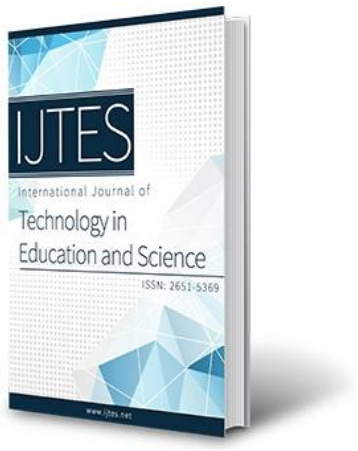

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Jorelyn E. Insorio
Pacific InterContinental College/ Pacita Complex National High School, Philippines

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Video Lessons via YouTube: Supplementary Learning Materials for the National Learning Camp

Jorelyn E. Insorio

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Abstract

The National Learning Camp (NLC) serves as the national recovery program of the Philippine Department of Education (DepEd) using a camp-like learning experience. Hence, learning materials were distributed to the students, and teacher-student interaction was limited to forty-five minutes, insufficient to cover all required lessons. So, teacher-made video lessons aligned with the learning modules were shared with the students via a YouTube channel to address the problem. The study used a practical action research design aiming to supplement the learning materials of the national learning camp for Grade 7 students. The participants were sixty grade 7 students selected purposively. The validated survey questionnaire, interview guide, and reflection notes from the experts in mathematics education were used to collect data. Findings revealed that the teacher-made video lessons via YouTube supplement the learning materials of the national learning camp. The students evaluated the said interventions as effective materials in terms of content, audio-visual presentation, usefulness, and aesthetic value. The video lessons were easy for the students to understand since the mathematics teacher explained the content loudly and aligned it with the students' workbooks. However, the students requested more video lessons with more examples and explanations in the Filipino language to understand the content better.

Introduction

The 2022 Programme for International Student Assessment (PISA) reveals that Philippine students continue to be the least competent in reading, mathematics, and science (Organisation for Economic Co-operation and Development, 2022). According to the most recent PISA 2022 test scores, the nation's PISA 2018 performance did not increase significantly. Because of the poor student assessment performance seen in recent years, the Philippine education system has launched a learning recovery program. The Philippine government has adopted several educational programs, initiatives, and policies to reduce the gap and improve academic quality. One of the initiatives is establishing the National Learning Camp (NLC) (Maguate et al., 2024). The NLC promotes quality education regarding SDG 4 to ensure accessible, quality, and inclusive education for all (Espinosa & Guevara, 2024). The Department of Education (DepEd) is committed to addressing the learning loss brought about by COVID-19 and providing appropriate support so that all learners can meet their needs transformatively and

developmentally through concrete, creative, computation-enhanced pedagogy. Quality education, or Sustainable Development Goal (SDG) 4, is encouraged by NLC to ensure inclusive, equitable quality education and life-long learning opportunities for all (Espinosa & Guevara, 2024).

The Philippine Department of Education (DepEd) is committed to mitigating learning loss brought about by the COVID-19 pandemic and jumpstarting all students towards meeting their learning needs (DepEd Order No. 014, s. 2023). Furthermore, as outlined in the DepEd MATATAG: Bansang Makabata, Batang Makabansa agenda, a learning recovery program is required to eliminate learning loss. As a result, the NLC is established beginning with the 2022-2023 school year. The NLC is a nationwide volunteer recovery program that starts at the end of the school year and strives to improve learning outcomes while upgrading teachers' teaching competencies (David et al., 2024). Related to student involvement and welfare, inclusive education and an enjoyable classroom atmosphere belies nurturing academic excellence among teachers as successful people teaching well seems one of the focus of this initiative (Visca & Pelayo, 2024).

The DepEd implements the NLC to enhance learning outcomes and build the capacity of teachers for better teaching skills (Espinosa & Guevara, 2024). This voluntary program is implemented gradually, beginning in the school year 2022-2023, focusing on English, Science, and Mathematics, and continues every school year (DepEd Order No. 014, s. 2023). The first NLC occurred from July 24 to August 25, 2023, and was intended to benefit K–12 public elementary and secondary school students. Three days per week are set out for teacher-student engagement, while the other two days are reserved for teachers to plan and share their knowledge and experiences through Learning Action Cell (LAC) sessions.

