

Effectiveness of Video Lessons in Improving the Performance of the Students in Mathematics 8

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Abstract— This study determined the effectiveness of video lessons in improving the performance of the students in mathematics 8 at Guruyan National High School (GNHS), Juban II District in the Division of Sorsogon Province, school year 2021–2022. The respondents of the study were the 30 students who are officially enrolled at Guruyan National High School and 5 Mathematics experts who validated the video lessons. This study employed descriptive-developmental method since it determined the following: (a) level of performance of the students in the pretest and post test result, (b) experts' validity of the video lessons using DepEd LRMS criteria and the (c) difference between the pretest and posttest scores before and after the utilization of the video lessons. Moreover, the development and evaluation of the video lessons focused on the developmental process of video lessons designed by the researcher. Findings revealed that the video lessons are effective on all corners of the classroom in which educators can use it to create time and space for active learning. This suggest that the teaching and learning will come up to greater heights of performance on the part of the students and contentment on the part of the teachers. A video lesson can be developed and utilized to improve the performance level of the students in Mathematics.

Keywords— Effectiveness, Video Lessons, Performance Level.

I. INTRODUCTION

. There has been an initiative to integrate technological advancements in the classroom to advance the quality of education. It is essential to facilitate educational development in this area because students are constantly bounded by digital devices and must obtain technological literacy to be a productive member of society in various used such as at home, in school, and in the community as also specified by Organisation for Economic Cooperation and Development (OECD). Nonetheless, technology has been a great asset in education because technological tools such as word processors with spellcheck features, voice-to-text translators, writing templates, digital audio books, 3D geometric software, graphing software, and mathematical apps help to address the diverse needs of students according to Groff (2013) and Papert & Markowsky (2013).

As part of information and communication technology, the United States considered instructional videos as one form of this growing means that have become a prevalent way to learn inside and outside of the classroom which can be utilized for effective and quality learning modality for students' academic growth and performance. Additionally, a number of current advances, most notably the hasty growth in access to high-speed Internet through homes, schools, and personal devices such as tablets or smartphones, have had a noteworthy impact in altering the learning environment and hastening video use in education especially in eastern countries.

Furthermore, the Trends in International Mathematics and Science Study (TIMSS) is a series of international assessments of the mathematics and science knowledge of students around the world that provides important background information that can be used to improve teaching and learning in mathematics and science. For example, TIMSS collects detailed information about curriculum and curriculum implementation, instructional practices, and school resources. This generally highlights the basis of the present study for its conduct that is modified in a distance learning set up. In the same way, Department of Education found out the need of adapting the video-based materials engaging services to support the learning aids needed by both students and teachers in the teaching and learning process.

During the first wave of distance learning, Department of Education implemented the DO No. 032 series of 2020 which is known as the Guidelines on the Engagement of Services of Learning Support Aides to Reinforce the Implementation of the Basic Education Learning Continuity Plan in the time of COVID-19. In this order, learning institutions are asked to integrate video-based materials as part of educational modality where radios, televisions, and video lessons are considered to be the mainstreams of the implementation. In a local context, the Schools Division Office (SDO) Sorsogon employed the Division Memorandum No. 175 s. 2021 or the Adoption of the Radio-Based Instruction as a Learning Delivery Option for Distance Learning where all learning institutions are encouraged to

assimilate the utilization of radio-related materials including video lessons for learning accountability which can assure effectiveness as the national order also pertains to and concerns about. The national and local orders supplement teacher lesson plans to enhance learning to point to that a technology-based instructional tool such as video lessons might be especially well appropriate to improve students' proficiency especially in mathematics despite the illiteracy of some students in the Philippines.

On the other hand, mathematics is imperative not only for day-to-day activities, but also for higher education and career opportunities as stated by Martin (2003). To resolve this rising issue especially in the present time, Weinstein (2010) suggested to conduct studies in analyzing such students' mathematics performance and attitude with emphasis on technology-based approach as the main contributory factor to reach certain level of proficiency in the subject.

Moreover, as it becomes already a part of the teaching and learning process, it is necessary to acquire basic competence in the integration of video lessons during distance learning while face-to-face classes are still being restricted given that the school setting of the study finds the level of learning performance of students decreasing compared to the face-to-face learning modality then. Relatively, students especially in the Grade 8 level find it more difficult to absorb mathematical concepts especially in the new normal

learning modality. Grade 8 students as compared to other grade levels of the anticipated setting of the present study where the Grade 8 students got declining average grades of 81.95, 81.20, 80.25, and 80.00 respectively from the 1st quarter until the 4th quarter with 80.85 average grade in total based from the submitted average grades of the subject teacher in Mathematics 8 from the previous school year.

