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Contextualized Recorded Video Lectures in Basic Trigonometry for Ninth Grade Learners

Bless T. Eslabon, MSciEd[1] Douglas A. Salazar, PhD[2]

1. Mindanao State University-Iligan Institute of Technology, Andres Bonifacio Avenue, Tibanga, 9200 Iligan City, Philippines
2. College of Education, Mindanao State University-Iligan Institute of Technology, Andres Bonifacio Avenue, Tibanga, 9200 Iligan City, Philippines

* E-mail of the corresponding authors:

bless.eslabon@g.msuiit.edu.ph[1] and douglas.salazar@g.msuiit.edu.ph[2]

Abstract

A world enemy, this time invisible, engendered a global shutdown. COVID-19 pandemic has wrought havoc specifically on the education sector, thereby leaving face-to-face teaching and learning suspended. Modular Distance Learning is one of the modalities and throughout its implementation, different challenges arose. This study developed Contextualized Recorded Video Lectures as a supplement material to the Department of Education's self-learning modules and investigated the ninth-graders achievement level and perception of its implementation. Learners find video lessons to be a great help in their self-regulated learning. They perceived that contextualization of lessons through recorded video lectures makes learning easier, more meaningful, and relevant as reflected in their responses to the perception questionnaire which were then supported by a short interview. This study employed a mixed method of research that is a quantitative method with qualitative support. The achievement test was used to measure the learners' achievement level. The results revealed that thirty-three percent (33%) and eighty-six percent (86%) of the learners in the control and experimental groups respectively improved their achievement levels.

Keywords: Achievement Level, ADDIE Model, Basic Trigonometry, Contextualization, Contextualized Recorded Video Lectures (CRVLs), Modular Distance Learning, Video-Based Learning

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1.0 Introduction

Trigonometry stands to be one of the most challenging topics teachers find hard to explain and for the learners to comprehend (Dündar, 2015). The study by Prabowo, et al. (2018) stated that among the four competencies (Algebra, Calculus, Geometry and Trigonometry, and Statistics and Probability) tested in the National Examination in 2016 at the high school level, Trigonometry was the least mastered by learners. In a local study published by Luzano (2020), he stated that learners consider Trigonometry more difficult compared to other subjects of Mathematics.

For these reasons, there is a recommendation that contextualized recorded video lectures (CRVLs), which are aligned with the Most Essential Learning Competencies (MELCs) released by the Department of Education, accompany self-learning modules (SLMs). Video lessons are great for helping learners' self-regulated learning (van Alten et al., 2020), and teachers also recognized videos as a powerful communication tool (Moreira & Nejmeddine, 2015). The study of Insorio et. al. (2022) has proven the claim that teacher-made video lessons helped the learners to understand Mathematics topics by watching conveniently and repeatedly. Moreover, visual processing, demonstrations, self–study, contextualization, illustration, and others, are the different ways to learn with videos quickly and effectively (Bergwall, 2015).

Contextualization is one of the keys to engaging the learners in the teaching and learning process, wherein they can relate their situations to their lessons (Reyes et al., 2019). In the recent study conducted by Buan et. al. (2021), the findings of the study revealed that there was a significant improvement in the learners who have undergone contextualized lessons than those who have not. Based on the results of their study, learners perceived contextualized lessons as relevant and comprehensive. The study then recommended that teachers adopt the use of contextualized problems in teaching Mathematics, specifically in Measurement lessons.

1.1 Statement of the Problem

Through the years, school professionals and stakeholders have constantly been collaborating in the revision of the methods and strategies to improve student engagement and learning (Kammer, 2021). Due to the suspension of face-to-face classes and the shifting of classes to the distance and blended learning setup, however, school professionals have to find ways of executing these methods and strategies via the New Normal modalities. Chen (2012) cited the study of Fern et al., (2011) which states that videos are one of the most diverse and powerful virtual learning mediums. Contextualization is one of the ways that help learners learn the videos quickly and effectively. It leverages learners' knowledge by bringing the concepts from their home or community and connecting them to classroom situations (Paris, 2012).

For this reason, teachers must find different and up-to-date ways to deliver the lessons effectively and become more meaningful to the lives of the learners in this new learning setup. To address this goal of assisting the learners, the researcher developed contextualized recorded video lectures as a supplement material that underwent an evaluation process from the panel of evaluators and investigated the learners' achievement level and perception through its implementation in Basic Trigonometry topics.

1.2 Research Hypotheses

The researcher put forward the following hypotheses:

1. There is a significant difference between the mean scores in the achievement test of the learners who used contextualized recorded video lectures and those who did not.

2. There is a significant difference between the mean gain scores in the achievement test of the learners who used contextualized recorded video lectures and those who did not.

