

Video Aided Lessons and Students' Performance in Mathematics

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ABSTRACT: In the modern outlook of education, traditional methods are constantly being enhanced by productive and innovational technological tools. This study aimed to evaluate students' performance in Mathematics by examining their pretest and posttest scores from both the controlled and experimental groups, assessing how video-assisted lessons influenced students' performance in Mathematics, and investigating the difference between the pretest and posttest scores of the two (2) groups. The study was conducted to selected group of seventy (70) seventh-grade students at Opol National Secondary Technical School for the 2023-2024 academic year. The researcher utilized the purposive sampling technique combined with a Quasi-experimental research framework that incorporated a pretest and posttest questionnaire based on the DepEd modules. Results showed that Mathematics performance of students during the pretest was at Low Level. Posttest showed significant improvement on students' Mathematics Performance with control group of students at High Level while the students from experimental group with a Very High Level. Traditional way of teaching is still effective but the researcher recommends integration of appropriate strategies like video aided lessons for better results. Furthermore, video aided lessons strategy can be applied to other learning areas apart from Mathematics.

KEYWORDS: Mathematics performance, posttest, pretest, video aided lessons

I. INTRODUCTION

In present-day education, the assessment of students' Mathematics performance is a censorious aspect that gives thought to not only individual attainment but also the overall potency of educational systems. At this current time, students' mathematical proficiency plays a critical role in shaping their academic and professional paths. The Mathematics education landscape has evolved, guided by technological preference, pedagogical innovations and interventions, and an increasing recognition of the fundamentals of mathematical skills in various fields.

Since ancient times, education has consistently been a crucial aspect of human civilization, as the advancement of a nation's education directly impacts its future growth. The conventional teaching approach focuses on the teacher to deliver textbook information to learners. In earlier eras, conventional teaching techniques were prevalent as educators aimed for students to acquire set information and achieve high marks on tests. In a conventional classroom, students are required to follow rules to maintain a positive learning atmosphere, while teachers act as the leaders of the class.

The development of the new era, Science and Technology are more developed, and people's thinking is more active. Students not only want to learn from textbooks but also are attracted by innovative knowledge. To improve the quality of teaching and provide students with a better education, modern teaching methods are also widely used. Modern teaching methods pay more attention to improving students' values and abilities.

In the modern classroom, the teaching atmosphere is more relaxed, and there are multiple technology products to assist teaching and the classrooms are student-centered. The two different teaching methodologies have specific advantages and disadvantages. People in the future education field can analyze the benefits and drawbacks of the two methods and use different methods on different students. In this way, the efficiency and quality of teaching can be greatly improved. (Yuemeng Wang, 2022)

The development of technology is very rapid in various sectors, including the education sector. Technological improvements in this era of globalization can be applied to education as more facilitate the learning process. The use of learning videos can be a solution in presenting material with audio and visuals that can draw students' attention compared to conventional online learning. Video is one of the learning media in audio-visual, which is very effective to support the learning process. The benefits of learning videos can be perceived as real as they can reach all learners and are effective as a medium of learning

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because they can be reproduced, viewed, and repeatedly presented (Nurismaeni Rauf, Ulfa Fauziah 2021).

Mathematics is seen as one of the hardest and most monotonous subjects that learners have to face in their studies. In a classroom setting, teachers must find ways to enhance the engagement and interactivity of the teaching and learning processes, allowing students to grasp and succeed in every mathematical concept introduced. Additionally, as per the 2022 PISA or Programme for International Student Assessment, the Philippines placed 6th from the last, and although there was a slight rise in the score obtained relative to the 2018 results, it was considered insignificant per PISA criteria (www.oecd.org, 2022).

This has encouraged the researcher to explore methods that can enhance student performance in Mathematics by ensuring that they find enjoyment, excitement, and interest in learning mathematical concepts. It is true that there are a lot of strategies that are present and existing that can be utilized by teachers to aid the students. However, as to its effectiveness and efficiency the teacher must implement it and properly record and evaluate it based on the performance of the students so that it can be more effective and can result to better educational outcomes. One of the strategies is video aided lessons.