It was also observed that they lack interest if Learning Activity Sheets are just provided with them because of no guidance being rendered while doing it; thus, it is found necessary to give them a way in which they can engage drive and enthusiasm towards learning, then at least if video lessons will be developed, they will be motivated to answer activities as it has qualities and elements to catch students' attention upon learning.

II. METHODOLOGY

This study employed descriptive-developmental method since it determined the following: (a) level of performance of the students in the pretest and post test result, (b) experts' validity of the video lessons using DepEd LRMS criteria and the (c) difference between the pretest and posttest scores before and after the utilization of the video lessons. Moreover, the development and evaluation of the video lessons focused on the developmental process of video lessons designed by the researcher.

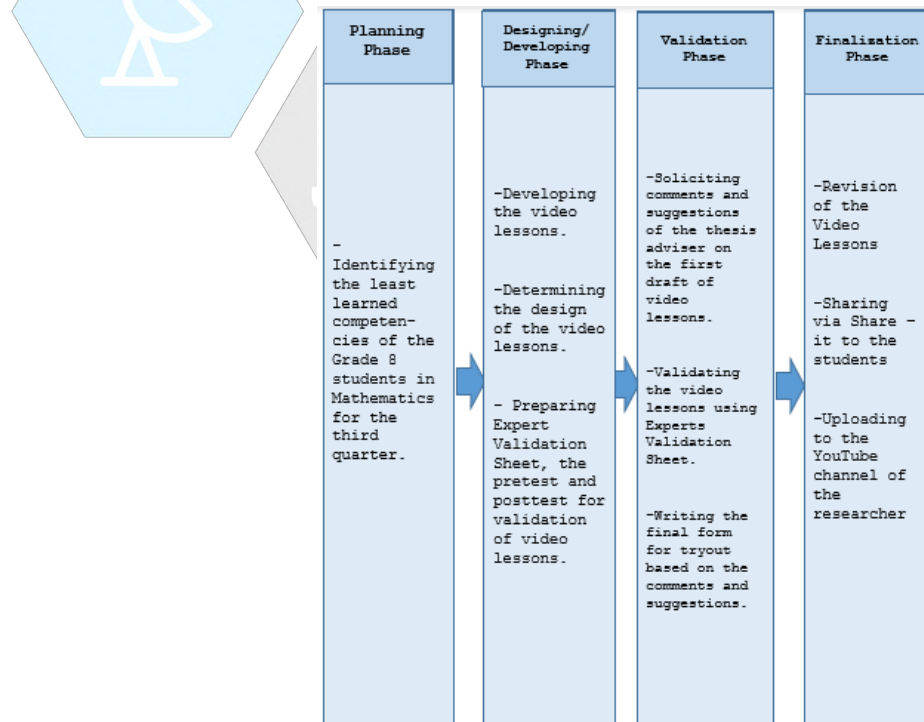


Figure 2. Developmental Process of Video Lessons Designed by the Researcher

The study also made use of single- group, pretest-posttest design as part of the validation process of the video lessons. The respondents were the thirty (30) Grade 8 students of Guruyan National High School and five (5) Mathematics teachers who are experts in their field of specialization from the different schools in the Schools Division of Sorsogon, Sorsogon Province. Nevertheless, the teacher-made test and expert validation sheet were used as the instruments to gather the necessary data. Additionally, several statistical tools were also used in the analysis and interpretation of results such as the frequency count, percentage and mean, and t-test for dependent data.

The researcher utilized a 40-item teacher-made test along the least learned competencies for the third quarter of grade 8 mathematics mathematics under K to 12 Basic Education Curriculum. Expert Assessment Sheet (EAS) was employed to check the coherence of the test items with the learning competencies in the competency-based test. Dry run was conducted. Item analysis employed, and the internal consistency of the test determined through a reliability test. The test administered by the researcher to the grade 8 students from other schools after the final test questions are validated. Choosing the respondents, seeks permission from the superintendent, principals and concerned subject teachers.

The researcher determined the topic or lesson to be presented which are solving corresponding parts of congruent triangles and proving two triangles are congruent. Then the researcher used simple random sampling in selecting the students - respondents while the purposive sampling used to determine the experts - respondents of the study.