1.3 Significance of the Study

The study on Contextualized Recorded Video Lectures in Basic Trigonometry for Ninth Grade Learners offers relevance to the following:

To the learners, this study will help them to have more accessible and more effective self-regulated learning with the aid of CRVLs rather than just doing SLMs alone without any additional material.

To the teachers, it will enable them to be aware of the importance of developing contextualized recorded video lectures for the learners. Moreover, they will be given timely ideas on how to make teaching and learning in the New Normal more relevant and meaningful for the learners.

To the parents, this study will benefit them since they would not worry anymore about explaining to their learners the lessons they are not familiar with. Also, this will ease their burden from hiring tutors, especially for complex Mathematics topics.

To the school administrators, this will serve as a driving force that will guide and motivate them to organize programs and seminar workshops that would develop and strengthen the teacher's skills and competence in developing contextualized recorded video lectures not just in Mathematics but in their respective fields of specialization.

To future researchers, the result of this study will be used for further studies that will make teaching and learning more effective, relevant, and meaningful, especially in this New Normal setup.

1.4 Scope and Limitations of the Study

In this study, the researcher developed contextualized recorded video lectures and investigated the learners' achievement level and perception in Basic Trigonometry. The development of CRVLs focused on the selected topics in Grade 9 and was based on the Most Essential Learning Competencies of the Mathematics curriculum guide. The topics covered were the third and fourth competencies for the Fourth Quarter. These competencies are as follows: (1) illustrates angles of elevation and angles of depression, and (2) uses trigonometric ratios to solve real-life problems involving right triangles. The result of the achievement test and the learner's responses in the perception questionnaire supported by a short interview served as a ground for investigation in terms of the CRVLs effectiveness towards learner's achievement level in Basic Trigonometry. Part of the limitations of this study was the learners' prior knowledge of Basic Trigonometry and the influence of the local context where this study took place. Moreover, part of the study's limitation was the selection of one section only for the Ninth Graders of the targeted school because of the current situation and the method of the school in implementing the Modular Distance Learning Modality.

1.5 Definition of Terms

For a more precise understanding of this study, the following terms were conceptually and operationally defined.

Achievement. In this study, it refers to the gain score obtained by the respondents on the researcher-made pre-test and post-test.

Achievement Level. In this study, it refers to the interpretation of the Ninth Grader's achievement or score in the pre and post-achievement tests.

Achievement Test. In this study, it refers to a researcher-made test administered to the learners before and after the implementation of the contextualized recorded video lectures.

Basic Trigonometry. A branch of Mathematics that mainly studies the relationships of sides and angles of right triangles. In this study, it pertains to all the topics that fall under the third and fourth competencies of the Grade 9 Mathematics Curriculum Guide for the fourth-quarter period.

Contextualized Recorded Video Lectures (CRVLs). In this study, they refer to the recorded video lectures that served as supplemental material to the self-learning modules presented through a video format that can be viewed offline or online.

Gain Scores. In this study, it refers to the difference between the post-test and pre-test scores of the control and experimental groups.

Perception. In this study, it refers to learners' responses (experimental group only) supported by short interviews to the open-ended questions in the perception questionnaire about their experiences and views on implementing the contextualized recorded video lectures as a supplement material to their self-learning modules.

2.0 Methodology

This chapter presents the procedures that led to the realization of the goal of this study. It includes the research method, subjects of the study, instruments used, data collection, data analysis, and coding of qualitative data to come up with reliable and valid results.

2.1 Research Method

This study employed a mixed method of research that is a quantitative method with qualitative support. On the quantitative part, the researcher used the quasi-experimental while on the qualitative part, the open-ended perception questionnaire supported by short interviews was utilized. The participants of this study were divided into control and experimental groups. The control group received no treatment, thus they made use of SLMs only from the Department of Education, whereas the experimental group used SLMs and at the same time the four developed CRVLs as a supplement material. Both groups had received pre and post-tests. The learner's previous quarter grades along with their pre-test results were considered to ensure the comparability of the two groups. The qualitative data were taken to support the quantitative data and they were described using words and sentences to get the conclusion.

2.2 Subjects of the Study

In this study, purposive sampling was used. The participants of this study were one section only out of three Grade 9 sections that suited the researcher's goal of the study. In dividing the section into two groups, the researcher considered the previous quarter grades of the participants. The participants were arranged; boys and girls were separated to divide them evenly into two groups. Afterward, the researcher assigned the first learner on the list to the control group, while the second learner was assigned to the experimental group. The next persons in the list were then grouped in the same alternating manner. Moreover, the pretest scores results were considered to ensure the comparability of the groups. Table 1 below shows the matrix of the participants.

Table 1. Matrix of the Participants

Grade 9	Number of Learners	Previous Quarter Grade Means	Pre-test Means Scores
Control Group	21	82.24%	6.95
Experimental Group	21	82.71%	6.90

As can be seen in Table 1, the control group had a mean grade of 82.24% while the experimental group got a mean grade of 82.71%. In terms of the pre-test scores, the control group had a mean of 6.95 while the experimental group got a mean of 6.90. This means that the two groups were comparable at the beginning of the study.

