International Journal of Mathematics and Physical Sciences Research ISSN 2348-5736 (Online)
Vol. 13, Issue 1, pp: (35-45), Month: April 2025 - September 2025, Available at: www.researchpublish.com

SUPPLEMENTAL VIDEOS IN TEACHING MATHEMATICS

Margie M. Oacan

Cebu Normal University

Osmena St., Cebu City, Philippines

DOI: https://doi.org/10.5281/zenodo.15363628

Published Date: 08-May-2025

Abstract: **The integration of supplemental videos in teaching mathematics allows students to comprehend more and recall key purposes of the discussion. Those enhancements speak to some significant learning results. This study wanted to investigate the effectiveness of integrating supplemental videos in teaching mathematics. The video clips presented to the respondents during class were harvested from youtube.com. A researcher-made pretest posttest was used as the main instrument in this study. An adopted survey on the level of self- efficacy was also given to the respondents of the experimental and control group to determine the capacity of the students to solve mathematics problems. Results indicate that the performance level of the students from the experimental group has increased significantly after the exposure of the supplemental videos. However, there is no significant difference on the performances between the control and experimental group on their posttest results, hence, it can be concluded that the performances of both groups are comparable. Survey results on the level of self – efficacy of the experimental group also shows that there was no change on the beliefs of the students on their capacity in terms of solving problems in mathematics. The given results have been confirmed with a subjective assessment of students' regard for learning with the use of supplemental videos. Further study that led to discover the impact on the use of supplemental videos to another group of students is recommended**

Keywords: **mathematics, performance, self- efficacy, students' regard, supplemental videos.**

I. INTRODUCTION

In the past three decades, digital technologies have its role on enhancing teaching and learning in which it has been one of the subjects of interests among educators in the area of Mathematics. Moreover, technological influences in educational process in the field mostly inclined to how computers, calculators, or the internet could be maximized by educators to enhance the progress of students' mathematical capabilities (Geiger, Forgasz, Tan & Calder, 2012).

Educational videos have become an essential part of higher education and hold a significant promise in improving K-12 education outcomes. Supplemental videos can be an avenue in facilitating many teaching approaches such as self -directed and collaborative learning (Mohammed & Abdulghani , 2016).

The Philippines educational sector holds the K-12 educational system last 2012. This initiative is taken in perspective on the low quality of the Philippine Basic Education as reflected by the low accomplishment scores of Filipino students in the national and international assessment (Magayon & Tan, 2016). Yet, it still captures its main goal which is to improve students' mastery on the learning competencies in all subject areas. However, it has been a challenge for every Filipino educator on how to sustain the demands of the enhanced curriculum.

Trends in Mathematics and Science Study (TIMMS) in 2013 informed that the Philippines has found its way to the bottom part of the rank. The country is in 41st place among 45 participating countries in the Mathematics test. Also, Philippines never joined the international assessment for mathematics and science after that (Lequin, 2015).

Philippines National Achievement Test Result of school year 2011-2012 also showed low scores in the field of Mathematics. Moreover, the performances of the public high school students in the country has been declined and are significantly lower than that of the public elementary students and this trend remained for the past five years. In the recently concluded National Achievement Test for Grade 7 students of the school year 2017-2018, mathematics as well is one of the lowest MPS in our school, Gelacio C. Babao Sr. Memorial National High School, in which records showed 32.58% which is too far from 75% standard level.

The researcher, as a secondary Math Teacher, also had a hard time finding ways and means to make her mathematics class fun and lively. She had an experienced teaching Values Education wherein she let her students watched an animation video film Upon watching the film, students were entertained, excited and attentive. During the content process, the students were so interactive and almost all of them wanted to give their insights and the experience showed their eagerness and willingness to learn. This gave the researcher an idea to conduct a study on integrating video clips or supplemental videos in her teaching of mathematics. The researcher believed that with the use of mathematics supplemental videos many students might be more interested to master the different competencies in the discipline of Mathematics. This can be a gateway in arousing students' interest, and will help them improve their mastery level and develop their academic performance in the field of math.