The researcher sought help from the experts for the validation of the proposed video lesson. The instrument to be used for this study is Expert Validation Sheet (EVS) adopted from DepEd LRMS criteria. The experts' comments and suggestions regarding the acceptability and relevance of the video lessons will then be considered. They examined the tool based on four indicators which include: (1) content quality; (2) instructional quality, (3) technical quality and (4) mechanics. The developed video lesson was tested and validated. The final validation of the video lesson was done by the experts. The researcher takes the suggestions and comments of the experts for revision and improvement.

After the video lessons were made, the respondents was utilized the video lessons. Teachers' supervision is

needed for students' questions regarding the instructional tool.

To observe ethics and to assure the full cooperation of the respondents, the researcher asked permission first from the Superintendent of Schools Division of Sorsogon. Upon granting an approval, the researcher sought permission from the principal of Guruyan National High School to formally allow the researcher to conduct the said study. After the approval of the principal, the researcher conducted the pretest on February 14, 2022. The respondents were given instructions on the manner of answering the test. They were given one hour to answer the the 40 – item test after the researcher gave the instructions. The test papers and answer sheets were retrieved by the researcher and the retrieval rate is 100%. The results were checked, recorded, and made available for statistical interpretation.

The video lessons developed and edited by the researcher anchored on the least learned competencies for the 3rd quarter in Mathematics 8. The video lessons were validated by five (5) experts from January 28, 2022 to February 12, 2022. There were three (3) developed video lessons. The researcher shared the video lessons via Share-it, a mobile application, so that the students can watch it offline. Also, the researcher uploaded the video lessons in her YouTube channel for those students who have internet connection so that they can watch it online. The Experts Validation Sheet (EVS) were personally distributed and retrieved by the researcher by the identified experts-respondents. The retrieval rate of the Experts Validation Sheet (EVS) is 100%.

Furthermore, the lessons were intended for 2 weeks and the duration of each video lessons about ten (10) to twenty-three (23) minutes. The Learning Activity Sheet (LAS) from Juban II District was utilized. The researcher provided the printed Learning Activity Sheet (LAS) for every topic in the least learned competencies of Mathematics 8 in the 3rd quarter parallel to the developed video lessons.

The test items were inserted in the Learning Kit of the students. The researcher asked for the help of the parents to ensure that the students to watch the video lessons on the scheduled time. The researcher created a messenger group chat for the respondents of the study and gave the orientation about what video lessons were all about. Also, the researcher gave instructions through group chats about the schedule on watching the video lessons. The scheduled time in watching and answering the Learning Activity Sheet (LAS) was at 9:00-10:00 in the morning. After utilizing the video lessons, posttest was

administered to determine the difference in the performance of the students.

To determine the effectiveness of video lessons in improving the performance of the students in mathematics 8, the data gathered was subject to various statistics for analysis and interpretation. The gathered data were analyzed and interpreted using frequency count, percentage, mean, and t – test.

The video lessons developed in this study was validated by Mathematics experts along content quality,

instructional quality and technical quality using the following rating scale adopted from DepEd LRMS.

To determine the level of level of performance of the respondents, the results of the pre-test and posttest were analyzed and interpreted using the scale based on DepEd Order No. 8, s. 2015.

Further, the weighted mean was used to describe the validity of the developed video lessons. Likewise, t-test for dependent samples was applied to determine the significant difference in the performance of the students in the pre-test and post-test.

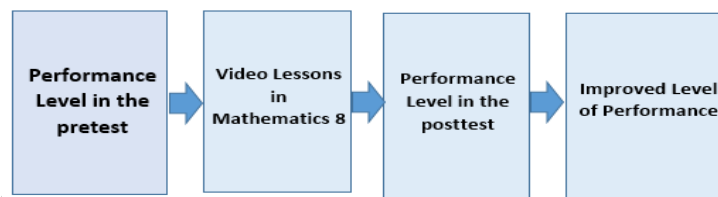


Figure 1: Conceptual Paradigm

III. RESULTS AND DISCUSSIONS

The presentation and analysis of the data are the following:

1. Performance level of the students in the pre-test and post-test along solving corresponding parts of congruent triangles and proving two triangles are congruent.
2. Video lessons developed in Mathematics 8 along the identified topics.
3. Validity of the video lessons based on DepEd LRMS.
4. Difference between the level of performance of the respondents in the following topics along Solving Corresponding Parts of Congruent Triangles Proving Two Triangles Are Congruent in the Pre-test and Posttest.