2.3 Instruments Used

This study utilized different types of research instruments which were described as follows:

2.3.1 CRVLs Evaluation Tools from Department of Education

These are the standard evaluation tools representing the numerical and qualitative comments of the panel of evaluators from the Department of Education.

2.3.2 Achievement Test

The Achievement Test was used to determine the achievement levels of the learners. To ensure the content validity of the test, the Table of Specifications was used and it underwent the item analysis process.

2.3.3 Open-Ended Perception Questionnaire with Short Interview

The perception questionnaire was composed of six (6) open-ended questions supported by a short interview on how the CRVLs affected their learning in the current situation, and how it helped them in their Basic Trigonometry lessons.

2.4 Data Collection

2.4.1 Process in the Development of Contextualized Recorded Video Lectures

The following steps were based on the ADDIE Instructional Design Model.

Analysis Phase: In this stage, the researcher gathered and examined the modules four and five that were used in the study from the region. All the learning objectives that fall under the third and fourth competencies of the MELCs in Mathematics 9 Fourth Quarter were identified. The target school and participants were also surveyed and analyzed by the researcher.

Design Phase: In this stage, the researcher planned how modules could be contextualized considering the learner's context and situation where this study was implemented. The contextualized scripts for the videos and the slide presentations were prepared. Also, the researcher explored the different applications that can be used for the recording and editing processes.

Development Phase: After selecting the necessary and appropriate recording and editing applications, the researcher recorded the video lectures based on the contextualized slide presentations and scripts prepared in the Design Phase. After recording and producing the videos, they then undergo an editing process to refine the quality of the videos in terms of their audio, music background, and visual presentations. Afterward, the CRVLS were evaluated by the panel of evaluators using the evaluation rubrics from the Department of Education. The researcher then edited or revised the videos once again applying the comments and suggestions of the evaluators including the thesis adviser.

Implementation Phase: After completing the first three processes, the CRVLs were set and ready to be implemented in the experimental group of the study. The first two videos (Videos 1 and 2) were given to the learners for the first week while the third and fourth videos (Videos 3 and 4) were given to them in the second week of the implementation. For some learners, the videos were given to them personally as they get their learning modules while some learners prefer to have them online. The researcher made a private page where learners in the experimental group were added and can only access the videos. On the page, instructions were given in each recorded video lecture. Thus, the CRVLs can be accessed by the learners both online or offline basis.

Evaluation Phase (Validation): After the two-week implementation of the study in the targeted school, the researcher secured all the gathered data, and appropriate measures were taken to analyze and investigate the effects of CRVLs on learners' achievement levels in Basic Trigonometry and their perceptions through the implementation of the CRVLs.

2.4.2 Implementation of the Study

The following were the steps that were followed by the researcher in implementing the study.

2.4.2.1 Asking Permission

After the development and evaluation of the CRVLs, achievement test validation, as well as the ethics committee's approval, the researcher, with the consent of her thesis adviser, requested permission from the school principal to conduct the research study. Upon approval by the school's principal the researcher was referred to the JHS Math 9 Coordinator, who was at the same time the adviser of the section that was selected as the participants of the study. The researcher then communicated and explained the goals and purpose of the study to the cooperating teacher.

2.4.2.2 Participant's Orientation

After collecting the parent's consent form and learner's assent form the researcher conducted a short orientation. The researcher then informed the participants in both the control and experimental groups of the study's goal and purpose. The participants subsequently filled out the learner's survey form for the researcher to gain knowledge of the background of the learners. In a separate orientation, the researcher explained the agreement form to the participants in the experimental group.

2.4.2.3 Conducting of Pre-test

After the orientation, a pre-test was given utilizing pen and paper in a face-to-face setting. This was done a week before the implementation of the SLMs and contextualized recorded video lectures.

2.4.2.4 Implementation of SLMs and CRVLs to the Participants

The implementation began a week after the pre-test. The researcher went to the school to implement the study. The researcher had already divided the participants into two groups (control and experimental) based on their previous grades in Mathematics while considering also their pre-test scores.

2.4.2.4.1 Control Group

The researcher and the class adviser distributed the SLMs from the Department of Education and informed the learners that they had one week to complete the activities in the first set of modules. After a week, they were instructed to return the answered modules and get the second set of modules.

2.4.2.4.2 Experimental Group

The researcher and the class adviser started distributing the SLMs from the Department of Education. They informed the learners that they had one week to complete the activities in the first set of modules, and they also received the first two CRVLs (Videos 1 and 2). After a week, they returned the answered modules and get the second set of modules and also the last two CRVLs (Videos 3 and 4).