II. METHODOLOGY

This study used quasi – experimental method for the respondents from the control group which was exposed to the conventional way of teaching following the learners' books prescribed by the Department of Education and Supplemental Videos for the experimental group. This study answered the following questions:

1. What is the pre- post-test profile of the control and experimental group in terms of:

1.1. Performance level

1.2. Self - Efficacy

2. Is there a significant mean difference in the pre-post-test mathematics performance in the control and experimental group in terms of;

2.1. Performance level

2.2. Self - Efficacy

3. Is there a significant mean gain difference in the pre-posttest mathematics performance of both groups in terms of;

3.1. Performance level

3.2. Self - Efficacy

4. How do students regard learning after the exposure of supplemental videos?

The respondents of the study were the 80 Grade 9 students of Gelacio C. Babao Sr. Memorial National High School. A total 40 students were assigned in the control group and another 40 students were assigned to the group who were exposed to the intervention.

The fundamental instrument of the investigation was the composed Pre-Posttest which was given to both the control and experimental group. The Pre- Posttest was a researcher made test with 30 items. Basically, it covered the topics and competencies stipulated in the k-12 curriculum. The test undergone content validity by the experts: the school master teacher, the school math coordinator and the division math supervisor. Moreover, a reliability test was also done using Cronbach alpha which gained a coefficient reliability of 0.730. Students in both groups were also given math self- efficacy survey which was adapted from General Efficacy Scale of Jeneveb Malusay in her thesis "High Low Pairing Technique on Student's Mathematics Performance and Self - Efficacy" in order to determine student's capacity in performing different activities in mathematics. Also, a semi structured questions during the focused group discussion were given to the group of students who experience the strategy in order to solicit students' regard of learning after the exposure of the exposure of the supplemental videos.

For the entire experiment, the same content and skill were taught to each group of students. At the start of the class session, the experimental group was given supplemental videos about the topic which were harvested in youtube.com. For the control

group, the conventional approach or any lecture/drill method was given. Formative assessments were utilized to support and evaluate the performance of the Grade 9 students. The Mathematics Self - efficacy Test was administered to the students before and after the experiment. After gathering the necessary data, they will be organized, tabulated, and interpreted to reach a conclusion on the effectiveness of supplemental videos to the mathematics performance of the Grade 9 learners.

III. RESULTS AND DISCUSSION

This section of the study elaborates the results and translates the gathered data on the performances of the two groups in grade 9 level which were exposed to conventional and the use of supplemental videos in teaching mathematics.

Student's Performance

The control and experimental groups were both given a pretest which helps the researcher determine the performance profile of the respondents. The pretest also determines how far the grade 9 students have gone on the different competencies for the second quarter. Table 1 below shows the results of the performance profile of both group in each competency as well as in totality.

TABLE 1. PRETEST MATHEMATICS 9 PERFORMANCE PROFILE OF THE CONTROL AND EXPERIMENTAL GROUPS

Competencies	No. of items	Control Group			Experimental Group		
		a.m (SD)	%	Description	a.m (SD)	%	Description
1. Translate into variation statement	5	3.17 (3.43)	63.33	DME	3.17 (4.18)	63.33	DME
2. Solve problems involving variation.	2	1.10 (3.54)	55.00	DME	0.97 (14.8)	48.33	DME
3. Laws of integral exponents.	2	1.13 (2.83)	56.67	DME	0.90 (0.71)	45.00	DME
4. Simplifies expressions with rational exponents.	5	2.03 (1.30)	40.67	DME	2.37 (3.77)	47.33	DME
5. Rational exponents as radicals and vice versa	3	1.20 (4.00)	40.00	DME	1.57 (1.53)	52.22	DME
6. Laws of radicals.	4	1.13 (2.08)	28.33	DME	1.63 (5.8)	40.83	DME
7. Performs operations on radical expressions.	3	0.77 (2.31)	25.56	DME	1.33 (4.51)	44.44	DME
8. Solves equations involving radicals	6	1.13 (1.51)	18.89	DME	2.30 (4.18)	38.33	DME
TOTALITY	**30**	**11.67 (5.29)**	**38.89**	**DME**	**14.23 (5.14)**	**47.44**	**DME**

Source: DepEd Order No. 8 series 2015 (Policy Guidelines on Classroom Assessment for the K-12 Basic Education Program)

90-100	*Outstanding (O)*	*a.m.- actual mean*
85-89	*Very Satisfactory (VS)*	*SD – Standard Deviation*
80-84	*Satisfactory (S)*	
75-79	*Fairly Satisfactory (FS)*	
Below 75	*Did not meet Expectations (DME)*	

As shown in table 1, pretest results reveal that both groups follow the similar pattern wherein all of the competencies fall in the Did not meet Expectation performance level since both groups got a mean score below 75%. The results also signify that the students of both groups do not have that enough knowledge on the said competencies.