Video Aided Lessons is a valuable teaching tool that has improved learning. This represents moving images supplemented by voice or sound to enhance the overall impression, which is then combined into a single unit in the form of a plot. It carries a message aimed at achieving a particular objective. Teachers and students alike are utilizing video to improve their learning experience. In the near future, the video will be utilized more frequently. Videos benefit both students and teachers in the process of teaching and learning. In Mathematics, using video lessons enables more efficient processing and memory recall. Video's visual and auditory characteristics allow each user to interpret information uniquely. Students may be more motivated to create a unique environment for their learning if they have access to the video (Arcilla, 2020).

Many educational videos on a variety of topics are uploaded to video platforms to enlighten both students and the general public. YouTube is one of the most well-known sites, with an estimated two billion assigned users and one-third of all Internet users. YouTube has grown in popularity for educational videos and has established itself among students as a complementary learning platform that promotes on-demand learning.

Furthermore, many individuals turn to YouTube for information on science, technology, and medicine. Thus, educational videos can be viewed as a great instrument for increasing people's knowledge (Kohler and Dietrich, 2021). Educational videos or movies are often only a few minutes long and can only address single, simple concepts that can be conveyed in a few minutes. According to the research on educational videos, they are often well-perceived as a learning resource (Abrar et al., 2020).

Moreover, Aldallal et al. (2019) found that educational videos function as learning resource. The effectiveness of the educational videos may stem from the comparable communication abilities of the students. In this scenario, educational videos prove to be more effective when the groups have a similar educational level.

However, comparisons of course sections with and without access to the video lessons showed no statistically significant difference in students' academic performance. Similarly, Lloyd and Robertson as cited by Lector (2020) investigation results show that the video aided lessons significantly enhanced students' learning, especially for higher order conceptual knowledge. McDaniel and Green as cited by Staff (2020) found that the use of online instructional modules, which combine an applet, audio-visual tutorials, and guided discovery questions, contributed to an increase in students' understanding of sampling variability concepts.

The primary responsibility of the Mathematics teacher is to guarantee that each student acquires the Most Essential Learning Competencies (MELCs) during each session to maintain learning progress to the next level while fostering a mindset, enthusiasm, and affection for studying the subject. The teacher is tasked with creating learning activities and resources suitable for the students' comprehension. They must tackle the urgent issues, especially the students who are struggling and becoming disinterested in the subject matter. Students who struggle often do not vocalize their difficulties, leading the teacher to overlook them until the pupils can no longer cope with Math classes (Insorio et al., 2023). The student facing learning difficulties erred while studying Mathematics. They need regular clarifications from the teacher to understand the mathematical concepts and techniques, making it harder for the teacher to reiterate them multiple times individually (Oco, 2022).

Students who struggle rarely express their challenges, resulting in teachers overlooking them until these students cannot manage Mathematics classes (Ovadiya, 2021). The learner facing challenges encountered errors while learning Mathematics. Students require multiple explanations from the teacher to understand the mathematical concepts and procedures, making it challenging for the teacher to reiterate the explanations individually on numerous occasions (Tan et al., 2020). Thus, video lessons are suitable for students who are having difficulty, allowing them to repeatedly view the teacher's instruction on the Mathematics lesson at their convenience. Students may utilize videos to revisit the educational content provided by their instructors (Turmudi et al., 2013). Thus, there have been fewer investigations into Mathematics video interventions within secondary schools (Bouck & Cosby, 2019).

So, video lessons are appropriate for struggling students since they allow them to see the teacher teach the Mathematics subject repeatedly or at their own pace. Students can use films to study the learning materials provided by the teachers.

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Consequently, fewer researches have been undertaken regarding Mathematics video interventions in Secondary Schools (Coles, 2019).