2.4.2.5 Conducting of the Post-Test and Perception Questionnaire with Interview

The researcher administered the post-test to both the control and experimental groups after the two-week implementation. The moment the learner turned in their questionnaires, the researcher had a short follow-up interview with the learners in the experimental group about their answers.

2.5 Data Analysis

Both quantitative and qualitative analyses were done to determine the achievement level of the respondents who were exposed and not exposed to Contextualized Recorded Video Lectures. The qualitative data were derived from the perception questionnaire and follow-up interview results. The mean rating was used to determine the average scores in the Achievement Test for both the pre-test and the post-test. Also, this was used to compute the average grade of the two groups in their previous quarter grade in Mathematics to ensure their comparability.

A Mann-Whitney U test is a non-parametric test, used to compare the mean scores between the control and experimental groups. Also, to check if there was a significant difference between the mean scores of the post-test between the control and experimental groups.

A Wilcoxon signed-rank test is a non-parametric test, used to compare the mean pre-test and post-test scores of the participants from the control group and experimental group. This test was used to check if there was a significant difference between the mean scores of the pre-test and post-test of the control and experimental groups.

An independent t-test is a parametric test used to compare the mean gain scores of the respondents between the control group and experimental group. This test was used to check if there was a significant difference between the mean gain scores of the control group and the experimental group.

To check if there was a significant difference based on the hypotheses of the study, the licensed SPSS 14 was used at 0.05 level of significance with the help of a statistician.

2.6 Coding of Qualitative Data

For easier processing of the data needed for the analysis, qualitative data were coded. Each respondent was systematically assigned to a corresponding letter and number. For the control group, the respondents were coded using the letter C and a number corresponding to their sequential order. For instance, the first respondent was coded C1. For the experimental group, the respondents were coded using the letter E and a number corresponding to their sequential order. For instance, the first respondent was coded E1. Lastly, the perception questions were coded as Q1, Q2, and so on.

3.0 Presentation, Analysis of Qualitative and Quantitative Data

The following discussion presents the results of the analysis of the student scores in the achievement test in Basic Trigonometry. It describes the effects of the CRVLs' on the student's achievement level. This result is supported by the qualitative data gathered from the perception questionnaire and follow-up interview.

3.1 Achievement Level

Before the implementation of the SLMs and CRVLs, the researcher conducted a pre-test for both groups to identify their prior knowledge on Basic Trigonometry. Table 2 below summarizes the learner's distribution of scores in the achievement test and its respective interpretation and percentage.

Table 2. Learner's Test Score and Equivalent Achievement Level and Percentage

Score Scale - ITP	PRETEST				POST-TEST			
	Control Group		Experimental Group		Control Group		Experimental Group	
	f	%	f	%	f	%	f	%
21 – 25 (90%-100%) (A)	0	0	0	0	0	0	1	5
19 – 20 (85%-89%) (P)	0	0	0	0	2	9	5	24
17 – 18 (80%-84%) (AP)	0	0	0	0	1	5	8	38
15 – 16 (75%-79%) (D)	0	0	0	0	4	19	4	19
0 – 14 (0%-74%) (B)	21	100	21	100	14	67	3	14
TOTAL	21	100	21	100	21	100	21	100

Legend: ITP-Interpretation, f-frequency, A-Advanced Proficient, P-Proficient, AP-Approaching Proficient, D-Developing Proficient, B-Beginning Proficient

In Table 2, it can be gleaned that one hundred percent of the learners in both groups got score that fell in the 0-14 interval. This means that all learners had the Beginning Proficient achievement level at the beginning of the study.

After the two-week implementation, the researcher conducted a post-test to determine the learners' improvement in their achievement levels, and identify which group improved better in Basic Trigonometry. For the control group, it revealed that two (9%) learners got a score that fell in 19-20 intervals; one (5%) learner fell in 17-18 intervals; four (19%) learners fell in the 15-16 interval; and fourteen (67%) learners fell in the 0-14 interval. This means that 33% of the learners improved their achievement levels, while 67% did not improve their achievement levels. In terms of the experimental group, one (5%) learner got a score that fell in a 21-25 interval; five (24%) learners fell in 19-20 interval; eight (38%) learners fell in 17-18 interval; four (19%) learners fell in the 15-16 interval; and only three (14%) learners fell in the 0-14 interval. This means that eighty-six

percent (86%) of the learners improved their achievement levels, and only fourteen percent (14%) of the learners did not improve their achievement levels. Furthermore, results showed that it caused the learners a noticeable improvement by thirty-three percent (33%) in the control group and eighty-six percent (86%) in the experimental group. The data also showed that five percent (5%) of learners in the control group and thirty-eight percent (38%) of learners in the experimental group reached the approaching proficient level in basic trigonometry. Thus, a prominent change has been observed among the learners in the experimental group compared to the control group.