The competencies on translating variation statement, solving problems involving variation and laws of exponents got high means in the control groups which are 63.33 %, 55 % and 56.67 %, respectively. Meanwhile, the competencies on translating variations (63.33 %), solving problems involving variation (48.33 %) and simplifying expressions with rational exponents (47.33 %) got high means in the experimental group. Though, these competencies from each group are the highest mean scores but still the performance needs to be improved.

The results further imply that there could be some reasons which changes the students' performance like readiness of the students to speculate the answers. Since students are not yet shown to the model of discussion so, students really have a hard time during the pretest (Abella, 2017). This means that learners are expected to get low scores during the pretest especially when basic concepts and skills were not honed during their foundation years of learning.

TABLE 2. POST-TEST MATHEMATICS 9 PERFORMANCE PROFILE OF THE CONTROL AND EXPERIMENTAL GROUPS

Competencies	No. of items	Control Group			Experimental Group		
		a.m (SD)	%	Description	a.m	%	Description
1. Translate into variation statement	5	4.37 (7.98)	87.33	**VS**	4.97 (4.27)	99.33	**O**
2. Solve problems involving variation.	2	1.20 (19.8)	60.00	**DME**	1.57 (6.36)	78.33	**FS**
3. Laws of integral exponents.	2	1.03 (3.54)	51.67	**DME**	1.40 (2.83)	70.00	**DME**
4. Simplifies expressions with rational exponents.	5	2.70 (3.35)	54.00	**DME**	3.10 (3.58)	62.00	**DME**
5. Rational exponents as radicals and vice versa	3	1.83 (2.52)	61.11	**DME**	2.27 (1.41)	75.56	**FS**
6. Laws of radicals.	4	2.00 (2.16)	50.00	**DME**	2.73 (2.08)	68.33	**DME**
7. Performs operations on radical expressions.	3	1.50 (4.36)	50.00	**DME**	1.93 (0.58)	64.44	**DME**
8. Solves equations involving radicals	6	2.77 (1.94)	46.11	**DME**	4.23 (3.6)	70.56	**DME**
TOTALITY	**30**	**17.40 (6.72)**	**58**	**DME**	**22.20 (4.80)**	**75**	**FS**

Source: DepEd Order No. 8 series 2015 (Policy Guidelines on Classroom Assessment for the K-12 Basic Education Program)

90-100	*Outstanding (O)*	*a.m.- actual mean*
85-89	*Very Satisfactory (VS)*	*SD – Standard Deviation*
80-84	*Satisfactory (S)*	
75-79	*Fairly Satisfactory (FS)*	
Below 75	*Did not meet Expectations (DME)*	

As indicated in table 2, in totality the performance of the control group increases in the posttest but still within the Did not meet Expectation Level. Looking at the competencies, all of the mean scores increased but still was not able to hit the target of 75 %. One of the competencies that resulted to very satisfactory level is the translation variation statement. On the other hand, the standard deviation shows that the scores of the students in the group that was exposed to conventional teaching method are varied and that clustered to the mean.

The conventional instruction used for the control group yield a below average performance. This could be due to the lecture method used by the teacher. As observed, this method is a bit disengaging to the students because they took a passive role in the process of learning.

In the study of Nesmith (2008), the predictable way of teaching Mathematics such as memorization of facts, ability to execute rules and follow plug in formulas limit and affect the students in learning the subject area and only those can easily absorb things excel in this traditional way of teaching. The activities in the manual prescribed by the department demand effort, time and memorization of formulas and these limits the students to engage and do other enjoyable activities related to the topics

In the post test, the experimental group was exposed with the supplemental videos in the teaching- learning situation. Results showed that in all lessons, students' performance increased and some of the competencies are on the fairly satisfactory and outstanding level, thus, in totality, their performance is in the fairly satisfactory level wherein they got a mean score of 75 %. This can be deduced that students learned better with the aid of the supplemental videos with respect to the subject matter. Most of the students said that, the videos are of great help since they can view it at their own pace as well as they can rewind and review portions that they did not understand the first time. Same level of performance was also acquired by the experimental group on lesson 1 wherein they were able to gain an above average level of performance. The two groups are comparable in terms of their knowledge about the subject matter.