Learners may be assigned to any camp based on pre-assessment scores or academic achievements. Each class in the camps has a maximum of 35 students for enhancement camp or consolidation camp but a maximum of 10 students only for intervention camp (DepEd Order No. 014, s. 2023). The duration and activities of each camp vary. Participants who satisfy the camp's objectives are awarded a certificate of completion, while teachers who participate in the NLC receive a certificate of recognition and service credits with allowance (Visca & Pelayo, 2024). The NLC is expanded to include more grade levels and learning domains for the following school year (DepEd Order No. 014, s. 2023). The DepEd wants to implement the NLC throughout all grade levels and topics in the future academic years.

The second NLC is implemented on July 1 – 19, 2024, comprising three weeks for the students under Grades 1 to 3 and Grades 7 to 10 in the school year 2023-2024 (Regional Memorandum No. 281, s. 2024). Lesson plans are provided for the teachers, while workbooks are provided for the students. Regarding teaching contact, three 45-minute daily lessons for three days a week are intended for intervention camp, consolidation, and enrichment camps (Regional Memorandum No. 281, s. 2024). The NLC promotes personal growth by boosting students' self-confidence, encouraging a growth mentality, and raising self-awareness. It also improves character development by encouraging accountability, integrity, honesty, resilience, and responsibility (Espinosa & Guevara, 2024). However, a three-week span provides short teaching and learning time to cover the lessons found in the learning materials and develop the target competencies. Hence, teaching guides and written materials must be provided to

implement structured learning tasks, cover lessons in a home-based setup, and ensure competencies are developed (DepEd Order No. 014, s. 2023).

NLC has been proven to enhance learners' numeracy and literacy skills (Maguate et al., 2024). To be sure, challenges get in the way of students markedly raising their performance levels — from both an instructive and a skill standpoint. Students' challenges during the first NLC implementation are the delivery of lessons and time management, teacher collaboration difficulty, inappropriate learning content, and knowledge application (David et al., 2024). In addition, there have been concerns that the NLC needs to identify learners needing help and deprives teachers of relaxation time (Visca & Pelayo, 2024). So, these challenges may only continue if adequately addressed. Contextualization and modification must be made to make the lesson appropriate. However, to address the delivery of lessons and time management, online supplementary video lessons as an intervention may be used so that the student may cope with learning problems (Timbreza, 2022).

In the local setting, Pacita Complex National High School is a public secondary school offering NLC at the end of the school year. Considering its context, students who attended the first NLC suffered learning difficulties such as difficulty understanding the lesson and too many lessons to cover with the short teaching and learning time. In addition, the student learning workbook does not discuss lessons or give examples to guide the students in answering the written activities. Only activities to be answered are present in the workbook. Hence, the students needed help answering the questions. So, teacher-made video lessons are crafted to supplement the learning materials and student-teacher interaction. The video lessons are uploaded to the YouTube channel to make them accessible anytime. Hence, the teacher instructs the students to watch the video lessons a day before the regular classes, but the students need to make a short reflection note about the video lessons.

The study benefits the students by reinforcing their learning even after school hours by watching the teacher-made video lessons via YouTube. Also, the study gives new insights into helping students through the teacher-made video lessons that consider students' needs. Hence, it inspires teachers to construct interventions like video lessons as a way of helping their students. Moreover, it serves as literature on utilizing teacher-made video lessons via YouTube rather than available videos online. Hence, teachers must develop and apply new learning approaches by integrating technology to deliver education through videos (Nabayra, 2023).

Literature Review

Previous studies have also highlighted video as a technological tool in teaching (Nabayra, 2023). Much research has addressed the benefits of videos in education (Dong, 2016; Insorio & Macandog, 2022; Nabayra, 2020). In addition, students feel that videos are suitable mathematics learning materials (Rauf & Fauziah, 2021). Hence, the students can revisit the lesson anytime, and the teacher is free from student interaction (Nielsen, 2023). So, students responded positively to concepts or lessons illustrated in nature when teachers incorporated videos.

