Available online at **globets.org/journal**
International Journal of Education, Technology and Science
3(1) (2023) 47–55

IJETS
International Journal of Education Technology and Science

THE USE OF PRE-RECORDED VIDEO LESSONS AND ITS IMPACT ON STUDENTS' ACHIEVEMENT IN MATHEMATICS 8

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Received: 14.11.2022 Revised version received: 09.02.2023 Accepted: 12.02.2023

Abstract

The study determined the use of pre-recorded video lessons and its impact on students' achievement in mathematics on Grade 8 students of Victorino Mapa High School in the Philippines during the school year 2021 – 2022. The study was conducted among thirty-six students of Grade 8 Section 3 – Eighteen (18) of whom formed the experimental group called Supplementers while another 18 students formed the control group called Visitors. The quasi-experimental research, Pretest-Posttest Nonequivalent Group Design was used to assess the effectiveness of pre-recorded videos to the students' achievement through scores. Likert scale questionnaire method was utilized to reveal the students' rating on the use of pre-recorded video lessons to their learning process. Based on the statistical analysis test, it was found at that the mathematics achievement of students who watched pre-recorded video lessons before the online class discussion had significant increase compared to those who don't watch. The results of the questionnaire also obtained positive results that students found it helpful to their learning process.

Keywords: Video lessons; impact of education; students' achievement; Mathematics

1. Introduction

1.1. Background of the Study

In early 2020, the traditional educational systems around the world become greatly affected by the COVID-19 pandemic. This causes a major overhaul in the entire education system in the country. The Department of Education (DepEd) crafted its Basic Education

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Learning Continuity Plan (BE-LCP) for A.Y. 2020 – 2021 and adopt distance learning as its new set-up. Llego (2020) stated that distance learning modality is most viable for independent learners, and learners supported by periodic supervision of parents or guardians. The challenge will be in dealing with learners not capable of independent learning.

According to Chen and Thomas (2020), lecture videos are an integral part of distance education.

The research proponent also observed that in the second quarter, 23% of handled grade 8 students got grade of 79 and below in Mathematics despite they belong to higher sections. Furthermore, the daily attendance of students only 65% of the total number. The aim of this study will be the impact of pre-recorded video lessons as supplement to the academic achievement of grade 8 students of Victorino Mapa High School.

The use of pre-recorded video lessons as supplement in teaching Mathematics in the grade 8 level of Victorino Mapa High School is the main goal of this research proposal. According to Burt (2021), students can boost their learning when viewed pre-recorded video lectures or edited audio/visual clips compared with in-person instruction, tutorials or reading assignments. The pre-recorded video lessons will use to solve the issue and improve the academic achievement of the students in mathematics in distance learning.

1.2. Research Questions

The primary purpose of this study is to investigate the use of pre-recorded video lessons and its impact on students' achievement in Mathematics to selected grade 8 junior high school students of Victorino Mapa High School.

Specifically, the study sought to answer the following questions:

1. What is the level of the students' academic achievement among two groups before and after the intervention?
2. Is there a significant difference in the academic achievement between two groups in relation to pre-recorded video lessons?
3. What is the impact level of the pre-recorded video lessons in Mathematics 8 on students' learning process?

2. Method

In the study, the quasi-experimental research design was used. Pretest-Posttest Nonequivalent Group Design which involved two groups in one class wase formed with Grade 8 students of Victorino Mapa High School in the Philippines.

2.1. Participants

The study made use of the Grade 8 students of Victorino Mapa High School as participants and the researcher is one of the faculty of the said school. Thirty-six students from one section of Grade 8 took part of the study.

The participants were distributed in two groups: (1) Visitors: students who only attended only online classes and did not watch any pre-recorded video lessons; and (2) Supplementers: students who both attended online classes and watched pre-recorded video lessons. Furthermore, pretest and posttest were given to participants to evaluate the impact of pre-recorded video lessons as supplement on the academic achievement in mathematics. Likewise, questionnaires, teachers' observation notes, and focus group discussions were used by the researcher to verify the learning and teaching experiences of students and teacher in using the pre-recorded video lessons. Data collected was subjected to qualitative and quantitative data analysis.

2.2. Data Gathering and Procedures

Before to conduct the study, the researcher prepared action research proposal to the research committee of Victorino Mapa High School for consultation. The comments and suggestions from the experts are incorporated in the revisions. The researcher prepared a letter of approval and endorsement to the committee and school head to be submitted to the office of Division Schools, Manila, asking permission to conduct the study. The month before the start of the experiment devoted to preparation, construction, and validation of instructional learning materials. The instructional learning materials as well as the research instruments are validated by the two master teachers and one head teacher for content validation.