In the case of the experimental group, the overall average performance could be attributed to the kind of instruction they were exposed to. Learning for them has been easier due to the supplemental videos as an aid throughout the learning process. As what Mohammed and Abdulghani (2016) cited that supplemental videos can be an avenue in facilitating many teaching approaches such as self -directed and collaborative learning.

Pre – Post - test Self - Efficacy Level of the Control and Experimental Groups

Table 3 shows the level of self - efficacy of the grade 9 students before and after the intervention. The survey question was used to determine the student's capacity to deal and solve mathematical problems.

TABLE 3: PRE - POST SELF - EFFICACY LEVEL OF THE CONTROL AND EXPERIMENTAL GROUPS

	CONTROL		**EXPERIMENTAL**	
	Mean Score	**Description**	**Mean Score**	**Description**
Pretest	**1.94**	*Slightly Capable*	**2.72**	*Moderately Capable*
Posttest	**2.17**	*Slightly Capable*	**2.75**	*Moderately Capable*

3.26 - 4.00 Highly Capable

2.51 - 3.25 Moderately Capable

1.76 - 2.50 Slightly Capable

1.00 - 1.75 Not Capable

In table 3, it reveals in the pre- assessment, the self- efficacy level of the control group is slightly capable. This can be deduced that students could have a hard time in presenting their solutions and arriving at the correct answer. This can be further purported that students were constrained in limit as far as managing math problems.

Meanwhile, on the post-test though there is an increase in the score of the means on control group but still the self- efficacy level of the students is slightly capable. Students' are not yet still confident of their capacity in terms of math problems. Moreover, this can be inferred that some prerequisites competencies were not fully acquired by the students. On the other hand, pretest result on self-efficacy of the students in the experimental group unveils that the students were already complacent with their capacities since their level is moderately capable. The result can be inferred that the students are somehow has good foundation or background than that of the control group. However, after the exposure of the supplemental videos, students' level of self – efficacy still marks moderately capable regardless of the expansion of the mean score in the posttest. This outcome can be ascribed to the utilization of supplemental videos can be an elective method in learning mathematics but could not further upgrade their ability in managing math problems.

The use of supplemental videos as an aid in the teaching learning process can be an alternative way in enhancing the level of self- efficacy of the students towards mathematics. As the results reveal, it can be disposed that both supplemental videos and conventional teaching strategy can enhance the academic performance of the students. According to Ayotola & Adedeji

(2009) that enhancing the level of self – efficacy of the students will lead to a higher achievement in the area of Math. Self – efficacy as one of the important terms in human learning, is defined as the ability to accomplish tasks and affects motivation, action, efforts and achievement (Liu & Koirala, 2009).

Pre- Post-test Significance Mean Difference between the Experimental and Control Group

The outcomes of the Pretest and Post-test Significant Mean Difference in mathematics 9 achievement test of both groups are summarized in Table 4 below.

TABLE 4. THE PRE- POST-TEST SIGNIFICANCE MEAN DIFFERENCE BETWEEN THE EXPERIMENTAL AND CONTROL GROUP

Competencies	Control Group					Experimental Group			
	Test	Mean	Mean Diff.	T-value	P-value	Mean	Mean Gain	T-value	P-value
1. Translate into variation statement	Pre	3.17	1.2	2.93*	0.043	3.17	1.8	1.11 ns	0.328
	Post	4.37				4.97			
2. Solve problems involving variation.	pre	1.10	0.10	0.13 ns	0.917	0.97	0.6	1.50 ns	0.374
	post	1.20				1.57			
3. Laws of integral exponents.	pre	1.13	-0.10	-0.33 ns	0.795	0.90	0.5	3.00 ns	0.205
	post	1.03				1.40			
4. Simplifies expressions with rational exponents.	pre	2.03	0.67	2.27 ns	0.086	2.37	0.73	3.32*	0.029
	post	2.70				3.10			
5. Rational exponents as radicals and vice versa	pre	1.20	0.63	5.20*	0.035	1.57	0.70	3.03*	0.094
	post	1.83				2.27			
6. Laws of radicals.	pre	1.13	0.87	3.52*	0.039	1.63	1.1	2.46*	0.091
	post	2.00				2.73			
7. Performs operations on radical expressions.	pre	0.77	0.73	2.11 ns	0.170	1.33	0.6	2.27 ns	0.151
	post	1.50				1.93			
8. Solves equations involving radicals	pre	1.13	1.13	9.36*	0.000	2.30	1.93	7.12*	0.001
	post	2.77				4.23			
TOTALITY	**pre**	**11.67**	**5.73**	**5.44***	**0.001**	**14.23**	**7.97**	**9.59***	**0.001**
	post	**17.40**				**22.20**			