Complex lessons can be explained via videos, which are a better choice. It will be interesting for the students as in some of my learning activities, images are added to complement (Caratiquit, 2022). Additionally, videos have

pause-and-play, allowing students enough time to comprehend the lesson (Antonio, 2022). So, videos are suitable learning materials for students since they prefer to watch rather than read instructional materials.

On the other hand, video lessons help struggling students cope with mathematics lessons (Insorio et al., 2023). Also, video lessons effectively improve students' mathematics performance (Gratela & Janer, 2022; Jeremias & Carretero, 2022). Moreover, video lessons have proven to be supplementary learning materials for struggling students during the pandemic (Insorio & Macandog, 2022; Perez, 2023; Timbreza, 2022). However, these have yet to be proven after the pandemic. So, verifying whether video lessons still contribute much to students' learning is essential.

The teacher-made video lesson is an effective intervention material for improving student's mathematics performance because of the activities that the students can work on (Timbreza, 2022). Also, teacher-made video lessons can help students track their learning and enhance flexibility in mathematics education delivery (Nabayra, 2022). The video lessons created by the teacher help the students grasp the mathematical lesson and generate delight among the students since they visually see their teacher on the screen (Insorio & Macandog, 2021). So, the video lesson must be created by the teacher of the students who will consume them.

Video lessons help struggling students master the curriculum and promote student-teacher engagement (Nabayra, 2023). They also enhance students' engagement and motivation in mathematics learning (Mendeja & Chavez, 2024). So, teachers are encouraged to create video lessons for their students' consumption to supplement their teaching (Perez, 2023). If teachers create video lessons for their students, they are encouraged to consume them.

On the other hand, anyone can access YouTube. YouTube is useful for teachers in imparting curriculum through videos created and published on YouTube (Widiastuti & Hidayati, 2023). Many studies have demonstrated that using YouTube in education has enhanced students' involvement, understanding, and total contentment (Insorio & Macandog, 2022; Jia, 2019; Lausa et al., 2021). Mohamed and Shoufan (2022) reveal that YouTube is an excellent source for self-directed learning outside the classroom. So, YouTube is the best platform for video lessons that are accessible and preferred by students. YouTube is a handy, inventive, and authentic teaching tool that can be appropriately utilized (Sakkir et al., 2020). The utilization of YouTube in the classroom has captivated students' interest.

Using YouTube videos allows students to develop their creative freedom and drives them to higher studies because it also adds a perspective by following the school setting (Caratiquit, 2022). Teachers must use YouTube to get students interested in learning something. Moreover, video lessons published on YouTube show picture and auditory representations, allowing teachers to give learning resources to the students (Widiastuti & Hidayati, 2023). Similarly, investigating YouTube video lessons as supplementary materials is timely (Caratiquit, 2022).

Teacher-made video lessons via YouTube have been investigated as suitable supplementary learning materials (Caratiquit, 2022; Insorio & Macandog, 2021; Perez, 2023; Widiastuti & Hidayati, 2023). However, they must still be utilized in a camp-like learning experience for students like NLC. Previous studies covered the analysis of

YouTube learning videos from several current YouTube channels. Hence, limited studies have been conducted on the use of video lessons via YouTube for summer camp. In contrast, the present study employs YouTube teacher-made video lessons as additional learning materials for NLC in a newly introduced Philippine learning recovery.

Theoretical and Conceptual Framework

The study supports Richard Mayer's Cognitive Theory of Multimedia Learning, which states that multimedia learning helps only people who learn through videos (Mayer, 2024). Determining the brain's information processing mechanism is the first step toward comprehending why multimedia learning is so effective. Mayer (2024) explained that the brain receives and analyzes information based on video content. It might go via several different pathways depending on how it is delivered. The first channel is for optically displayed material, while the second is for auditory portrayed material. The information is processed using the visual channel when a learner is provided visual data, such as a video. The auditory input is subsequently processed separately from the visual information, such as narratives and other nonverbal sounds. So, an audio-visual video presentation must convey important information.

