, brother/sister, tutor or an online teacher. The way of studying the learner's at home depends on whatever way works best for him because he has the right to make his own schedule for his studies.

The grade 7 teachers of the school have encountered manifestations of using another strategy in the delivery of the competencies especially in this time of pandemic to the learners' achievements. Being the focal figure in education, the teachers must be competent and knowledgeable to impart the knowledge they could give to their students. It is entrusted with so many responsibilities that range from very simple to complex and very challenging jobs such as students' lack of interest and motivation as the lesson to be done for a longer time, especially those involved in abstract reasoning and problem-solving processes which has not been very effective.

Some of the problems that may encounter in homeschooling are as follows: learner cannot manage his time properly for his studies, lack of motivation, less opportunities to socialize others and parent's attitude towards their children.

It is necessary to conduct this study to find out how to strengthen the teaching-learning strategy of Distance Learning Modality and the learning performance of learners in Mathematics while they are studying at home.

This study aimed to assess the distance learning modality's effectiveness to the performance of the Grade 7 students in Mathematics. The findings of the study served as a basis for a proposed Intervention plan.Specifically, this study seeks to answer the following questions.

1. What is the pretest performance of the Grade 7 students in Mathematics before the integration of Distance learning Modality?

2. What is the posttest performance of the Grade 7 pupils after the integration after the integration of Distance Learning Modality?

3. Is there a significant difference in the pretest and post-test performance of the Grade 7 learners in Mathematics before and after the Distance Learning Modality intervention?

4. What intervention plan can be proposed based on the findings of the study?

II. Methodology

Design. This study utilized the quasi- experimental type of research in gathering the responses employing the quantitative approach. Tahud National High School is the main locale of the study. The Grade 7 students and the Grade 7 teachers in Mathematics are the main respondents of the study and the data based on the students' performance ratings with the result of the pretest and posttest were utilized. This research is mainly focused to gather data on: effectiveness of the distance learning modality to the performance of the Grade 7 students in Mathematics; Proposed intervention Plan based on the findings of the study.

Sampling. There are 53 students included in the study. The primary means of reach is through Facebook account – using messenger account of the respondents, group chat of the Grade 7 sections, and cell numbers of the students and the parents/guardians.

Research Procedure. The researcher prepared the research design and tools to be utilized in the study. Approval and recommendation from the principal was sought. The proposed title and design were submitted to the Dean of the Graduate School's Office for screening, evaluation, and approval. Upon approval, the office of the Dean released approval sheet for further screening and approval through the assigned adviser. When the Dean approved the Graduate School research through the Assigned Adviser, the researcher began the process of data gathering. Validation of the instruments through the Education Program Supervisor in Mathematics. Orientation of the participants (Students). Answering and retrieval of the research tool followed. Tallying of results and treatment of data. Analysis and Interpretation of Data. Making of Proposed Improvements

Ethical Issues. The right to conduct the study was strictly adhered through the principal's approval, approval of the Public School District Supervisor; approval of the Superintendent of the Division's approval. Orientation of the respondents both the grade 7students and the teachers was done separately. In the orientation, the issue on the giving of summative test questions as well as the retrieval of the questions from the students and parents/guardians following the IATF and DepEd protocol. a written permission was sought to the principal confidentiality and anonymity was discussed requiring them not to write names on the tools and will have assigned codes instead.

Treatment of Data. The effectiveness of distance learning modality on the Grade 7 students' performance in Mathematics was treated through a weighted mean. Pretest and posttest performance was gathered through the use of rating rubrics and the results were treated through weighted mean and T-Test of mean Difference.

III. Results and Discussion

Table 1

Pre-Test Performance of Grade 7 Students in Mathematics

Score Range	Description	Grade 7	
		Frequency	%
33-40	Excellent	2	4
25-32	Very Good	5	9
17-24	Good	22	42
9-16	Fair	18	34
0-8	Poor	6	11
Total		53	100
Weighted Mean		**17.23**	**Good**

Table 1 shows the Pretest performance of the Grade 7 Students Mathematics. In this table, it presents on how the pupils are being rated according to their level of performance in the aforementioned subject. Based on the study results, the grade 7 students have shown performance majority on the good level, which is equal to 42 percent or 22 total number of respondents belong to the score ranging from 17-24. Only 6 students or 11 percent in the poor level having score ranging from 0 to 8 out of the 53 students being tested. Moreover, in the fair level, there were 18 total number of students or 34 percent having belong to the score ranging from 9 to 16 and in the very good level of performance ranging from 25-32, there were only 5 students or 9 percent and lastly, in the excellent level of performance there were only 2 students or 4 percent out of the 53 students (100%) being tested in the distance learning modality.