** - significant when $\alpha \leq 0.05$ level of statistical significance ns- not significant*

These findings indicate that conventional teaching method helped improve the mathematics performance of the students. Despite the fact that utilization of conventional method is frequently challenged and condemned these days in light of integrating technology in education, yet one can't remove the said method in accomplishing a compelling instruction. In conventional classroom teaching, what is necessary for the teachers is how much the learners can understand the concepts. Hence, discussion with well- prepared steps and procedures would still produce better results on students' performance.

The use of supplemental videos helped the students enhanced their performances of the said lessons. As Sorden (2018) emphasize that learners can create meaningful representations with the use of pictures and words, however, they can learn more effectively combining the descriptions and images rather than given descriptions or pictures only.

The group manage to improve their performance after the exposure of the supplemental videos. Moreover, the group raised their pretest mean of 14.23 to a mean of 22.20 in the posttest in which in totality, they garnered a mean difference of 7. 97 which make it significant. Overall, both groups obtain a substantial difference in the means between the pre and post

assessment results. Nevertheless, a greater mean gain was achieved by the experimental group than the control group mostly of the lessons, consequently, a greater overall performance.

The Pre- Post- test Students Significance Mean Difference Math Survey on Self Efficacy between the Control and Experimental Group

The outcomes of the Pretest and Post-test Significant Mean Difference on the level of Math Self- Efficacy Survey among students of both groups are summarized in Table 6 below.

TABLE 5. THE PRE- POST-TEST STUDENTS SIGNIFICANCE MEAN DIFFERENCE ON SELF EFFICACY SURVEY BETWEEN THE CONTROL AND EXPERIMENTAL GROUP

Tests	Control Group				Experimental Group			
	Mean Score (SD)	Mean Gain	T-value	P-value	Mean Score (SD)	Mean Gain	T-value	P-value
Pretest	**1.94** (0.41)	**0.23**	**4.92***	**0.001**	**2.65** (0.25)	**0.03**	**0.062 ns**	**0.547**
Posttest	**2.17** (0.27)				**3.31** (0.34)			

** - significant when α ≤ 0.05 level of statistical significance*

ns- not significant

Table 6 shows that the students exposed to conventional teaching strategy enhance the level of their self -efficacy. Looking at the previous pre-posttest results, though it shows that the level students' belief in their capacity or self – efficacy in the control group is the same which is slightly capable but there was a significant increase on students' belief in their capacity to solve Mathematics problems.

Meanwhile, in the experimental group, it is indeed evident that there was no significant difference on the level of the self-efficacy statements. As the results revealed that pre and post evaluation mean scores increases but it does not change the students' belief on their level of capacity towards mathematics. According to Siegle & McCoach (2007), the most prominent contributor of students' academic success and ability is their previous performance. On the off chance that students have been fruitful at a specific capacity previously, they likely will accept that they will be fruitful at the capacity in what's to come. In this study, Siegle & McCoach's claim is comparable since the pre and post evaluation on the level of self- efficacy of the students are just the same.

Mean Gain Difference between the Experimental and Control Groups

The main gain difference between the two groups; experimental and control is shown in the table 6 that follows.

TABLE 6. MEAN GAIN DIFFERENCE BETWEEN THE EXPERIMENTAL AND CONTROL GROUPS

Competencies	Group	Mean Gain	Mean Gain Difference	T- Value	P-Value
1. Translate into variation statement	Experimental	1.8	0.60	1.14 ns	0.292
	Control	1.2			
2. Solve problems involving variation.	Experimental	0.6	- 0.50	-0.40 ns	0.755
	Control	0.10			
3. Laws of integral exponents.	Experimental	0.5	0.60	1.75 ns	0.331
	Control	-0.10			
4. Simplifies expressions with rational exponents.	Experimental	0.73	0.06	0.18 ns	0.861
	Control	0.67			
5. Rational exponents as radicals and vice versa	Experimental	0.70	0.07	1.68 ns	0.235
	Control	0.63			