This research supports the notion of Mayer's (2014) Cognitive Theory of Multimedia Learning, which suggests that effective learning occurs through the integration of words and images when utilizing videos accompanied by text, visuals, and audio. Understanding deepens as the visual and auditory resources assist students in processing information and acquiring knowledge. In a video tutorial, important terms from the displayed visuals are systematically arranged and subsequently combined with the learner's existing knowledge. This implies that the educator needs to thoughtfully choose the words and images to feature in the video lesson, taking into account the students' local context and their level of comprehension.

The present study is anchored on two theories related to video aided lessons and students' performance in Mathematics. The first essential theory that supports the study is the Instructional Theory. This aims to describe how to help people learn and develop, create conditions that boost the chance of learning and improve instruction. Instructional theory prescribes how to help people learn better. Thus, it suggests the utilization of interventions. The focus of this theory is on how to structure material for promoting the education of the people. Such materials include the instructional materials. Instructional materials are important tools in education. Examples of these tools are workbook supplements, manuals, guidebooks which help clarify the concepts, principles, and techniques contained in the textbooks, by making the student undergo exercises applying the lessons learned. They also provide means of checking whether the students have understood the lessons taught in the classroom. (Vacalares, 2021).

The second theory is Developmental Constructivism. Piaget's research and theory, is called Developmental Constructivism (Romberg, 1969), and maintains that children acquire number concepts and operations by construction from the inside and not by internalization. Piaget (1968) pointed out that every normal student is capable of good mathematical reasoning if attention (and care) is directed to activities of his interest, and if by this method the emotional inhibitions that too often give him a feeling of inferiority in lessons in Mathematics are removed.

II. METHODOLOGY

A pretest-posttest control group is part of the quasi-experimental research strategy used for this study. The quasi-experiment as defined by Farnell (2021) differs from an actual experiment in that participants are not assigned at random. This idea led to the formation of two groups. There were two groups: the control group and the experiment group. The experimental group underwent treatment, during which the lessons supported by video were utilized. In contrast, the control group did not, as this group utilized the traditional teaching method. The researcher conducted a pretest and posttest of this kind to examine changes over time. To determine if two variables reacted in a similar way to a specific change, it evaluated two variables thought to be alike. This method was applied in a single case where the researcher purposefully matched control group participants to treatment group participants based on traits that could be connected to the desired outcome. A one-to-one match between the individuals in the two groups can be achieved by doing this matching at the individual level.

The following statistical tools were used to analyze the data for each problem. Problems 1 and 2 utilized Frequency, Percentage, Weighted Mean and Standard Deviation (SD) in analyzing the Pretest and Posttest scores of the students from controlled and experimental groups. Problem 3 utilized t-test in analyzing the significant difference between the independent variables (Pretest) and the dependent variables (Posttest) based on its significant level and critical value.

III. RESULTS AND DISCUSSION

Problem 1. What is the students' level of Pretest Mathematics Performance based on:

- 1.1 Control Group; and
- 1.2 Experimental Group?

Table 1: Pretest Mathematics Performance of the Control and Experimental Groups

Control				Experimental			
Scores	Frequency	Percentage	Mean & SD	Scores	Frequency	Percentage	Mean & SD
25-30	0	0.00	10.2	25-30	0	0.00	8.46
19-24	0	0.00	(3.35)	19-24	0	0.00	(2.54)
13-18	10	28.57	Low	13-18	1	2.86	Low
7-12	20	57.14	Mathematics	7-12	25	71.43	Mathematics
0-6	5	14.29	Performance	0-6	9	25.71	Performance

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Total	35	100.00	Total	35	100.00
Note:	25 – 30 Very High Mathematics Performance		19 – 24 High Mathematics Performance		
	13 – 18 Moderate Mathematics Performance		7 – 12 Low Mathematics Performance		
	0 – 6 Very Low Mathematics Performance				

Table 1 presents the Pretest Mathematics Performance of the Control and Experimental Groups. For the Control Group, It registered an overall mean of 10.2 with SD=3.35 described as Fair and interpreted as Low Mathematics Performance. Moreover, majority of the students' performance were at Low Mathematics Performance with twenty (20) or 57.14% while there are also students with performance at Very Low level with five (5) or 14.29%. This data imply that the students have very low level of learning and performance in Mathematics. The concepts in this subject are presented in spiral progression which means that it is from easy to difficult. Therefore, students must master the easy or basic concepts so that by the time they reach the difficult level concepts they can understand and solve it as they have their prior knowledge about it.