Based from the results given, it implies that prior to the implementation of the Distance Learning Modality majority of the students gained knowledge and master their skills in the different competencies in mathematics in the second quarter. In other words, the grade 7 students are learning independently maybe because they are already exposed to the different medium of learning instruction such as utilizing information and communication technology in learning different topics or even acquiring knowledge to the different subjects they wanted to learn. Such that, it is also implies that having traditional way in learning the subject such as reading different reference books, journal, readers digest, and even showing videos in YouTube and other advance platforms are still effective considering the fact that majority of the performance focused in the good level of performance with an average weighted mean of 17.23 (good). But in order to further increase performance the remaining pupils who are in the fair level, there is a need to strategize the way the teachers teaching Mathematics to the Grade 7 students just to increase their performance. The teacher must find different teaching modality specially this time of pandemic or in the new normal scheme of delivering the education to our learners in order for them to be motivated to learn how to solve certain problems in mathematics subject.

Table 2

Post-Test Performance Of Grade 7 In Mathematics

Score Range	Description	GRADE 7	
		Frequency	%
33-40	Excellent	3	6
25-32	Very Good	7	12
17-24	Good	21	40
9-16	Fair	22	42
0-8	Poor	0	0
Total		53	100
Weighted Mean		**18.72**	**Good**

Table 2 presents the Posttest performance of the Grade 7 students in Mathematics. This table presents how the students are being rated according to their level of mathematical problem solving performance after the integration of Distance Learning Modality for a given period of time of the Second Quarter in the delivery of the different most essential learning competencies in mathematics subject. The results shows in the posttest that majority of the Grade 7 students being exposed to the distance learning modality are belong to the good level of performance in Mathematics with the score ranging from 17 to 24 with a total number of students equal to 21 total number of students or 40 percent. There were Grade 7 students who have shown performances are still in the fair level of performance with a score ranging from 9 to 16 having a total number of students equal to 42 percent or (22 students) while in the score ranging from 25 to 32 with a level of description of Very good level of performance has 7 total number of students or 12 percent. In the excellent level of performance with a score ranging from 33 to 44, there were 3 total number of students or 6 percent and none in the poor level of performance having a score ranging from 0 to 8.

The result implies based from the previous results, though the grade 7 students shows positive result just like the pretest performance result having a good performance the posttest results of the students also have good results which means that the normal way of learning the mathematics subject such as learning through reading of books may it be referenced books or supplemental, video lessons, journal, magazines, radio broad and the others which really consider as method or strategy in learning new techniques in learning mathematics subject. In other words,

those techniques in acquiring knowledge are effective and considered effective in improving the performance of the grade 7 students in Mathematics. But of course, we cannot deny that the distance learning modality has not really something to do in improving the performance of the grade 7 students in mathematics because there was no increase in the pretest and post-test performance. Hence, in order for the teachers to see the positive impact to the students' performance a new approach in teaching in the new normal should be engaged to have more interaction between the pupils and teachers and they can be more comfortable in their own pace to learn the Mathematics subject.

Table 3

Test of Difference Between the Scores in the Pre-test and Post-test Scores

Groups	Test Scores		p value	Level of Sig	Decision	Interpretation
Grade 7	Pre Post	17.23 18.72	1.23	0.05	Fail to Reject H_o	Not Significant

Table 3 presents the test of difference between the scores in the pretest and posttest of the Grade 7 students in Mathematics. The results show a little difference in the test percentage of the post-test and the pretest considering that the pretest result is 17.23 while in the post-test is 18.72. It further shows having the little increase resulted to a computed p value which is equal to 1.23 is greater than the level of significance of 0.05, the hypothesis which state that there is no significant difference in the pretest and posttest performance of the Grade 7 pupils before and after integrating distance learning modality is rejected.

The result implies that though there is a little difference in the pretest and posttest result before and after the implementation of the distance learning modality, still is does not guarantee its effectiveness to increase the performance of the Grade 7 students in Mathematics. There are still possibilities that the usual way of acquiring the knowledge and skills of the Grade 7 students in the delivery of the Most essential learning competencies in Mathematics are still effective considering the result of the pretest that majority of the students have gained good level of performance. Thus, the distance learning modality is not really effective compare to that of the traditional way in the delivery of the competencies and or teaching mathematics. Moreover still the two strategies could still bring or increase the performance in the Grade 7 pupils particularly in Mathematics subject.

IV. Conclusion

Based on the study's findings, the distance learning modality does not really help improve the performance of the Grade 7 students in mathematics, which means that there was no significant effect to the students in acquiring their knowledge and skills in the mathematics subject.

V. Recommendations

1. The proposed Intervention plan should be adopted.
2. The teachers should continuously update themselves with new approaches, methods, strategies and techniques in teaching Mathematics since it is one of the major subjects that needs to have extra effort for both teachers and students specially this time of pandemic. This can be done by attending Webinars related to different teaching strategies to be used in teaching Mathematics.
3. The school administrator should have concrete plans to develop and monitor their students' performance throughout their stay in their respective homes.
4. The Principal should establish bases and standards for allocating resources that contribute to the students' performance in all major subject areas.
5. The principal should provide professional development assistance for the faculty to equip them relevant approaches, methods, strategies and techniques in teaching mathematics.
6. Future researchers are encouraged to conduct similar study on a wider scope to validate the results and findings of the present study. Likewise, they are encouraged to investigate other factors that may contribute to students' academic performance such as learning styles, teaching strategies, technologies used in teaching and learning.

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