

Project Mathnood At Mathtuto: Impact of Localized Educational Videos (LEV) To Ninth Grade Students' Performance in Mathematics

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Maggie C. Villanueva*

maggie.villanueva001@deped.gov.ph

Punta Integrated School, Department of Education, SDO Calamba City, Philippines 4027

Abstract

The use of audio-visual materials has long been recognized to have the power to capture the attention of learners, increase their motivation and enhance their learning experience. Since the first use of filmstrips during the World War II as a training tool for soldiers (Hovland, Lumsdaine & Sheffield, 1949), both the technology and content have continuously grown. This paper explored the impact of Localized Educational Videos (LEV) entitled Project Mathnood at Mathtuto to the performance of ninth grade students at Punta Integrated School. The contents of the LEV were based on the Most Essential Learning Competencies and Budget of Work released by the Department of Education. This is to aid the teacher in transferring knowledge to the learners. Results showed that there is a significant difference between the performance of the experimental and comparison group after the implementation of the project. Experimental group dominates the comparison group with 12.255 mean difference in the post test resulting to a very large effect size. Thus, this implies that learning with the use of Localized Educational Video through Project Mathnood and Mathtuto was made possible; the implementation of Project Mathnood and Mathtuto was effective as revealed by the analyzed data; Project Mathnood and Mathtuto: Localized Educational Video is effective. Further, the following recommendations were made: School Administrators and curriculum supervisors shall support the reproduction and dissemination of the available Localized Educational Videos; Teacher-researchers and other teachers shall identify least mastered competencies from first to fourth quarter and create LEVs; Schools and the SDO shall include filming of other localized educational videos on their Annual Implementation Plan; and Schools and the SDO shall tap teachers and other personnel who would be of help in making more LEVs.

Keywords: Localized Educational Video; Performance; Knowledge

I. Introduction and Rationale

In this time of pandemic brought by the corona virus, learning must not stop. Learning should be continuous no matter what. A reason why the Department of Education adapts the New Normal Scheme in education. Adjustments to changes in the education system are readily observable.

Without a doubt, this age is the media generation, as they spend more than a quarter of their day immersed in it. Media messages will become even more omnipresent in an already media-saturated world as media devices grow more portable and permeate more through young people's environments— from their schools to their cars. Anything that occupies this much room in the lives of young people needs our complete attention. —Family Foundation Kaiser

The ability of audio-visual elements to attract learners' attention, raise their motivation, and improve their learning experience has long been acknowledged. Since the first usage of filmstrips as a teaching tool for soldiers during World War II (Hovland, Lumsdaine, & Sheffield, 1949), both the technology and content have advanced.

According to the Corporation for Public Broadcasting (1997), the use of educational video and television in classrooms has increased constantly over the past 20 to 30 years. These surveys looked at usage patterns as well as teacher

attitudes and expectations. Not only this technology is widely used, according to the most recent study, but it is also highly valued as a means of teaching more effectively and creatively. Based on the findings, there is a direct relationship between the frequency of use of educational video and television and perceived student achievement and motivation.

Mathematics is one of the disciplines that has been prioritized in the Philippine educational system. No one cannot deny the essence of Mathematics in the demands of everyday living. The National Mathematics Advisory Panel (2008) stated that mathematics is embedded in our lives in many ways: practical, civic, professional, recreational, and cultural. Even nowadays, in the era of fast-pacing technological advances, number sense and problem-solving skills are also increasing its importance to the lives of many people.

However, it cannot be concealed that Mathematics is one of the most challenging areas for Philippine high school students. This is supported by the result of standardized tests such as the National Achievement Test (NAT). The DepEd reports that the NAT mean percentage score (MPS) for high school in school year 2012-2013 46.83 percent in mathematics, or 28.17% away from the target MPS. Locally speaking, in Punta Integrated School, MPS in Mathematics has been continuously fluctuating from 48.54 (SY 2016-2017) to 46.82 (SY 2017-2018) to 47.53 (SY 2018-2019) to 45.21 (SY 2019-2020). These scores are at par of the required mastery level set by the Department of Education.

Since the implementation of the K to 12 in 2013, Research has also been part of the new curriculum for senior high school. Practical Research 1 is one of the contextualized subjects of the Senior High School curriculum which aims to focus on specific applications of certain subjects or topics based on the chosen career of the students.

However, no matter how good a curriculum is, the success of the program will always depend on the performance of the students.

Professionals and experts are unceasingly looking for ways to address this prehistoric problem. More so, teaching Mathematics in an enjoyable way has been a very challenging task for any teacher. In the pursuit of solution to this problem, the researchers considered the use of technology, specifically, the production of educational videos. Educational video has unique features that make it an important medium for mathematics learning, particularly at the secondary-tertiary interface. These features include its ability to present a summary of a topic in context, particularly the historical context, to bring reality in the form of case studies and practical applications into a classroom or lecture theatre, and most importantly its power in the affective domain of learning. Video resource can motivate learning, to change attitudes and to present role models, features that are well known in the context of television advertising.