6. Laws of radicals.	Experimental	1.1	0.23	0.46 ns	0.671
	Control	0.87			
7. Performs operations on radical expressions.	Experimental	0.6	- 0.13	-0.30 ns	0.780
	Control	0.73			
8. Solves equations involving radicals	Experimental	1.93	0.80	0.93 ns	0.380
	Control	1.13			
TOTALITY	**Experimental**	**7.97**	**2.24**	**1.98 ns**	**0.052**
	Control	**5.73**			

** - significant when α ≤ 0.05 level of statistical significance*

ns- not significant

As shown in table 6, a comparison of mean gain between the two groups reveals that in totality a much higher mean gain of the experimental group than the control group in which the former got 7.97 while the latter got 5.73. Even though it has been revealed that the experimental group have higher mean gain in almost all of the lessons than that of the control group, but the differences are not that far from each other's performances of both groups, apparently, the difference did not reach the level. This can be inferred that the conventional teaching can be as effective as with the use of supplemental videos in teaching mathematics.

Different media have specific capacities, which enable varied learning experiences. Learning experiences in any type of any method of instruction could have indistinguishable impacts if with adequate preparations. The use of instructional videos has been rampant in all institutions nowadays and could lead students to less excitement in the learning process since they will just be sitting and watching and do not make the class engaging for the students. For mathematics class, drills are necessary to students' learning in which conventional teaching usually employs.

The result is the same as the study of Gano (2010) wherein the investigation revealed that watching videos may not necessarily lead to learning and understanding really the concepts even if the videos are within the standards and were clear, concise and easy to understand but it can somehow help the students be motivated in class. Aside from that, one contributing factor is that students exerted a moderate amount of mental effort in watching the videos. Comparing the results of the two groups, students learn with the aid of the teachers in providing more inputs as well as proper dissection of the supplemental videos as an aid of the teacher in delivering the lesson. As Steffes and Duveger (2012) cited on their study that a teacher must have a best possible plan of valuable video content and the approach in showing the videos to the learner, hence, the absence of such factors can contribute to students' low performance in class and lack of interest as well.

Mean Gain Difference on Self – Efficacy Survey between the Control and Experimental Groups

The table beneath uncovers the significance in the mean gain difference between the level of self - efficacy of both groups. It is a comparison on the effect of the conventional teaching strategy and the use of supplemental videos to the level of efficacy between groups which are control and experimental.

TABLE 7. MEAN GAIN DIFFERENCE ON STUDENTS' SURVEY ON SELF- EFFICACY BETWEEN THE EXPERIMENTAL AND CONTROL GROUPS

Group	Mean Gain	Mean Gain Difference	T-value	P-value
Control Group	0.23	0.20	2.33*	0.025
Experimental Group	0.03			

** - significant when α ≤ 0.05 level of statistical significance*

ns- not significant

As revealed in table 7, there is a substantial mean gain difference between the level of self-efficacy of the both groups with p- value of 0.025 less than level of significance of 0.05. It could be distinguished that the group of students in the experimental which was exposed to supplemental videos has a higher mean than the students exposed conventional teaching. This could be mean that supplemental videos somehow help the students in augmenting their belief that they deal better in Mathematics problems.

This result is alike to the results of the study of Ayodele (2011) that self – concept or self – efficacy is moderately correlated with performance in Mathematics. This suggests that teachers must develop the confidence and positivity of learners towards solving problems in Mathematics to enhance their Mathematical achievement.

Students' Regard Towards Learning After the Exposure of Supplemental Videos

The learners who were in the experimental group were additionally assessed to determine the effectiveness of integrating supplemental videos in teaching math. A Focused Grouped Discussion (FGD) was conducted to further determine students' view and how students regard learning. On the conduct of the FGD, the students were encouraged to share their thoughts freely on the questions given by the researcher.

The use of supplemental videos in teaching mathematics may increase students' understanding on significant information and inspiration for learning. Hence, the students are more likely to comprehend and recall salient points of the discussion and those developments speak to some significant learning results (Ljubojevic, et. al., 2014). However, in this study, several issues have surfaced on how the students regard learning upon the exposure of the supplemental videos.

These themes of meaning that emerged were as follows:

Theme No. 1: Practicality of integrating videos.