3.2 Difference in the Mean Scores of the Learners in the Achievement Test within Groups

Table 3 presents the summary statistics of the control and experimental group's pre-test and post-test mean scores using the Wilcoxon Signed Rank Test.

Table 3. Summary Statistics of Achievement Test Scores within Groups

STATISTICAL TOOLS	CONTROL GROUP		EXPERIMENTAL GROUP	
	Pretest	Post-test	Pretest	Post-test
Mean	6.95 (B)	13.71 (B)	6.90 (B)	17.05 (AP)
Standard Deviation	2.64	2.74	1.55	2.44
Coefficient of Variation	38	22	20	14
Coefficient Value	-4.029		-4.024	
P-Value	0.000		0.000	

**Significance at p<0.05*

Legend: B-Beginning Proficient, AP-Approaching Proficient

As can be observed in Table 3, the mean pre-test score of the learners in the control group was 6.95, while 13.71 in the post-test. It means that the learner's score in the post-test increased. However, the control group's achievement level remained at the same level which was Beginning Proficient in both pre and post-tests. To check if there was a significant difference in the mean score within the control group in the pre and post-tests, the Wilcoxon Signed-Rank test was used. Based on the result, there was a significant difference between the mean scores of the learners within the control group. As for the experimental group, the mean pre-test score of the learners was 6.90, while 17.04 in the post-test. It means that the learner's score in the post-test also increased in the experimental group. Moreover, based on the achievement level of the group, it can be clearly observed that the learners improved from beginning proficient to approaching proficient level. Based on the p-value of the experimental group, there was a significant difference between the pre and post-tests means scores of the learners.

3.3 Difference in the Mean Scores of the Learners in the Achievement Test between Groups

Table 4 presents the summary statistics of the pre-test and post-test means scores of the control and experimental groups using the Mann-Whitney U Test.

Table 4. Summary Statistics of Achievement Test Scores between Groups

STATISTICAL TOOLS	PRETEST		POST-TEST	
	Control	Experimental	Control	Experimental
Mean	6.95 (B)	6.90 (B)	13.71 (B)	17.05 (AP)
Standard Deviation	2.64	1.55	2.74	2.44
Coefficient of Variation	38	22	20	14
Coefficient Value	213		81	
P-Value	0.848		0.000	

**Significance at p<0.05*

Legend: B-Beginning Proficient, AP-Approaching Proficient

Based on Table 4, the mean pre-test score of the learners in the control group was 6.95, while 6.90 for the experimental group. It means that the achievement of the learners in the control and experimental groups were more likely the same. The achievement level of the learners in both control and experimental groups was in

the beginning proficient level. Now in terms of the post-test results, the mean score in the control group was 13.71 and 17.05 for the experimental group. Based on the p-value, there was a significant difference between the mean scores of the learners for both control and experimental groups.

This result of the study confirms the findings of Lalian (2018) who stipulated that videos were used as a learning medium in Mathematics. Based on the result, he concluded that videos play a vital role in improving learners' motivation in learning, enhancing their knowledge and understanding of the lesson, and in improving their achievements. One local study entitled, "Effects of Teacher-Made Learning Videos on Students' Academic Performance among Grade 9 Mathematics under Modular Approach" published by Ladrillo (2021), stated that learners who were exposed to teacher – made learning videos performed significantly better and obtained high mean score than those learners who were not.

3.4 Distribution of Learner's Achievement Test Gain Scores, Corresponding Interpretation, and Percentage

Table 5 below shows the gain scores of the learners for both groups, the frequency of learners, percentage, and its equivalent interpretation based on the given intervals. With respect to the working description of the gain scores, this was adapted from Salazar's study (2016) entitled Video Captured Lectures with Salazar's Method of Grouping: Effects on Students' Achievement in Differential Calculus with modifications suited for the present study.

Table 5. Gain scores of the Learners and Interpretation

Gain Scores	Control Group (NO CRVLs)			Experimental Group (WITH CRVLs)		
	f	P	ITP	f	P	ITP
21-25	0	0%	Very High Increase	0	0%	Very High Increase
16-20	0	0%	High Increase	0	0%	High Increase
11-15	0	0%	Average Increase	11	52%	Average Increase
6-10	16	76%	Low Increase	8	38%	Low Increase
1-5	5	24%	Very Low Increase	2	10%	Very Low Increase

Legend: f-frequency, P-percentage, ITP-interpretation

As can be seen in Table 5, in the control group, 76% of the learners fell in a 6-10 gain score interval which can be interpreted as low increase; and 24% of the learners fell in a 1-5 gain score interval which can be interpreted as very low increase. In the experimental group, 52% of the learners were in an 11-15 gain score interval which can be interpreted as an average increase; while 38% of the learners were in a 6-10 gain score interval which can be interpreted as low increase; and only 10% of the learners fell on a 1-5 gain score interval which can be interpreted as very low increase. The data concludes that 76% of the control group respondents increased their score between 6 – 10 points, while 38% of the experimental group increased their score between 6 – 10 points. Moreover, in the control group, no learner increased their scores between 11– 15 points but in the experimental group 52% of the learners increased their scores between 11– 15 points. Thus, most of the participants from the control group gained low increase scores, while the experimental group improved on the average increase.