According to Bringas (2014), localization maximizes materials, activities, events, and issues that are readily available in the local environment; and to contextualize, teachers must use authentic materials, and anchor teaching in the context of learners' lives.

In this study, educational videos will be crafted using the locally available materials. Filipino actors and contemporary Philippine settings shall be utilized in order to establish strong connection between the viewers (learners) and the story (lesson). In addition, contextualization may be observed through the application of content knowledge to real-life scenarios helps the learners to appreciate more the significance of Mathematics in everyday living.

This paper will be exploring the impact of Localized Educational Videos (LEV) entitled Project Mathnood at Mathtuto to the performance of ninth grade students at Punta Integrated School. The content of the LEV will be based on the Most Essential Learning Competencies and Budget of Work released by the Department of Education. For every week in the first and second quarters, there will be one 20-minute teacher-made localized educational film/video to be used as supplemental learning material to students. This is to aid the teacher in transferring knowledge to the learners.

2. Literature Review

Enhancing the teaching and learning processes, particularly what occurs during sessions, is a crucial aspect in improving the quality of education. In the curriculum delivery and learning processes, the lesson is the most significant component. There are numerous approaches available to determine what happens in a class. Given the complexity of classrooms, the majority of these have significant technical drawbacks. However, one of the approaches that has consistently proven to be effective is research based on video recordings of instructor and student activities to register what is going on inside the classroom. Furthermore, there is a substantial body of evidence that video recordings can be used for purposes beyond than capturing classroom occurrences. Video classes have also been shown to have a high level of effectiveness. usefulness as a tool for improving teaching quality (Calandra and Rich, 2015).

Several studies have documented the use of videos to aid in the development of teaching quality (Romano & Schwartz, 2005). Furthermore, it is an effective tool for motivating instructors to modify their practices, and most teachers agree that it is useful for commenting on their work, particularly during self-evaluation (Tripp & Rich 2012).

In comparison to more traditional printed materials, a video is definitely an engaging teaching medium that

creates far more attention and enjoyment. Video is an excellent medium for kids who are auditory or visual learners since it combines sight and sound. It excites and engages students in establishing and retaining interest for extended periods of time, as well as providing educators with an innovative and effective way to address and deliver essential curriculum topics. It is an extremely flexible medium that allows for participatory instruction. It has the ability to be paused, halted, and restarted or resumed (Zane Education, 2015).

Despite instructors' efforts to improve and enhance their teaching skills, they nevertheless encounter numerous distractions on a daily basis, including the environment, natural and man-made disasters, calamities, health concerns, students' disregarding attitudes, student absenteeism, and even teacher factors. As a result, a teacher should constantly feel compelled to adjust courses using material that he or she believes is appropriate for facilitating meaningful learning for pupils, regardless of the situation. A great teacher plans for her pupils' benefit so that, while stress is unavoidable and important for learning, unneeded stress is kept to a minimum since the teacher does not fail in her responsibilities. S/he does not only transmit knowledge but also influence and transform students in ways no one can underestimate. (Koo, 2015).

According to Knight (2014), the first step toward improvement is for teachers to be involved in a pre-contemplating stage. He claims that videos can take teachers from what he refers to as a "pre-contemplating" stage, in which they have no idea how their performance would seem. The most typical reaction when people observe themselves teaching is astonishment.

3. Research Questions

The main objectives of this study were to improve the performance of the ninth- grade students in Mathematics and to explore the impact of the use of Localized Educational Videos in teaching Mathematics during this time of pandemic. Specifically, this study will seek answers to the following questions:

- 1.What is the level of performance of the two groups of ninth-grade students during the pre-test before the utilization of the Project MathNood at MathTuto?
- 2.What is the level of performance of the two groups of ninth-grade students during the formative tests during the utilization of the Project MathNood at MathTuto?
- 3.What is the level of performance of the two groups of ninth-grade students during the post-test after the utilization of the Project MathNood at MathTuto?
- 4.Is there a significant difference between the performances of the comparison group and the experimental group during the pre-test, formative test, and post-test?
- 5.Based on the findings of the study, what recommendation can be suggested?

4.Scope and Limitations

The primary source of data in this study who served as the respondents are the grade 9 students of Punta Integrated School enrolled during SY 2020 – 2021 under Modular Distance Learning Modality.

These student-respondents were chosen through Stratified Random Sampling in order to have a well-represented group of respondents.

5. Research Methodology

5.1. Sampling

Ten (10) sections of grade 9 with an estimated sum of 500 students will be subjected to the pre-test. Match-pairing technique in order to determine who will be the members of the control and experimental group will be utilized based on the results of the pre-test. At least 40 pairs of students will serve as the respondents. Purposive sampling technique will be applied.

Aside from the results of the pre-test, formative tests and post test results will also be used as basis in determining the impact of Project MathNood at Mathtuto.