The Cognitive Theory of Multimedia Learning is essential as it highlights the portrayal of multimedia learning via visually and auditorily depicted content, teacher-made video lessons being one such case. The student integrates past experiences and knowledge through visual-auditory modeling. The new memory is stored in long-term storage after processing it with all its functions engaged. On the other hand, entertainment fosters a student's interest and curiosity (and imagination in general) about something that facilitates learning and satisfies creativity. Meanwhile, the Interest Stimulation Theory by Timbreza 2022 claims that video makes students create things more beautifully, resulting in better learning. Instead, videos that deliver instructional content must be engaging to avoid getting students' attention and spirit easily (Widiastuti & Hidayati, 2023). So, aesthetic value is vital in motivating students to watch videos.

Figure 1 depicts the study's framework. The teacher-made mathematics video lessons via YouTube serve as supplementary learning materials for NLC, which are to be evaluated by the students in terms of content, audio-visual presentation, usefulness, and aesthetic value. Also, the strengths and weaknesses of video lessons are elicited from the students via interviews to serve as a basis for reflecting practices. Then, suggestions for improvement are asked from the students to improve practices.

Ou et al. (2019) designed and developed video lessons following the seven-principle model. The effectiveness of video lessons was determined using students' perceptions with high ratings. However, students suggested having more examples for application, exercises to practice, and more depth in the lesson's content. On the other hand, Rahmawati (2021) and Yunita and Suprapto (2021) found that video lessons via YouTube could be better and still need improvement. So, the study elicits the students' suggestions for improving teacher-made video lessons.

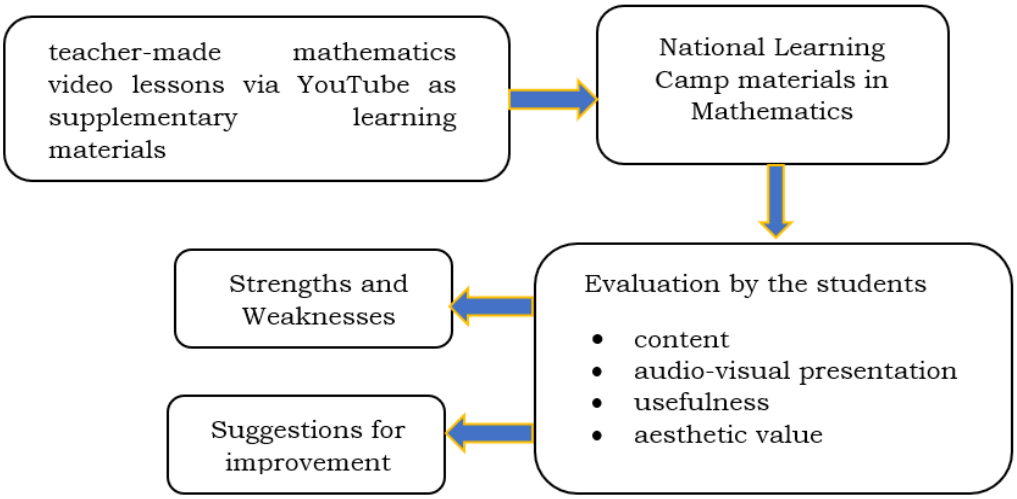

Figure 1. Conceptual Paradigm

The students learn most when teachers vary their instructional delivery and use as many interventions as offering learners numerous opportunities to comprehend the lesson through the most dynamic and engaging multimedia learning (Eren & Ergulec, 2020). Multimedia learning can be done through video lessons shared with the students on an accessible platform. So, the study utilizes YouTube video lessons as supplementary learning materials for NLC students. YouTube is chosen as a platform since students love watching videos on it (Insorio & Macandog, 2022).

Eighteen lessons from NLC learning materials are considered in the video lesson development. The video lesson spans 12 to 17 minutes, and the title is accessible via the NLC FOR GRADE 7 MATH YouTube channel. The eighteen video lessons can be accessed anytime and anywhere if the mobile device has an internet connection. Hence, the instruction to the students is given via group chat so that the students are guided in watching the video and producing a reflection note.