Students commonly answered that integrating videos in the class somehow helped them but they can fully grasp the concept if the teacher will have a follow up discussion after they watched the video. The following are the responses of the students,

> *" Makatabang man ang videos pud Miss pero dili lang jud mi kasabot dayon kung dili namo balik balikon og kadaghan." ("The videos somehow helped us Miss but we cannot understand right away if we will not watch it several times".)*

> *" Mas nindot jud miss na naay maestra mudiscuss after sa video para makasabot jud mi og maayo". ("It would be nice if there is a teacher who will discuss to us after watching the video for us to understand better".)*

These statements appeared that in terms of practicality, the use of supplemental videos is not that practical due to the fact that students need to watch the videos several times to understand fully the concept. Other students need a teacher that can help them in the learning process. In this case conventional teaching is indeed still needed in the delivery of the lesson in teaching mathematics. This finding was also supported by Nesmith (2008) that educator's job in conventional method is to give clear, bit by bit showings of every method, repeat steps in light of students' questions, give sufficient chances to students to rehearse the ways, and offer explicit remedial help when essential. Videos can be a springboard for students in igniting their curiosity specifically those difficult topics.

Theme No. 2: Medium of instruction used.

The students identified that the medium of instruction can be a probable impediment in understanding the concept delivered in the videos. Mathematics as a subject uses English as a medium of instruction thus, most of the videos the students were exposed to are in English but the language is not the first language of the students.

As respondent 3 mentioned,

> *"Lisod man sad kayo isabot usahay miss kay paspas man kayo mustorya nya English pajud kayo, slang jud kaayo". ("Its hard for us to understand sometimes Miss because of the faster narration and pronunciation".)*

Respondent 4 also described,

> *"Nindot og makasabot jud mi kung ang videos kay tagalog or bisaya bar on parehas katong usa sa mga videos na imong gipatan aw namo miss". ("Its nice and easy to understand the videos miss if the medium of instruction is in Tagalog or Visaya just like what the video that you let us watch once miss".)*

These statements also manifest that English as a mode of teaching is a potential barrier in the understanding of the concept. This finding is also supported by Morgan and Wagner, (2014) that language barrier has detrimental effect on the learning of the students. The learners find this as a significant tool in understanding the concepts well. The outcomes are additionally strengthened by Sharma (2015) that learning Mathematics is emphatically related with language and to prevail in Mathematics, the students must have the option to utilize mathematical language effectively and understand it as well.

Theme No. 3: Difficulty of the topics/ competency.

Another issue encountered by the students surrounds on the complexity of the competencies. Mathematics is known for its usefulness in day to day life but it can't be refuted that majority of the students hurdled a lot in the acquisition of the essential mathematics skills and process that are valuable to their everyday lives (Ganal & Guiab, 2014).

As respondent 5 recited,

> *" Lisod kaayo analyzon ang radicals miss kung mutan aw lang mi og videos dili mi kasabot sa mga terms og paspas ra jud kaayo, maksabot man gani mi dili jud tanan". ("It is so hard to analyze the radicals miss if we will just watch the videos only, the terms are hard to understand and the narration is so fast, we can understand just a few".)*

The response would further mean that there are some learning competencies that cannot be carried by merely watching the videos. With this regard, Ryan and Tilbury (2013) state that in the era of Information Technology which could help broaden the students; learning experiences in the class, they also advice that it could likewise swift a downsized educational connection. Nashash & Gunn (2013) also discovered that if the student hard the time understanding the content of video lectures, it may deliver annoyance and math anxiety resulting to a waste of time in comprehending such difficult concepts.

IV. CONCLUSION AND RECOMMENDATIONS

A. Conclusion

It can be concluded that the use of supplemental videos is a good alternative in teaching the concepts in mathematics for it kindles the curiosity of the learners which can serves as a springboard for the lesson. Moreover, teachers need to reinforce the teaching and learning process in integrating supplemental videos.

B. Recommendations

1. The use of supplemental videos in teaching mathematics coupled with drills and teacher reinforcement can be a good practice in enhancing performance of the students in mathematics.

2. Teaching mathematics with the aid of supplemental videos can be more compelling if the narration is within the context of the students.

3. Teachers may undergo seminar – workshop in preparing supplementary videos in teaching mathematics.

4. Further study that led to discover the impact on the of use supplemental videos in teaching other subject areas and another group of respondents.