The challenge of topics in Grade 9 Mathematics is that its introductory or simple topics are introduced in the Grade 7 level and not found in the Grade 8 level. Thus, there is a tendency that students tend to forget their lessons. Teachers must be observant to this scenario so that they can provide measures or interventions to help the students improve their learning, knowledge and performance.

According to Tang (2019) one of the causes of students performing low in Mathematics is that they cannot easily relate with the topics and not able to understand much of it. With the integration of technology, the presentation of the lessons becomes more relatable and easier to grasps due to visual presentation as well as presented examples with appropriate illustrations that helps them understand the scenario of the given problem. Thus, teachers are encouraged to utilized technologies that can make teaching and learning more fun, exciting and interesting.

For the Experimental Group. It registered an overall mean of 8.46 with SD=2.54 described as Fair and interpreted as Low Mathematics Performance. Moreover, majority of the students' performance were at Low Mathematics Performance with twenty-five (25) or 71.43% while, there are also students with performance at Very Low level with nine (9) or 25.71%. This data imply that the students have very low level of learning and performance in Mathematics. This subject progresses from easy to tough conceptually. In order for students to comprehend and solve more complex problems later on, they will need to have mastered the simpler or more fundamental principles first. In order to help students, enhance their learning, understanding, and performance, teachers need to be aware of this situation and be able to intervene or take appropriate action. Moreover, this group was selected as the experimental group wherein they were exposed to the video aided lesson strategy as they have the lowest performance average compared to the students that belong to control group.

According to Insorio et al. (2023) the students nowadays have more fun and interest in studying their lessons by watching video presentations that can guide them in understanding and discovering the meaning and importance of the concepts presented to them. On the other hand, teachers can also save their energy from exhausting all their efforts just to convey the purpose and the functions of the concepts being presented during the teaching and learning process.

Although both groups registered low Mathematics performance in their pretest scores, it can be observed that the selected students for experimental group was the appropriate set of students as the majority of them registered pretest scores that belongs to low Mathematics performance. They were more in the struggling situation compared to the students in the control group. It is just fitting that both groups must be given extra time and attention by the teachers so that they can catch up with their peers most especially those in the experimental group.

Table 2: Comparison of Students' Pretest Mathematics Performance

Group	Mean	SD	Description	Interpretation
Control	10.2	3.35	Fair	Low Mathematics Performance
Experimental	8.46	2.54	Fair	Low Mathematics Performance
Overall	9.33	2.94	Fair	Low Mathematics Performance
Note:	25 – 30 Very High Mathematics Performance		19 – 24 High Mathematics Performance	
	13 – 18 Moderate Mathematics Performance		7 – 12 Low Mathematics Performance	
	0 – 6 Very Low Mathematics Performance			

Table 2 exhibits the Comparison of Students' Pretest Mathematics Performance. It registered an overall Mean of 9.33 with SD=2.94 described as Fair and interpreted as Low Mathematics Performance. Low performance in Mathematics indicates that the students were not able to master majority of the lessons or concepts that has been presented to them. Mathematics is

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one of the most essential subjects therefore teachers must create and provide extra activities and intervention programs that will help the students improve their knowledge and skills in Mathematics. The subject can be challenging but its impact and importance to man's daily activities is undeniable. It is important that each individual should master the basic concepts in Mathematics that can be applied in their daily routines.

Vacalares (2022) stated that learning Mathematics is challenging and sometimes boring. Teachers need to make the teaching and learning process and activities fun, interesting and exciting so that the students will have better interest towards it. Video aided lesson strategy can be a better option as it provides integration of technology that is current and relevant to the current generation. It will help the students learn and realized the importance of mathematics concepts in their studies and real-life application activities.