1. Performance Level of the Students in the Pre-test and Post-test along Solving Corresponding Parts of Congruent Triangles and Proving Two Triangles Are Congruent

It is reflected in table 1. A performance level of the students in the pre-test and posttest along solving corresponding parts of congruent triangles and proving two triangles are congruent. It can be observed from the table that the computed mean score of the students in the pretest along solving corresponding parts of congruent triangles using LAS 5 is 4.20 which is equivalent to 21% as the level of performance which is described as did not meet expectation. On the other hand, the computed mean score of the students in the posttest on the said topic yielded to 15.10 which is equivalent to 75.50% as the level of performance which is described as fairly satisfactory.

Table 1 A: Performance Level of the Students in the Pre-test and Post-test along Solving Corresponding Parts of Congruent Triangles and Proving Two Triangles are Congruent.

Topics	Pre-test			Post-test		
	Mean Score	PL	Description	Mean score	PL	Description
Solving Corresponding Parts of Congruent Triangles (LAS 5)	4.20	21%	Did not meet Expectation	15.10	75.50%	Fairly satisfactory
Proving Two Triangles are Congruent (LAS 6)	5.70	28.50%	Did not meet Expectation	15.23	76.16%	Fairly satisfactory

Legend: PL – Performance Level
 LAS – Learning Activity Sheet

It is also shown in the table that the computed mean score of the students in the pre-test on the topic about proving two triangles are congruent using LAS 6 is 5.70 which is equivalent to 28.50% as the level of performance which is described as did not meet expectation. Moreover, the computed mean score of the students in the pretest on the same topic yielded to 15.23 which is equivalent to 76.16% as the level of performance which is described as fairly satisfactory.

This means that the students showed interest and enthusiasm in the delivery of instructions using the video lesson. The students paid attention and gained more knowledge while their teachers are teaching by the use of the Learning Activity Sheets through video lessons. This implicates that teachers can keep students engaged in new and innovative ways, increased motivation and deeper learning, and can specifically impact students' ability to facilitate discussions and identify problems. Most importantly, the video lessons are effective in all corners of the classroom and educators can use it to create time and space for active learning. This suggest that the teaching and learning will come up to greater heights of performance on the part of the students and contentment on the part of the teachers.

Maclean M. (2017) emphasized the essence of incorporating technologized instructional methods where according to them, teachers thinking about using videos in their classes should know that students will at least get a basic understanding from videos, whether the videos are more conceptual or procedural. Similarly, Sharma K. (2018) pointed the increased understanding of the presentational and pedagogic gains from the use in mathematics lessons where it offers evidence of the need for generic skills and competencies if the technology is to be used to maximum learning advantage. Given this, teachers need time to advance their technological fluency, employ pedagogic principles to the available materials or to the development of materials, and then to integrate the technology appropriately seamlessly into their teaching.

2. Video lessons developed in Mathematics 8 along the identified topics

The developed video lessons consist of least learned competencies of the students in the 3rd Quarter of Mathematics 8. The topics included were Solving Corresponding Parts of Congruent Triangles and Proving Two Triangles are Congruent.

Solving Corresponding Parts of Congruent Triangles

The first topic has two video lessons developed (part 1 and part 2) as shown in plate 1 and 2. These two videos are intended for learners to understand the concept of congruent triangles. The video lesson provides the learners with the presentation and identification of solving corresponding parts of congruent triangles. Also, activities are provided to help them to easily solve the corresponding parts of the congruent triangles.

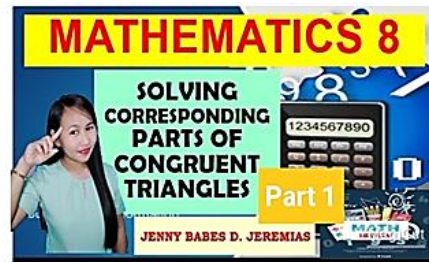


Plate 1. Video Lesson 1: Solving corresponding parts of congruent triangles (Part 1)

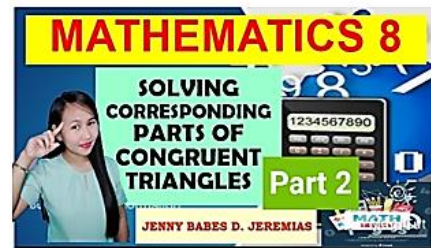


Plate 2. Video Lesson 2: Solving corresponding parts of congruent triangles (Part 2)

Proving Two Triangles are Congruent

On the other hand, the second topic is developed with one video lesson as shown in plate 3. This topic consists of discussions on methods to prove triangle congruence, properties of triangle congruence and two – column proof. It also includes the discussions on the difference of theorems and postulates. Theorems are statements that can be demonstrated to be true by accepted mathematical operations and arguments while postulates are statements that assumed to be true even without proof.