REFERENCES

[1] Abella, M. C. (2017). Research training programs and initiatives in Philippine higher education institutions. Philippine Journal of Research and Development, 36(1), 9-20.

[2] Ayodele, O. J. (2011). Self-Concept and Performance of Secondary School Students in Mathematics. Journal of Educational and Developmental Psychology, 1(1), 176-183.

[3] Ayotola, A., & Adedeji, T. (2009). The Relationship between Gender, Age, Mental Ability, Anxiety, Mathematics Self-Efficacy and Achievement in Mathematics. Cypriot Journal of Educational Sciences, 4, 113-124. - References - Scientific Research Publishing. (n.d.). https://www.scirp.org/reference/referencespapers?referenceid=2851897

[4] Ganal, N.,Guiab M.,(2014). Problems And Difficulties Encountered By Students Towards Mastering Learning Competencies In Mathematics. International Refereed Research Journal Vol.–V, Issue – 4, Oct. 2014 [27] E-ISSN2229-4686, ISSN2231-4172.

[5] Gano, L. (2010). Fitting Technology To The Mathematics Pedagogy: Its Effect On Students' Academic Achievement. In J. Sanchez & K. Zhang (Eds.), Proceedings of E-Learn 2010--World Conference on E-Learning in Corporate, Government, Healthcare, and Higher Education (pp. 987-993). Orlando, Florida, USA: Association for the Advancement of Computing in Education (AACE).

[6] Geiger V., Forgasz H., Tan H., Calder N., Hill J. (2012) Technology in Mathematics Education. In: Perry B., Lowrie T., Logan T., MacDonald A., Greenlees J. (eds) Research in Mathematics Education in Australasia 2008–2011. Sense Publishers, Rotterdam. https://doi.org/10.1007/978-94-6091-970-1_7https://www.researchgate.net/publication/267991109_The_Cognitive_Theory_of_Multimedia_Learning

[7] Lequin, S. (2015). T-Games in Teaching Mathematics. Cebu Normal University, Cebu City

[8] Liu, Xing & Koirala, Hari. (2009). The Effect of Mathematics Self-Efficacy on Mathematics Achievement of High School Students. NERA Conference Proceedings 2009.

[9] Ljubojevic, M., Vaskovic, V., Stankovic, S., & Vaskovic, J. (2014). Using supplementary video in multimedia instruction as a teaching tool to increase efficiency of learning and quality of experience. International Review of Research in Open and Distance Learning, 15(3).

[10] Magayon, V. C. & Tan, E. B. (2016). Learning Mathematics and Differentiated Instruction in the Philippines: A Phenomenographical Study on Struggles and Successes of Grade 7 Students. International Journal of Educational Studies in Mathematics, 2016, 3 (3), 114. DOI: http://dx.doi.org/10.17278/ijesim.2016.03.003

[11] Mohammed T., Abdulghani A. (2016). Impact of students' use of technology on their learning achievements in physiology courses at the University of Dammam. Journal of Taibah University Medical Sciences .https://doi.org/ 10.1016/j.jtumed.2016.07.004

[12] Morgan, C.,Craig, T., & Wagner, D. (2014). Language and communication in mathematics education: An overview of research in the field. ZDM Mathematics Education, 45, 843-853.

[13] Nashash, H. Al, & Gunn, C. (2013). Lecture capture in engineering classes: Bridging gaps and enhancing learning. Educational Technology & Society, 16(1), 69–78

[14] Nesmith, S.J. (2008). Mathematics and Literature: Educators' Perspectives on Utilizing a Reformative Approach to Bridge Two Cultures.

[15] Sharma, S. (2015). Laguage barriers in mathematics education: Some findings from Fiji. 7th ICMI - East Asia Regional Conference on Mathematics Education , 543 – 549

[16] Siegle, D., & McCoach, D. B. (2007). Increasing student mathematics self-efficacy through teacher training. Journal of Advanced Academics, 18, 278–312.

[17] Sorden, S. (2018). The Cognitive Theory of Multimedia Learning. Retrieved from https://www.researchgate. net/publication/267991109_The_Cognitive_Theory_of_Multimedia_Learning

[18] Steffes, E. M., & Duverger, P. (2012). Edutainment with videos and its positive effect on long term memory. Journal for Advancement of Marketing Education, 20(1).