3.5 Difference in the Mean Gain Scores of the Learners in the Achievement Test

Based on Table 6 below, the mean scores of the mean gain scores in both experimental and control groups were 6.76 and 10.14, respectively. Both of the results were classified as "Low Increase", meaning, both groups in the study acquired a low increase from the pre-test to the post-test. However, it can be observed obviously that the experimental group had a more excellent mean gain score compared to the control group. The Table 6 shows the summary of statistics using the independent t-test with 0.05 as the alpha-level.

Table 6. Summary Statistics of the Mean Gain scores of the Participants

Descriptive Statistics	Mean Gain Score	Standard Deviation	Gain Score Interpretation
Control Group (No CRVLs)	6.76	1.81	Low Increase
Experimental Group (With CRVLs)	10.14	2.74	Low Increase
Mean Difference[a]		3.38	
Coefficient Value		-4.71	
P-value		0.00	

**Significance at p<0.05*
a = Experimental Group – Control Group

The Independent T-test was used to test if there was a significant difference between the learners' mean gain scores in the achievement test in the control and experimental groups. The table above shows that the P-value is less than 0.05 (p=0.00). Hence, there was a significant difference between the mean gain scores of the control and the experimental groups. Also, the mean value of 6.76 for the control group and 10.14 for the experimental group indicates that the achievements of the learners in the experimental group were better than the control group.

3.6 Learner's Perception of the Utilization of CRVLs in the Experimental Group

The advantages of using CRVLs as a supplement to SLMs were evident in the better and positive improvement in the learners' achievement level in the experimental group and their responses to the perception questionnaire about the utilization of the CRVLs. The following statements were a few of the recurrent themes in terms of the responses of learners from their perception questionnaire supported by a short interview.

1. Learners learned the lessons through watching and listening to the CRVLs attentively.

One of the advantages and benefits of utilizing videos in the teaching and learning process is its ability to cater to manifold learners at any time and any place (Simi, 2020). Below were a few of the learners' responses about CRVLs and how they learned from them.

"I watch and play the videos, I also tried to answer the problems in the modules. I listen to the videos attentively". E5

"I learned the topics by watching the videos and listening to them attentively, I watch the videos again and again". E7

2. The problems or situations presented in the CRVLs are related to real-life contexts.

Contextualization is the process of matching the curriculum content and instructional strategies relevant to learners. Usually, it takes the form of real-world examples of problems that are meaningful to students personally, to the local area they belong to, or to the community they live in (Reyes, 2018). Learners find CRVLs to be relevant and relatable based on their perceptions below.

"Yes, I can say that illustrations shown in the videos are relatable and relevant to me especially that examples can be found at school, the school's vegetable garden, and flagpole. Not the same with our module where examples cannot be found in our place". E8

"I relate in the illustrations of angles of elevation and depression, the lookup and look down part of the video. I relate with the examples and illustrations used because they can be seen in our school like the flagpole, office, ground, and school's vegetable garden". E15

3. CRVLs simultaneously stimulate the auditory and visual channels.

One benefit of employing videos in the teaching and learning process is that they provide audiences with picture illustrations that they can see and audio that they can hear (Lee & Reeves, 2007). Below were some of the learner's responses that support this claim.

"I like the teacher's voice in the discussion. The videos are clear and pictures are very related to the topic. The illustrations are big and clear". E2

"The video's audio is loud and clear. The video has discussions. The pictures and the illustrations are big and clear". E5

4. CRVLs are more flexible.

In one of the publications of Brown (2002), he stated that one of the advantages of using videos in learning is its flexibility. It can be played by the learners as many times as they want, anytime, and anywhere either online or offline.

"Some of the ways on how I learned the topics or lessons were watched the videos multiple times". E8

"I also watch the videos repeatedly to understand it better. I pause and rewind the videos to parts that are not yet clear to me". E18

5. CRVLs are engaging to the learners.

Utilizing videos in a teaching and learning process is beneficial for learners and teachers (Beatty, et al., 2019).

"The first is the teacher in the video who explained well and examples were clear. It's not boring also to do it alone by yourself, videos are motivating". E4

"The introductory music can really make us have a good vibe, the voice is good and Ma'am Bless explained it well, and much better because the pictures given were realistic". E8

6. CRVLs enable teachers to guide learners virtually.

Teachers recognized videos as a powerful communication tool (Moreira & Nejmeddine, 2015). Through video lessons, teachers will be able to teach learners as if they are in the face to face scenario or situation.