In the same table, the group with the highest mean is the control group with the score of 10.2 and SD=3.35 describe as Fair and interpreted as Low Mathematics Performance. In reality, this could indicate that the students can only achieve either passing or failing marks in Mathematics which further means that they need assistance and guidance from their teachers and even from their parents or siblings at home. Mathematics has been considered a difficult subject but its importance to the society as well as to a person is undeniable. Therefore, to help the students, the teachers may provide various remedies.

According to Bullo (2021), Teachers should provide additional activities that will aid the students in their studies. Teaching and learning process must be inserted with strategies that are new to the students so that they will be more interested to study and learn. To make sure that lessons at school will be studied at home, teachers can provide extra activities through assignments using worksheets, modules to name a few.

Meanwhile, the group with the lowest Mean is the experimental group with the score of 8.46 with SD=2.54 described as Fair and interpreted as Low Math Performance. The students may actually only be able to receive passing or failing grades in Mathematics, which further indicates that they require support and direction from their teachers as well as from their parents or siblings at home. Although Mathematics has a reputation for being a challenging subject, there is no denying its significance to both society and the individual. Therefore, teachers may offer a variety of solutions to assist the kids.

According to Vacalares (2022), students that are struggling with Mathematics must be given serious attention. Along with improving the reading capability of the students, their computational and numeracy skills must not be left behind. This can be done and achieved with the collaboration of teachers and parents and even the community.

Problem 2. What is the students' level of Posttest Mathematics Performance based on:

- 1.3 Control Group; and
- 1.4 Experimental Group?

Table 3: Posttest Mathematics Performance of the Control and Experimental Groups

Control				Experimental			
Scores	Frequency	Percentage	Mean & SD	Scores	Frequency	Percentage	Mean & SD
25-30	0	0.00	19.71	25-30	20	57.14	8.46
19-24	21	60.00	(2.72)	19-24	14	40.00	(2.54)
13-18	14	40.00	High	13-18	1	2.86	Very High
7-12	0	0.00	Mathematics	7-12	0	0.00	Mathematics
0-6	0	0.00	Performance	0-6	0	0.00	Performance
Total	35	100.00		Total	35	100.00	
Note: 25 – 30 Very High Mathematics Performance				19 – 24 High Mathematics Performance			
13 – 18 Moderate Mathematics Performance				7 – 12 Low Mathematics Performance			
0 – 6 Very Low Mathematics Performance							

Table 3 shows the Students' Posttest Mathematics Performance between the Control and Experimental Groups. For the Control Group, It registered an overall Mean of 19.71 with SD=2.71, described as Very Good and interpreted as High Mathematics Performance. The majority of the students' performance was at high level with 60% while few were at moderate level with 40%. Moreover, none or 0% of the students got the performance at low and very low level respectively. This implies that after the lesson was presented the performance of the students improved which also mean that they were able to understand the lesson and learned from it resulting to the improvements of their performance. However, it was sad to note that none of them were able to achieve the very high level of Mathematics performance. This further means that teachers need to make additional adjustments for the students to achieve outstanding or highest level of Mathematics performance.

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Namocatcat (2022) stated that the teacher is still the best instructional materials that can help the students in improving their Mathematics performance. Teachers that pour their heart and passion in teaching their students achieves greater heights in terms of performance and outcomes. Moreover, they can be more effective if they integrate the use of other available resources for their class activities.

For the Experimental Group. It registered an overall Mean of 25.29 with SD=2.56 described as Excellent and interpreted as Very High Math Performance. The majority of the students' performance was at very high level with 57.14% while few were at moderate level with 2.86%. Moreover, none or 0% of the students got the performance at low and very low level respectively. This implies that after the lesson was presented with the integration of video aided lesson strategy the performance of the students improved which also mean that they were able to fully understand the lessons and learned from it resulting to the great improvements of their performance as majority of them were able to achieve either the very high level or high level of Mathematics performance.