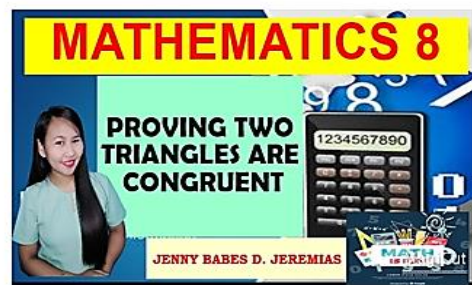


Plate 3. Video Lessons 3: Proving two triangles are congruent

Furthermore, the video lessons consist of six basic parts: title, learning competency, recall, lesson, summary, and references. Images from google, Teachers Guide and internet sources were utilized in the lessons. The developed video lessons used smartphone for video recording, microphone condenser for audio recording, Youcut and Kinemaster, a video editor downloaded at play store for editing the videos.

These video lessons are designed primarily for students who have difficulty in answering the Learning Activity Sheets (LAS). It aims to develop their capacity for self-directed learning, positive behaviour towards Mathematics. This can also be used as an intervention material for students who have difficulty in learning Mathematics, however, teachers' supervision during the utilization of the material is needed.

3) Validity of the video lessons based on DepEd LRMDS

It is important that the video lessons be validated to make them effective when utilized by the students. The developed video lessons underwent validations from five (5) experts. Based on the evaluation ratings, the videos were highly acceptable and highly relevant in terms of content quality, instructional delivery, technical quality and mechanics. Likewise, the videos were also considered as highly appropriate and usable. Therefore, the developed videos were acceptable to very satisfactory ratings. Hence, it can be concluded that these video materials were substantial and may help improve students' mathematical skills.

A. Content Validity. Table 3A.1 present the content validity of the video lessons evaluated by the experts by the use of an instrument provided by the DepEd. The evaluators examined the material and were guided by the evaluation instrument and made considerations about the extent to which the resource meets the criteria.

Table 3 A 1: Content Validity

Content Validity Indicators	Solving Corresponding Parts of Congruent Triangles		Proving two triangles are congruent	
	Mean	Desc.	Mean	Desc
1. Content is consistent with topics/skills found in the DepEd Learning Competencies for the subject and grade level it was intended.	4.00	VS	4.00	VS
2. Concepts developed contribute to enrichment, reinforcement, or mastery of the identified learning objectives.	4.00	VS	4.00	VS
3. Content is accurate	4.00	VS	4.00	VS
4. Content is up-to-date	4.00	VS	4.00	VS
5. Content is logically developed and organized.	4.00	VS	4.00	VS
6. Content is free from cultural, gender, racial, or ethnic bias.	4.00	VS	4.00	VS
7. Content stimulates and promotes critical thinking.	3.80	VS	3.80	VS
8. Content is relevant to real-life situations.	3.60	VS	3.60	VS
9. Language (including vocabulary) is appropriate to the target user level.	3.80	VS	3.60	VS
10. Content promotes positive values that support formative growth.	3.80	VS	3.60	VS
Overall Mean	3.90	VS	3.86	VS

Legend: Desc – Description VS – Very Satisfactory

It can be observed from the table that there are four (4) indicators which did not receive perfect ratings from the evaluators with regards to the two topics. These are: Content stimulates and promotes critical thinking, is relevant to real-life situations, Language (including vocabulary) is appropriate to the target user level and promotes positive values that support formative growth. The ratings for the first topic about solving two triangles are congruent are 3.80, 3.60, 3.80 and 3.80 respectively. While for the second topic, the ratings are 3.80, 3.60, 3.60 and 3.60 accordingly. This means that there is still needed to review and make some changes in the said indicators to gain the highest ratings. However, the rest of the indicators yielded a perfect score which means that video lessons are substantial, ready and usable. This also indicates that the video lessons meet the needs of the learners and suited to their level.

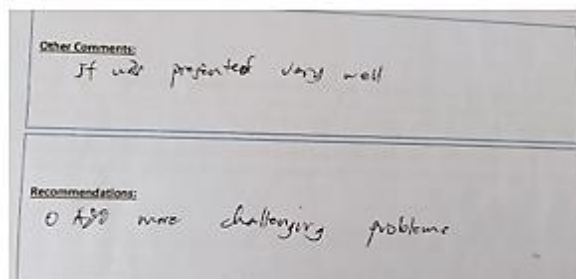


Plate 4: Comment on Content Quality

The expert's comment shown in plate 4 was to add more challenging problems. This was taken into consideration by researcher to improve the content quality. The researcher added more challenging problems in the quiz

part of the video lesson to learn if the students really understand the lesson.