"Yes, I like it very much. Because I can understand the topics better. The videos are like teachers during the face-to-face". E2

"Yes, because it makes our lessons more understandable and it helps us to answer our modules. Video lessons help us to experience or feel like we are in face to face because of the discussion". E18

7. CRVLs help learners in answering their SLMs.

The main struggle of learners in modular distance learning is self-studying (Dangle & Sumaoang, 2020). Through utilizing the CRVLs, the following statements below were proof that videos are great medium to help learners.

"Yes, because it makes our lessons more understandable and it helps us to answer our modules". E18

"Yes, I want modules with videos because videos helped me as a guide to answering my modules. I understand better my lessons with the help of the videos". E15

Furthermore, there were four (4) learners (19%) who improved from beginning proficient (B) to developing proficient (D). The learner's perceptions were used to support this improvement. It was evident in their statements which were as follows:

1. CRVLs are clear and concise.

Video lessons are very beneficial for learners, hence as a teacher, it is very important to consider the duration or length of a video that will help learners become more engaged and not be bored.

"The videos are not too long and they can be viewed easily on my phone". E6

"The videos are brief and the goals of the topics are stated before the discussion". E14

2. CRVLs present lesson objectives.

Sharing the end goal of every lesson is very beneficial among learners (Wengroff, 2019).

"In the videos, key terms are highlighted like the angle of elevation and depression. There is also a review before the lessons". E1

"The videos are brief and the goals of the topics are stated before the discussion". E14

3. CRVLs begin with a review.

Starting each lesson by reviewing the previous learning is one way to strengthen students' retention of knowledge (Nobes, 2019).

"In the videos, key terms are highlighted like the angle of elevation and depression. There is also a review before the lessons". E1

4. CRVLs presented the lessons through contextualization using appropriate and relevant problems or situations.

Using real-life examples and illustration in presenting the lessons make learning more relevant and meaningful.

"Yes, I can relate to the illustrations since the examples used can be found in school. I observed the flagpole, the school's vegetable garden, the covered court, and etc. I can easily relate since we frequently do our activities there, especially in the covered court". E6

"Yes, I relate very much. I relate in terms of the illustrations and examples like the flagpole, the school's vegetable garden, and the principal's office. The examples are very true on our campus and help me understand my lesson". E14

These perceptions of the learners regarding the implementation of the CRVLs as a supplement to their SLMs were supported by the studies of Brown (2002) and Reyes et al. (2019) which advanced contextualization as one of the keys to engaging the students in the teaching and learning process, enabling them to relate their situations to their lesson. Furthermore, Ali & Rashid (2015) observed that videos allow and provide a multisensory experience for the learners.

However, despite the advantages presented by most learners who improved their achievement levels through the implementation of CRVLs, there were three (3) learners whose achievement levels did not change. Upon considering their perceptions, most of them still perceived CRVLs to positively impact their learning but there are challenges that they encountered. The following themes were the learner's challenges encountered and their responses to the perception questionnaire.

1. Learners cannot easily understand the lessons.

"I learned a little bit but with the other lessons I cannot understand it but I learned a little bit. I cannot understand well because I cannot focus since my cousins were inviting me to play mobile legends". E3

2. Learner's environment is not conducive to learning.

"I learned a little bit because I'm busy preparing for the Olympics. I watch the videos attentively but not all the videos because I am very busy with practice and my teammates were very noisy". E10

3. Learners were disturbed by non-academic activity.

"I cannot understand it well because I cannot focus since my cousins were inviting me to play mobile legends". E3

"I learned a little bit because I'm busy preparing for the Olympics. I watch the videos attentively but not all the videos because I am very busy with practice and my teammates were very noisy". E10

4. Learners lacked focus.

"I cannot understand it well because I cannot focus since my cousins were inviting me to play mobile legends". E3

"I really did not watch the videos because I am working and I worked double." E11

With these challenges encountered, the learners managed to cope by reaching out to their teacher through direct messages on their social media accounts specifically the Messenger. It is then very important that teachers check and do follow-ups with their learners.

4.0 Summary of Findings, Conclusions and Recommendations

This chapter presents the summary of findings, conclusions derived from the findings, and the recommendations based on the findings and conclusions of this study.

4.1 Summary of Findings

Based on the analysis of both the quantitative and qualitative data, the following were the findings of the study:

The contextualized recorded video lectures developed followed the ADDIE Instructional Design Model. The development of the CRVLs utilized the local context of the school where this study was implemented. They were evaluated by the panel of evaluators including the thesis adviser. Using the standard evaluation tools, the CRVLs passed all the indicators of content, instructional, technical quality, and other findings. Moreover, using the LRMDS Educational Soundness Checklist, the CRVLs were recommended for reproduction and distribution in their current format and were accepted as they were. The CRVLs were ready for implementation and were

distributed as a supplemental material to the SLMs of the experimental group.