Before the actual study, the researcher and the department head had a conference and discussed the strategies, objectives, and the procedures of the study. The researcher requested the department head to sit down and observed the classes to help control for bias.

On the first day of the study, the respondents informed about the significance of the study and pretest for achievement test was administered. On the second day, the lesson proper started. One class was divided and categorized as visitors and supplementers. This continued for two months of the study. On the last day of the study, the participants were given the achievement test, posttest.

A forty-item pretest/posttest was constructed by the researcher as the research instrument in this study to determine whether the use of Pre-recorded video lessons is an effective supplement to develop students' achievement in mathematics. The mathematical concepts involved in a two-month experimental phase were topics on Geometry with the following learning competencies in the Most Essential Learning Competencies (MELCs) by DepEd: (1) describes a mathematical system; (2) illustrates the need for axiomatic structure of a mathematical system in general, and in Geometry in particular: (a) defined terms; (b) undefined terms; (c) postulates; and (d) theorems; (3) illustrates triangle congruence; (4) illustrates the SAS, ASA, SSS congruence postulates; (5) solves corresponding parts of congruent triangles; (6) proves two triangles congruent; (7) proves statements on triangle congruence; and (8) apply triangle congruence to construct perpendicular lines and angle bisectors. The researcher also gave the important considerations on content validity in constructing the test. The test draft was presented to the mathematics teachers who are competent in the field of mathematics teaching and test construction. It also presented to the two master teachers and one head teacher for validation purposes.

The scores in pretest and posttest of the respondents were interpreted using descriptive equivalents that are presented in the DepEd Order No. 8 s. 2015:

Grading Scale	Description
90 – 100	Outstanding
85 – 89	Very Satisfactory
80 – 84	Satisfactory
75 – 79	Fairly Satisfactory
Below 75	Did Not Meet Expectation

2.3 Significance of the Study

The results of the study are beneficial to the following: **School Administrators** can look forward to the findings to this strategy and provide basis for planning in the future to restore the low performance of the students in mathematics. It will also help in evaluating the quality of teaching and performance of the students. **Mathematics Techers** can give them ideas about teaching instructions and strategies that consider the achievement differences of the students because they do not learn at the same rate or with the same methods as their peers. **Students** can be directly benefited to this study considering it focused on a teaching strategy which contemplate their individual ability. **Future Researchers** may set inspiration and direction for future research to develop more technology-based tools and strategies as additional instructional materials in mathematics that can enhance the students' ability particularly in mathematics.

2.4 Scope and Limitation

For better understanding, the study utilized the following terms: **Pre-Recorded Video Lessons** refers to the teacher-made video lessons given by the students prior to actual discussions of the topics. **Students' Achievement** deals with the scores gained from pretest and posttest.

The study focused on the use of pre-recorded video lessons and its impact on students' achievement in mathematics specifically grade 8 topics taught in third quarter prescribed by the Department of Education's Most Essential Learning Competencies (DepEd MELCs). The respondents of the study composed of thirty-six Grade 8 section 3 students for S.Y. 2021 – 2022 of Victorino Mapa High School located at 300 San Rafael St., San Miguel, Manila. The respondents were divided into two groups: (1) Visitors: students who only attended only online classes and did not watch any pre-recorded video lessons; and (2) Supplementers: students who both attended online classes and watched pre-recorded video lessons.

2.5 Data Analysis

The gathered data were subjected to statistical treatment in order to analyze the impact of using of Pre-recorded video lessons in teaching to the academic achievement of students in Mathematics 8.

The mean, median, and standard deviation were utilized as statistical tools for the students and t-test was utilized afterwards in order to test the hypotheses of the study. The SPSS version 13.0 program was also utilized to compute the data needed for the study.

3. Results and Discussion

Table 1: Level of Achievement of Students Before the Intervention (Pretest)

Grading Scale	Group				Description
	Visitors		Supplementers		
	f	%	f	%	
90 - 100	0	0%	0	0%	Outstanding
86 - 89	0	0%	0	0%	Very Satisfactory
80 - 85	0	0%	0	0%	Satisfactory
75 - 79	0	0%	0	0%	Fairly Satisfactory
Below 75	18	100%	18	100%	Did Not Meet Expectation
MEAN	9.00		8.94		
MPS	65.17%	Did Not Meet Expectation	65.17%	Did Not Meet Expectation	

Table 1 shows 18 or 100% of students belong to visitors group did not meet expectation in the pretest. Moreover, 18 or 100% of students belong to supplementers group also did not meet expectation in the pretest.

The visitors group obtained 9.00 mean score while the supplementers group got 8.94 mean score. Which indicated that the students in both group got 65.17% Mean Percentage Score signifying not meeting the expectation before the intervention.