B. Instructional Delivery. Presented in table 3A.2 are the results of the evaluation by the experts about the video lessons relative to instructional delivery. It can be noted that there is only one indicator that did not meet the highest score of four (4) which is the feedback on target users' responses is effectively employed with the mean rating of 3.80 for both topics which is described as very satisfactory. This means that there is a certain part of the video lessons that needs to provide immediate feedback on the part of the viewers. This indicates that

the materials provided a space interaction among the students, the teacher, the content, and dispositions of the students needed for learning.

Other indicators gained the highest rating of four (4) which are all described as very satisfactory. It means that the learning objectives of the lessons are attainable, realistic within end results and the level of the instructions of the material is appropriate for the learners.

Table 3 A 2: Instructional Delivery

Instructional Quality Indicators	Solving Corresponding Parts of Congruent Triangles		Proving two triangles are congruent	
	Mean	Desc.	Mean	Desc.
1. Purpose of the material is well defined.	4.00	VS	4.00	VS
2. Material achieves its defined purpose.	4.00	VS	4.00	VS
3. Learning objectives are clearly stated and measurable.	4.00	VS	4.00	VS
4. Level of difficulty is appropriate for the intended target user.	4.00	VS	4.00	VS
5. Graphics / colors / sounds are used for appropriate instructional reasons.	4.00	VS	4.00	VS
6. Material is enjoyable, stimulating, challenging, and engaging.	4.00	VS	4.00	VS
7. Material effectively stimulates creativity of target user.	4.00	VS	4.00	VS
8. Feedback on target user's responses is effectively employed.	3.80	VS	3.80	VS
9. Target user can control the rate and sequence of presentation and review.	4.00	VS	4.00	VS
10. Instruction is integrated with target user's previous experience.	4.00	VS	4.00	VS
Overall mean	3.98	VS	39.80	VS

Legend: Desc – Description VS – Very Satisfactory

Furthermore, the material is perfectly evaluated so that it stimulates the interest of the students and will find it enjoyable and challenging for them. Another thing is

that, the material objectively reflects the users' background and experiences.

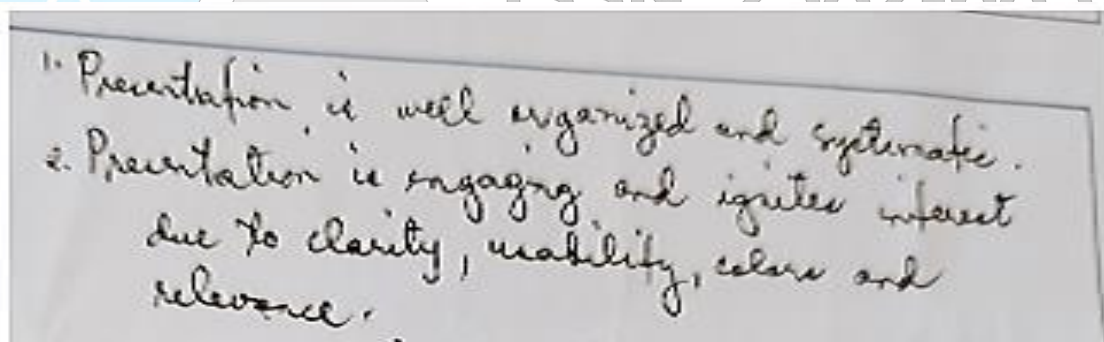


Plate 5: Comment on Instructional Quality

Plate 5 shows the comment of the expert on instructional quality. This means that the material used was effective in the teaching learning process. The researcher made sure that the video lessons were engaging, systematic, reliable and well-organized.

C. Technical Quality. Shown in table 3A.3 were the results of the evaluation of the experts on the video lessons in terms of technical quality. It can be observed

that the rating for visuals sustained interest and did not distract user's attention gained the mean score of 3.80 and 3.60 respectively for both topics while the rest of the indicators gained the perfect score of 4.00 and described as very satisfactory. It means that an additional refinement is to be made about the visuals of the material so as not to distract the user's attention. However, the material possesses the technical qualities that the users should need.