5.2. Data Collection

In order to gather sound and reliable data, the researchers will use varied instruments such as the teacher-made pre-test, formative tests and post-test which will undergo to sophisticated item-analysis. Eighty (80) items questions will be crafted and fifty (50) good items of such will be included in pre-test. Formative tests results will come from the results

of all the activities stipulated on their self-learning modules. Post test questions will be constructed in such a way that it will be parallel to the pre-test. These examinations will be administered to the learners at home where the researchers will personally visit the student respondents to eliminate biases.

Before having the actual conduct of the study with the respondents, researchers will make sure that ethical considerations will be properly observed. They will apply the key principles of ethical issues that should be considered in any research study which are consent and confidentiality.

Researchers will form production team who will simultaneously film localized educational videos. The initial LEV will be subjected for validation and revision, if necessary, before it will be finalized and utilized to the experimental group.

Data will be collected through pre-test, formative tests and post-test. After the conduct of post-test, scores will be made ready for statistical analysis.

Experimental research design will be utilized wherein two groups of students will be used as respondents. Match-pairing technique through pre-test will be used in grouping the respondents to make sure that these groups have equal learning ability.

Experimental group of respondents will be treated with the localized educational video while comparison group will receive no treatment but the use only of the self-learning module from the regional office of the Department of Education. The implementation will religiously be monitored. Scores of the learners after the formative tests will be recorded and will be analysed. Moreover, results of the periodical examinations shall also be scrutinized. These scores and data to be gathered will be used in order to measure the extent of effectiveness of the use of the LEV in the performance of the learners.

5.3. Ethical Issues

In order to address ethical considerations on this study, the researchers asked permission to conduct this study from the school head of the desired schools. The researchers also asked the respondents' consent to participate in the study through a written letter and verbal consent. Anonymity of the respondents and the confidentiality of their scores and responses were kept confidential and private.

6. Results and Discussion

The table shown below intends to establish the fact that the two groups of participants have the same level of performance before the implementation of Project Mathnood and Mathtuto. As you can see, both of the groups have the mean of 25.085 and standard deviation of 6.636.

Table 2. Results of Pre-Test of the Two Groups of Respondents

Formative Assessment	Group	MEAN	MPS	SD	MAX	MIN
1	Comparison	4.915	49.149	1.53	9	0
	Experimental	6.872	68.723	1.454	9	2
2	Comparison	4.702	47.021	1.517	9	1
	Experimental	8.128	81.277	0.769	9	7
3	Comparison	4.362	43.617	1.621	7	1
	Experimental	7.723	77.234	0.902	9	5

However, during the implementation of Project Mathnood and Mathtuto, formative assessment results were also recorded and analyzed. As shown, in the three (3) formative assessments given, experimental group who are actually being treated with the localized educational videos performed better than the comparison group. All of these formative assessments were comprised of 10 item questions. Scores of experimental group are more compressed to the mean than the comparison group. Further, experimental group obtained greater than 50% MPS in three formative assessments

Meanwhile, the table here shows the results of the post-test which also shows that experimental group dominates over the comparison group. Also, it can be glanced that students from the experimental group got an MPS of 75.277 which

is at the minimum mastery requirement.

Table 3. Results of Post Tests of the Two Groups of Respondents

Group	MEAN	MPS	SD	MAX	MIN
Comparison	25.383	50.766	3.78	34	17
Experimental	37.638	75.277	5.666	47	26

Inferential statistics was also used to test the significant difference on the performance of the two groups of student-respondents. As shown on this table, in three (3) formative assessments, there is a very large and significant difference on the performance of the two groups of respondents. It was supported by the computed values of the effect size.

Table 4. Test of Significant Difference of the Two Groups of Respondents in Formative Assessment

Formative Test	Mean Difference	p-value	Interpretation	Effect size	Verbal Interpretation
1	1.957	0.000**	significant	1.312	Very Large
2	3.426	0.000**	significant	2.848	Very Large
3	3.362	0.000**	significant	2.563	Very Large

** significant at $p < 0.01$

There is a significant difference on the performance of the two groups of student respondents in the three (3) formative assessments. Further, the effect size based on the computed cohen's d showed that there is a very large difference on their performance.

Similarly, experimental group also dominates the comparison group significantly with 2.545 effect size interpreted as Very Large.

Table 5. Test of Significant Difference of the Two Groups of Respondents in Post Test

Groups	Mean Difference	p-value	interpretation	effect size	Verbal interpretation
Comparison Experimental	12.255	0.000**	significant	2.545	Very Large

** significant at $p < 0.01$

7. Conclusions

1. Learning with the use of Localized Educational Video through Project Mathnood and Mathtuto was made possible.
2. The implementation of Project Mathnood and Mathtuto was effective as revealed by the analyzed data.
3. Project Mathnood and Mathtuto: Localized Educational Video is effective.

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