The creation of video lessons followed the four instructional methods to facilitate learning with video lessons: learning by examples, learning by doing, providing feedback, and learning through reflection (Ou et al., 2019). The teacher demonstrates in the video lessons how to solve mathematical problems, gives activities for the students while watching, asks for student's feedback, and requires the students to construct a reflection note. The teacher is always visible in the video lessons, conversing with the viewer to encourage the students to watch on-screen. Both words, audio, and graphics are present in the video lessons because students learn better by combining these elements (Clark & Mayer, 2016)

The link to the NLC FOR GRADE 7 MATH channel is given to the students via group chat, including instruction, a day before the regular classes as an asynchronous activity. However, the students must write a reflection note for every video lesson to be submitted during face-to-face classes. Hence, students may ask the teacher for clarification or questions in regular classes.

Figure 2 depicts the YouTube channel as a platform for teacher-made video lessons. The video lessons are aligned

with the content of the workbook learning material given to each student. However, the YouTube channel served as a platform for uploading and sharing teacher-made video lessons, which the students can access via https://www.youtube.com/channel/UCU5PW6hEl5JYgVS4lkAJhsA. Hence, students must subscribe to keep updated on the latest uploaded video lessons.

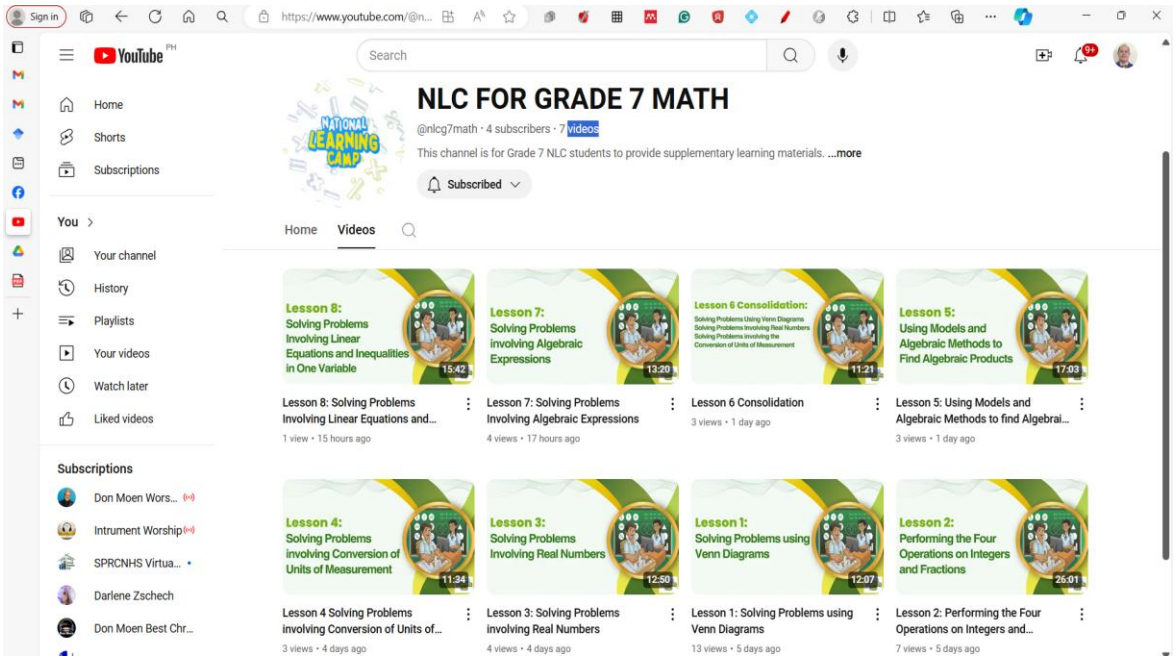

Figure 2. YouTube Channel for Teacher-made Video Lessons

Table 1 depicts the title of the video lessons found in NLC FOR GRADE 7 MATH. The video lesson titles are taken from the lesson titles in the student's workbook to ensure clarity. The teacher explains the mathematics content in the video using the English language and the same template to create a video identity. Hence, the video lessons review the previous lesson, present and discuss a new lesson, provide exercises with answers, and application of mathematics concepts.