Table 3 A 3: Technical Quality

Technical Quality Indicators	Solving Corresponding Parts of Congruent Triangles		Proving two triangles are congruent	
	Mean	Desc	Mean	Desc
1. Audio enhances understanding of the concept.	4.00	VS	4.00	VS
2. Speech and narration (correct pacing, intonation, and pronunciation) is clear and can be easily understood.	4.00	VS	4.00	VS
3. There is complete synchronization of audio with the visuals, if any.	4.00	VS	4.00	VS
4. Music and sound effects are appropriate and effective for instructional purposes	4.00	VS	4.00	VS
5. Screen displays (text) are uncluttered, easy to read, and aesthetically pleasing.	4.00	VS	4.00	VS
6. Visual presentations (non-text) are clear and easy to interpret	4.00	VS	4.00	VS
7. Visuals sustain interest and do not distract user's attention.	3.80	VS	3.60	VS
8. Visuals provide accurate representation of the concept discussed.	4.00	VS	4.00	VS
9. The user support materials (if any) are effective.	4.00	VS	4.00	VS
10. The design allows the target user to navigate freely through the material.	4.00	VS	4.00	VS
11. The material can easily and independently be used.	4.00	VS	4.00	VS
12. The material will run using minimum system requirements.	4.00	VS	4.00	VS
13. The program is free from technical problems.	4.00	VS	4.00	VS
Overall Mean	3.98	VS	3.97	VS

Legend: Desc – Description VS – Very Satisfactory

The video lessons therefore adhered to clear understanding of the lessons and could already grab the student's attention, spark curiosity, and provided value to the course content. Further, it can be an effective,

powerful medium and supportive material in relation to students' learning task that ensured effective and meaningful results.

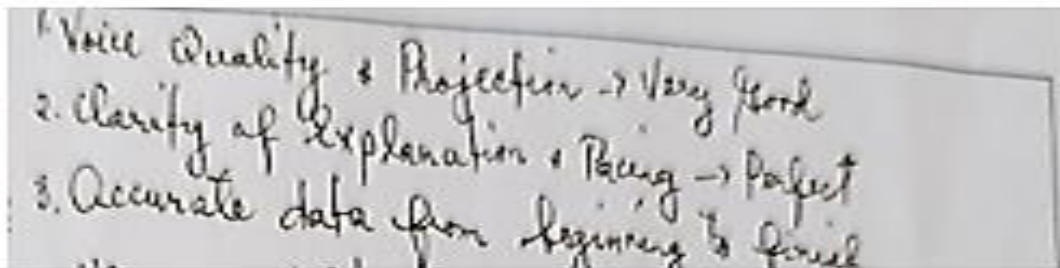


Plate 6: Comment on Technical Quality

Plate 6 shows the comment of the expert on technical quality. It shows that the video lesson was well crafted. The technical quality of the video lesson was taken into account by the researcher to make it more interesting and more enjoyable for the learners.

D. Mechanics. Table 3A.4 presents the evaluation results of the experts along the mechanics of the video lessons. It is revealed in the table that the video lessons in terms of mechanics gained the perfect scores for both topics.

This indicates that no errors were found in the material. This implies that the material found to be ready and usable for the users.

Table 3 A 4: Mechanics

Mechanics Indicators	Solving Corresponding Parts of Congruent Triangles		Proving two triangles are congruent	
	Mean	Desc.	Mean	Desc.
1. Conceptual errors	4.00	Not Present	4.00	Not Present
2. Factual Errors	4.00	Not Present	4.00	Not Present
3. Grammatical and / or typographical errors	4.00	Not Present	4.00	Not Present
4. Other errors (i.e., computational errors, obsolete information, errors in the visuals, etc.	4.00	Not Present	4.00	Not Present
	4.00	Not Present	4.00	Not present

Legend: Desc – Description VS – Very Satisfactory

Summary of the Experts' Validation of the Video Lessons

Table 3A.5 present the summary of the validity of the video lessons in the topic solving corresponding parts of congruent triangles and proving two triangles are congruent evaluated by the experts by the use of an instrument provided by the DepEd. The evaluators examined the material and were guided by the evaluation instrument and made considerations about the extent to which the resource meets the criteria.

It can be observed from the table that the computed average scores for solving corresponding parts of congruent triangles in terms of content, instructional, technical qualities and other findings are 39.00, 39.80, 51.80 and 16.00 respectively.

Table 3 A.5: Summary of Experts Validation Sheet

FACTORS	Required Points	Solving Corresponding Parts of Congruent Triangles		Proving two triangles are congruent	
		Average	Desc.	Average	Desc.
Content quality	30-40	39.00	Passed	38.60	Passed
Instructional quality	30-40	39.80	Passed	39.80	Passed
Technical quality	39-52	51.80	Passed	51.60	Passed
Mechanics	16	16.00	Passed	16.00	Passed

Legend: Desc – Description

The table also presents the evaluation results made by the experts as to the validity of the material with respect to the topic proving two triangles are congruent. It can be observed from the ratings for solving corresponding parts of congruent triangles in terms of content, instructional, technical qualities and other findings are 38.60, 39.80, 51.60 and 16.00 respectively. These values are also described as passed.