Table 2: Level of Achievement of Students After the Intervention (Posttest)

Grading Scale	Group		Description
	Visitors	Supplementers	

	f	%	f	%	
90 - 100	0	0%	3	17%	Outstanding
86 - 89	0	0%	3	17%	Very Satisfactory
80 - 85	2	11%	8	44%	Satisfactory
75 - 79	10	56%	4	22%	Fairly Satisfactory
Below 75	6	33%	0	0%	Did Not Meet Expectation
MEAN	23.38		30.00		
MPS	75.50%	Fairly Satisfactory	83.94%	Satisfactory	

Table 2 reveals that 2 or 11% of the students in visitors group are satisfactory, 10 or 56% of students attained fairly satisfactory, and 6 or 33% of students in visitors group did not meet the expectation in the posttest. On the other hand, 3 or 17% of students in supplementers group are outstanding, 3 or 17% of students are very satisfactory, 8 or 44% are satisfactory, 4 or 22% of students in supplementers group gained fairly satisfactory in the posttest.

The findings confirm that the students which was not exposed to pre-recorded video lessons got 23.38 or 75.50% with fairly satisfactory in the academic achievement in the posttest. On the other hand, the students which was exposed to pre-recorded video lessons obtained 30.00 or 83.94% with satisfactory level of academic achievement in the posttest.

Table 3: Test of Significance Difference in the Academic Achievement Between Two Groups in Relation to Pre-recorded Video Lessons

Indicator	Group	Mean	t-value	p-value	Decision	Remark
Pretest Scores	Visitors	9.00	2.032	0.925	Failed to Reject Ho	Not Significant
	Supplementers	8.94				
Pretest-Posttest Scores	Visitors	9.00	1.740	0.000	Reject Ho	Significant
	Visitors	23.38				
Pretest-Posttest Scores	Supplementers	8.94	1.740	0.000	Reject Ho	Significant
	Supplementers	30.00				

Posttest Scores	Visitors	23.38	2.032	0.000	Reject Ho	Significant
	Supplementers	30.00				

Table 3 presents the t-test of significance in the academic achievement between the Supplementers (Experimental Group) and Visitors (Controlled Group).

As depicts in the table, there is no significant difference was found between the pretest scores of the two groups with the computed p-value 0.925 which is greater than the alpha level of 0.05 level of significance. This connotes that the two groups of respondents have the same entry knowledge in the study of Mathematics 8.

It can be glean from the table that significant differences were found between the achievement of the visitors and supplementers in the posttest since both of the computed p-value of 0.000 is less than the alpha level of 0.05 level of significance. This means that the students exposed to different methods of teaching gained knowledge.

The table also reflects that there is a significance difference between the achievement in mathematics between two groups with a computed p-value of 0.000 is less than the alpha level of 0.05 test of significance. This implies that the supplementers performed better than the visitors.

Table 4: Students' Rating on Pre-recorded Video Lessons in Mathematics 8 in Their Learning Process

Statement	Median	Verbal Interpretation
I found pre-recorded video lessons interesting and don't get bored.	3	Agree
I can watch the pre-recorded lessons anywhere, anytime, and any number of times at my own pace.	4	Strongly Agree
I like watching pre-recorded video lessons better than reading self-learning materials (modules).	4	Strongly Agree
I found the length(minutes) of pre-recorded video lessons was appropriate for the given topic.	3	Agree
I would like to continue with this method since pre-recorded video lessons saved my time in studying.	4	Strongly Agree
I want other subjects in the future to have pre-recorded video lessons.	4	Strongly Agree
I found the pre-recorded video lessons easy to learn because the concepts were well-explained.	4	Strongly Agree
I learned more from pre-recorded video lessons since I could rewind and review portions that I did not understand at first.	4	Strongly Agree
The pre-recorded video lessons helped me understand the topics being discussed in online class.	4	Strongly Agree

I gained knowledge from the pre-recorded video lessons and they made me motivated to participate in online class.	4	Strongly Agree
Overall Median	**4**	**Strongly Agree**

Legend:

4 Strongly Agree
3 Agree
2 Disagree
1 Strongly Disagree

The table shows on overall median of 4 students' rating on pre-recorded video lessons in mathematics 8 in their learning process. This means that the respondents strongly agree that pre-recorded video lessons helped them to study and learn the lessons. Also, they motivated them to participate during the online class discussions.

4. Recommendations

After a thorough review of the findings of the study, the following recommendations were made: (1) The school administrators should expose teachers to seminars and trainings related to video lessons as instructional materials; (2) Encourage teachers to develop their on video lessons as supplements to their teaching; and (3) conduct future studies for the development of pre-recorded video lessons in teaching mathematics and other subjects.

Declaration of Conflicting Interests and Ethics

The author declares no conflict of interest.

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