Jamis (2022) stated that integration of various teaching strategies and other instructional materials definitely boosts the teaching and learning process among the students. The use of video aided lessons is one of the strategies that is beneficial to the teachers and the students. For the teachers, they can find a lot of materials in the internet and they will just find the most suited one to their lessons. Moreover, on the students' part, they can have better view and understanding of the lessons as they can review the video in multiple times until they understand the lesson.

Finally, it can be observed that there was tremendous improvement of the students' performance in Mathematics. Most notably in the experimental group as the majority of the students achieved very high Mathematics performance. Thus, the integration of video aided lessons in the teaching and learning process have benefited the students as they were able to grasps the various concepts presented to them specifically on angles.

Table 4 presents the Overall Students' Level of Mathematics Performance based on Posttest. It registered an overall Mean of 22.50 with SD=2.64 described as Very Good and interpreted as High Mathematics Performance. This implies that the students were able to uplift themselves by having better performance during the conduct of the posttest. Posttest is an essential concept in evaluating what the students learned after the course is being undertaken. This will further allow the teachers on the needed things to do for better results. This further means that the students were able to master the Mathematics concepts presented to them especially on the topics about geometry and angles. Moreover, the integration of video aided lessons strategy played a key role on the students' achievements in terms of their performance.

Table 4: Comparison of Students' Posttest Mathematics Performance

Group	Mean	SD	Description	Interpretation
Control	19.71	2.72	Very Good	High Mathematics Performance
Experimental	25.29	2.56	Excellent	Very High Mathematics Performance
Overall Mean	22.50	2.64	Very Good	High Mathematics Performance

Note: 25 – 30 Very High Mathematics Performance
13 – 18 Moderate Mathematics Performance
0 – 6 Very Low Mathematics Performance

19 – 24 High Mathematics Performance
7 – 12 Low Mathematics Performance

In the same table, the group with the highest level of Mathematics performance is the experimental group with the mean score of 25.29 with SD=2.56 described as Excellent and interpreted as Very High Mathematics Performance. This is the group wherein the teacher inserted and utilized the concepts of video aided lessons. This further mean that when the teacher makes extra effort by providing the students with strategies that will make the lesson lively, interesting and fun it can result to better outcomes for the teacher and the students. Thus, teachers must equip themselves with various teaching strategies not just to address the needs of the students but also in providing appropriate strategy for the type of the students that the teacher have.

According to Jamis (2022) and Vacalares (2022), the teaching and learning process among students is unquestionably improved by the combination of different teaching styles and other instructional materials. One tactic that helps both teachers and students is the use of video-assisted instruction. Teachers only need to select the best resource from the abundance of materials available online for their lessons. Additionally, by watching the video several times until they fully grasp the lesson, students can have a greater perspective on and comprehension of the material.

Meanwhile, the group with the lowest level of Mathematics performance is the control group with the mean score of 19.71 with SD=2.72 described as Very Good and interpreted as High Mathematics Performance. This is the group wherein the teacher utilized the traditional or usual way of teaching the students. This means that the teachers' efforts and sacrifices are worth it as the students were able to improve themselves by getting much higher level of Mathematics performance compared to their

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pretest scores. However, the improvement of their performance cannot be considered as an excellent one as they were not able to reach the top level of Mathematics Performance.

According to Bullo (2021) and Namocatcat (2022), the teachers remain the most effective educational resource for students looking to improve their math proficiency. Students who receive instruction from teachers who are passionate and invested in them reach higher levels of performance and results. Additionally, if they incorporate the usage of other accessible resources into their class activities, they can be more successful.

Problem 3. Is there a significant difference on the students' level of Pretest and Posttest Mathematics Performance based on:

3.1 Control Group; and

3.2 Experimental Group?

Table 5 shows the Test Significance on Students' Level of Mathematics Performance based on Pretest-Posttest results. This study employed an experimental type of research wherein one (1) group of students were under the control group and the other one is under the experimental group wherein video aided lessons were integrated to the teaching and learning process.