Because of these acceptable results and in which the material met all of each evaluation criterion, the video lessons were finalized and administered to the students without further validation.

The findings are strongly supported in the study of Robles and Acedo (2019) in their findings that the educational video tutorials which they have developed attained a great extent of validity. The experts evaluated educational videos as highly acceptable and highly relevant. They concluded that the content of the educational video tutorials is highly valid. According to them as rated by the Master teachers, the video tutorials possessed a high extent of applicability since the developed videos were highly usable and highly appropriate. Further they asserted that the videos are highly useful in enhancing the 21st-century skills of the students at the same time,

increase students' retention. Furthermore, they recommended that the developed videos were appropriate to assist both the teachers and students in improving the teaching-learning process.

4. Difference between the Performance of the Students in the Pre-test and Post-test using LAS 5 and LAS 6 along Solving Corresponding Parts of Congruent Triangles and Proving Two Triangles Are Congruent.

Table 4 presents how effective the video lessons are in improving the performance level of the students. It is presented in the table that the computed t value of 6.24, 14.55 and 15.48 are greater than the tabular value of 2.045 when the degree of freedom is 29 at .05 level of significance.

Table 4. Difference between the level of performance of the respondents along the identified topics in the Pre-test and Posttest.

Statistical Bases	Statistical Analysis	
	Solving Corresponding Parts of Congruent Triangles	Proving Two Triangles are Congruent
Df	29	29
Level of significance	.05	.05
Tabular Value	2.045	2.045
Computed t	6.24	14.55
Decision on Ho	Reject	Reject
Interpretation	Significant	Significant

Legend: Df – Degree of Freedom

Thus, the null hypothesis of no significant difference between the pre-tests and posttests are rejected. Therefore, there are significant differences in the pre-tests and posttests of the students using LAS 5, LAS 6 through video lessons along the identified topics.

This indicates that video lessons are effective tools to use in improving the performance levels of the students. When the teachers show resourcefulness in preparing instructional materials and by using them appropriately, there could be a more meaningful teaching and learning process. The lessons are being reinforced and emphasis is on what are being delivered. This implies that integrating video lessons in mathematics will result to a better performance among the students.

The results are also clearly mentioned by Darling-Hammond, Zielezinski, & Goldman (2017) which revealed that when mathematics teachers practice technology strategically, more students especially those students who struggle are provided with opportunity to learn mathematics skills more effectively, close their achievement gaps, and have a better chance for a productive future.

IV. CONCLUSION

On the light of the findings, the following conclusions are drawn.

1. The performance level of the students in the topics along solving corresponding parts of congruent triangles and proving two triangles are congruent in the pre-test are both described as did not meet expectations. The performance level of the students in the topics along solving corresponding parts of congruent triangles and proving two triangles are congruent in the posttest are both described as fairly satisfactory. Video lessons can be developed and utilized to improve the performance level of the students in Mathematics.
2. The video lessons that were developed passed the expert validation.
3. There were significant differences in the pre-tests and posttests of the students using LAS 5, LAS 6 through video lessons along the identified topics.

V. RECOMMENDATIONS

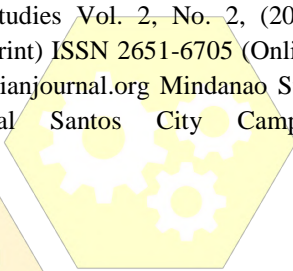
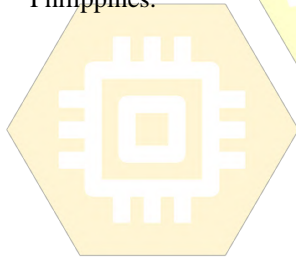
Based on the conclusions, the following recommendations are made.

1. Teachers teaching the mathematics subject may provide activities, exercises and other materials to help develop the knowledge and skills of the students.
2. Video lessons that were developed by the researcher may be adopted and utilized by other mathematics teachers to improve the performance of the students.
3. Collaboration between the school administrators and teachers may be done to support the teachers in developing instructional materials.
4. The DepEd may create policies and guidelines as basis for the schools in developing instructional materials like gaming, video lessons and other virtual lessons.
5. Researchers may conduct another study similar to the present study which may also develop other kinds of instructional materials to improve the performance level of the students.

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