The control group and the experimental group had a mean score of 6.95 and 6.90 in the pre-test, respectively. This shows that the learner's scores fall in the interval 0-74% and are interpreted as Beginning Proficient level. After implementing the SLMs only to the control group, the group got a mean of 13.71. The mean score increased but it still falls on the same achievement level in the pre-test. For the experimental group, after implementing the SLMs plus CRVLs, the group got a mean score of 17.05 and an equivalent grade that falls on 80-84% interval. This specifies that the student's scores are in Approaching Proficient level. In relation to the mean gain scores, the control and experimental groups got 6.76 and 10.14, respectively. Using the Mann Whitney U Test, the findings showed that there was a significant difference between the mean scores of the two groups and the mean gain scores of the said groups.

In the control group results showed that no (0) learner made a four-step improvement (B→A); there were two (2) learners made a three-step improvement (B→P); one (1) learner made a two-step improvement (B →AP); four (4) learners made a two-step improvement (B→D); fourteen (14) learners (67%) did not make any improvement in their achievement levels (B→B). As for the experimental group (WITH CRVLs), results showed that one (1) learner made a four-step improvement (B→A); five (5) learners made a three-step improvement (B →P); and eight (8) learners made a two-step improvement (B→AP). These learners perceived CRVLs as a helpful supplemental tool in learning because they learned the lessons through watching and listening to the CRVLs attentively. The learners, with the teacher's guidance in the CRVLs, were able to relate to the situations and problems presented. CRVLs are flexible, and engaging, and serve as a guide in their self-regulated learning. Lastly, CRVLs helped them in understanding and answering their self-learning modules. Moreover, four (4) learners made a one-step improvement (B→D). These learners claimed that CRVLs were clear and concise, presented lesson objectives that are very beneficial among the learners, begin with a review, and elaborate the lessons through contextualization using appropriate and relevant problems or situations. Regardless of the advantages expressed by most of the learners, however, there were three (3) learners who did not improve their achievement levels (B→B). They admitted that they encountered challenges in this modular learning set-up such as difficulty in understanding the lessons, an unconducive learning environment, non-academic activity disturbances, and lack of focus.

4.3 Conclusions

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

1. Following the ADDIE Instructional Design Model in the development of the CRVLs, learners were able to achieve the learning objectives through audio-visual stimulation in addition to their SLMs. The CRVLs passed all the factors in the evaluation rating sheet, including the content quality, instructional quality, technical quality, and other findings. Using the LRMDS-Educational-Soundness General Evaluation Checklist, the CRVLs are also recommended for reproduction and distribution in the current format and is acceptable as is. These indicate that the CRVLs are acceptable and appropriate to use as a supplement to SLMs of the learners.

2. Thirty-three percent (33%) of the learners in the control group gained improvement in their achievement level while eighty-six percent (86%) of the learners in the experimental group gained improvement in their achievement level through the implementation of the CRVLs. Using CRVLs to supplement their SLMs positively affects learners' achievement levels. Moreover, the learners perceived CRVLs as helpful supplemental tools in learning because through their implementation, they learned the lesson by watching and listening attentively. It also came out from the findings that the problems or situations presented in the CRVLs are related to a real-life context specifically the school local context. The CRVLs stimulate the auditory and visual channels, enabling the teachers to guide the learners virtually. It further came out that the CRVLs are clear and concise, present lesson objectives, begin with a review, and elaborate the lessons through contextualization. Although three (3) learners encountered difficulty in understanding all the lessons and difficulty in learning in an environment not conducive to learning, they appreciated the great help of the supplemental tool. It is evident in their perception of the implementation of the CRVLs.

4.4 Recommendations

Based on the summary of findings and conclusions of the study, the following recommendations should be taken into consideration:

1. Mathematics teachers may develop and use CRVLs as a supplement to SLMs since learners exposed to these improved their achievement level through its implementation in this study. For the development of effective CRVLs, the following should be considered: (a) CRVLs must be clear and concise, (b) contextualized through

relevant information, particularly in the local context, (c) visuals must be organized, (d) engaging, (e) presents lesson objectives, (f) begin with the review, and (g) audio must be loud and clear.

2. Before the recording of the CRVLs, scripts and slide presentations must be checked and validated if they are parallel to Department of Education's SLMs.

3. Follow-ups may be done for those learners who did not gain any improvement in their achievement level. The suggested follow-ups are as follows: (a) conduct home visitation, phone calls or texts, messenger, or any appropriate communication tool to determine the challenges and factors that affect the learner's performance in the implementation of the CRVLs.

4. School heads may encourage teachers to develop CRVLs to supplement the SLMs because learners perceived these to positively impact their learning, especially in this New Normal setup.

5. Future researchers may conduct a similar study on developing CRVLs, particularly on other least learned topics in Mathematics. They should be done extensively because teachers need to adapt to the New Normal delivery of lessons.

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