Table 5: Test Significance on Groups' Mathematics Performance based on Pretest-Posttest

t-value	p-value	Decision	Interpretation
13.007	0.001	Reject Ho	Significant
22.703	0.000	Reject Ho	Significant

Note: Significant if computed p-value is less than 0.05

For Controlled Group, the pretest and posttest results registered a computed t-value of 13.007 with p-value=0.001. The computed p-value is less than 0.05 level of significance. This implies that significant difference was established between the students' scores based on pretest and posttest. Thus, the null hypothesis is rejected. This further means that the efforts made both by the teachers and the students in learning concepts in Mathematics was effective and that it contributed to the improvement of the students' Mathematics performance from low Mathematics performance level during the pretest period to high Mathematics performance level during the posttest period. Moreover, based on the pretest and posttest mean score it can be asserted that many of the students have improved their performance and that they were able to learn the lessons well.

Ugwu (2019) and Zhang (2019) claimed that regular teaching and learning process is still valid and effective. However, to gain much better results and outcomes the teachers need to integrate strategies and technologies that are presently and vastly available in the environment as they can help the students in easily relating the lessons to their surroundings and that the technology they know and use can be connected and use to their studies as well.

For Experimental Group, the pretest and posttest results registered a computed t-value of 22.703 with p-value=0.000. The computed p-value is less than 0.05 level of significance. This implies that significant difference was established between the students' scores based on pretest and posttest. Thus, the null hypothesis is rejected. This further means that the efforts made both by the teachers, the utilized video aided lessons strategy and the students in learning concepts in Mathematics was effective and that it contributed to the improvement of the students' Math performance from Low Math performance level during the pretest period to Very High Mathematics performance level during the posttest period. Moreover, based on the pretest and posttest mean score it can be asserted that many of the students have improved their performance significantly and that they were able to learn the lessons well.

Peteros (2019) and Guinocor (2020) both attested that checking the effectiveness of a teaching strategy via experimental research is essential to check if the teachers did understand the needs of the students. In this way, the teachers can also make sure that acquisition of learning, knowledge and skills is at its most effective possible way. Meaning, the students have the chance to fully understand and learn the lesson at the same time have the chance to achieve much better performance in Mathematics.

In the final analysis, both the pretest and posttest scores of the students in two (2) groups showed significant difference. This means that learning took place as the students were able to acquire the necessary knowledge and skills about the topic and concepts that were presented to them. It further showed that the normal teaching and learning activities that teachers do with their students are effective. However, with the implication or integration of the video aided lessons strategy it was also observed that the students were able to achieve much higher level of Mathematics Performance as posttest of experimental group had Very High Mathematics Performance compared to the posttest score of controlled which was at High Mathematics Performance. This further signifies that teacher must adapt to the advancement of technologies and use it in their teaching and learning process so that students can relate more and become much interested and inspired to study as they feel that they can relate to it.

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Problem 4. Based on the findings of the study, which of the group of students have better results in terms of:

4.1 Control Group; and

4.2 Experimental Group?

Table 6: Groups' Mathematics Performance based on Incremental Score

Group	Pre		Post		Incremental Score
	Mean	SD	Mean	SD	
Control	10.2	3.35	19.71	2.72	9.51
Experimental	8.46	2.54	25.29	2.56	16.83

The pre-test scores reveal that the control group started with a higher average score (Mean = 10.2, SD = 3.35) compared to the experimental group (Mean = 8.46, SD = 2.54). However, the less variability in scores is demonstrated in the experimental group, being reflected by the lower standard deviation, indicating more consistent initial performance. After the intervention, both groups showed significant improvements, but the experimental group made larger gains. The control group achieved a post-test mean of 19.71 (SD = 2.72), reflecting an average improvement of 9.51 points. This improvement suggests a substantial natural progression or the influence of non-experimental factors. In contrast, the experimental group achieved a post-test mean of 25.29 (SD = 2.56), with an average improvement of 16.83 points. This dramatic increase, nearly double the control group's improvement, strongly indicates that the intervention applied to the experimental group had a pronounced and meaningful effect.

The standard deviations for both groups remained relatively low throughout the study, highlighting tightly clustered scores around the means. Both groups showed a slight reduction in variability from pre- to post-test, suggesting increased consistency in performance after the intervention of the video aided lessons. The experimental group not only surpassed the control group in post-test average scores but also maintained similar levels of consistency as observed in the pre-test phase. Overall, the results strongly suggest that the experimental intervention was effective and led to substantial and consistent improvements in performance.

Based on the latest developments in educational philosophy as of 2019, the data aligns with contemporary approaches emphasizing **evidence-based practices**, **equity in education**, and **learner-centered pedagogies**. Scholars such as John Hattie (2019) emphasize the importance of interventions that have a visible and measurable impact on student achievement. Hattie's **Visible Learning** framework highlights the significance of evidence-based interventions, supported by data, in driving student success. The dramatic improvement observed in the experimental group reflects the efficacy of a targeted instructional approach, resonating with this framework's focus on high-impact teaching strategies.

The emphasis on equity is another central theme in recent educational philosophy. The experimental group's greater improvement suggests that interventions can help bridge gaps between learners, ensuring all students have the opportunity to excel regardless of their starting point. This aligns with **culturally responsive teaching**, as described by Geneva Gay (2019), which emphasizes creating equitable learning environments tailored to the diverse needs of students.

Additionally, the results are rooted in the principles of **constructivist theories**, as highlighted by the work of Lev Vygotsky and revisited in modern studies by authors like Deborah Youdell (2019). The experimental intervention likely provided scaffolding that helped learners progress from their zone of proximal development (ZPD) to higher levels of achievement. The increased consistency in post-test scores (lower SDs) indicates that the intervention may have established clear expectations, structure, and support, fostering meaningful learning experiences for all participants.

The educational philosophy underpinning the use of video-aided lessons, as reflected in studies up to 2019, emphasizes the integration of cognitive load theory, student engagement, and active learning principles to enhance educational outcomes. According to Brame (2016), effective educational videos should be designed to manage cognitive load, maximize student engagement, and promote active learning. This approach aligns with constructivist theories, suggesting that learners construct knowledge more effectively when actively engaged with the material.

Furthermore, a comprehensive review by Sablić et al. (2020) analyzed research on video-based learning from 2008 to 2019, highlighting its benefits in supporting student learning outcomes, facilitating teacher reflections and feedback, and contributing to professional development. This underscores the role of video-based learning in creating dynamic and interactive educational environments, fostering both teaching and learning processes.

In summary, the integration of video-aided lessons into educational practice is supported by contemporary educational philosophy, which advocates for leveraging multimedia tools to create effective, engaging, and learner-centered experiences.

IV. CONCLUSIONS

In the light of the above-cited findings, the following conclusions are drawn from the study:

1. The students needed assistance, guidance and extra attention from their teachers as reflected in the low performance.
2. An exposure to video aided lessons has improved the learning capacity of the Experimental group. But the conventional approach remains efficacious.
3. Students from Experimental and Control groups have improved their mathematical skill. But students taught with other teaching approach such as video aided lesson have higher increase than students who were taught conventionally.
4. Traditional method of teaching is still effective but the teaching and learning with video aided lessons strategy yielded better results.

V. RECOMMENDATIONS

Based on the above findings and conclusions, the following recommendations are presented:

1. The school may provide the teachers with enough instructional materials and trainings on various strategies like video aided lessons to improve teaching and learning.
2. To further investigate and validate the effect and success of the video-aided lessons strategy, other testing instruments and scales might be employed in the study's subsequent iteration with a larger sample size and wider coverage of topics or concepts.
3. The use of video aided lessons strategy may not be limited to Mathematics subject only but in all the learning areas and in full quarters to find out the relative effectiveness of the approach.
4. Video-aided lessons offer a powerful tool for enhancing education, providing diverse and dynamic learning opportunities that can significantly enrich the teaching and learning experience. By thoughtfully integrating video content, teachers can leverage its benefits while addressing potential challenges to maximize its effectiveness.

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