Table 1. Lesson Titles in NLC FOR GRADE 7 MATH

Lesson Number	Title
1	Solving Problems Using Venn Diagrams
2	Performing the Four Operations on Integers and Fractions
3	Solving Problems Involving Real Numbers
4	Solving Problems involving the Conversion of Units of Measurement
5	Using Models and Algebraic Methods to Find Algebraic Products
6	Consolidation
7	Solving Problems involving Algebraic Expressions
8	Solving Problems Involving Linear Equations and Inequalities in One Variable
9	Identifying and Applying Relationships of Angles at a Point and on a Straight Line
10	Identifying and Applying Relationships among Angles formed by Parallel Lines cut by a

Lesson Number	Title
	Transversal
11	Identifying and Applying Relationships among the Parts of a Circle
12	Solving Problems involving Algebraic Expressions
13	Solving Problems involving Sides and Angles of a Polygon
14	Organizing Data in Tables and Using Appropriate Graphs to represent Organized Data
15	Calculating the Measures of Central Tendency of Ungrouped Data
16	Calculating the Range and Standard Deviation of Ungrouped Data
17	Using Appropriate Statistical Measures in Analyzing and Interpreting Statistical Data
18	Organizing Data in Tables and Using Appropriate Graphs to represent Organized Data

Widiastuti and Hidayati (2023) analyzed the YouTube-based learning videos of teachers in terms of content, graphics, language, and presentation. They found that videos via YouTube may be utilized as supplementary materials for traditional learning in the classroom. On the other hand, students' perceptions can be used to evaluate the teacher-made video lesson in terms of objectives, aesthetic value, audio-visual presentation, content, contextualization, design, and usefulness (Timbreza, 2022). However, Nabayra (2023) evaluated the teacher-made videos in terms of acceptability for objectives, content, format and design, learning activities, organization and presentation, and assessment during the pandemic. They concluded that teacher-made videos are appropriate learning resources for online learning during the pandemic. Nevertheless, it has yet to be proven in the post-pandemic time wherein face-to-face classes are back again, particularly in a camp-like learning experience for the students.

Research Questions

This study aimed to supplement the learning materials of the national learning camp through teacher-made mathematics video lessons via YouTube based on the evaluation of Grade 7 students. The following research questions were addressed at this moment. 1. What is the student's evaluation of the teacher-made mathematics video lessons as supplementary learning materials for a national learning camp in terms of content, audio-visual presentation, usefulness, and aesthetic value? 2. How do the teacher-made mathematics video lessons supplement the students' learning materials? 3. What are the strengths and weaknesses of teacher-made video lessons via YouTube based on the students' perceptions? 4. What are the students' suggestions for improving the teacher-made mathematics video lessons as supplementary learning materials for a national learning camp?

Method

Research Design

The study used a practical action research design to address the local problem in NLC delivery, such as limited time for teacher-student interaction to cover the lessons found in the learning materials through teacher-made video lessons as supplementary learning materials. Practical action research involves solving local problems in practice with the expectation of discovering quick answers or solutions to those problems by the practitioners

(Mertler, 2020). So, action research was the best design for the study.

Participants of the Study

Purposive sampling was used in the study to select the participants. Purposive sampling is a method in which participants are picked purposefully to give vital information based on criteria (Taherdoost, 2016). Sixty Grade 7 students enrolled in the Pacita Complex National High School consolidation camp for the National Learning Camp 2024 served as the target participants. The said students needed intervention compared with the students under enhancement camp. Out of sixty, fifty-five have an internet connection in their houses. Of these, nine have laptops, two have tablets, and forty-nine have cell phones. Also, since the teacher-made video lessons were based on the Grade 7 mathematics learning materials, Grade 7 students were the best participants. Hence, video lessons were validated by two master teachers and a supervisor because these must pass expert validation before their use (Jeremias & Carretero, 2022).

Instrumentation

The study used an adapted survey questionnaire from Timbreza (2022) and Nabayra (2023) with some modifications to suit the study's context. The questionnaire had four demographic variables and twenty-eight statements for evaluating teacher-made mathematics video lessons via YouTube as supplementary learning materials for an NLC. The video lessons were evaluated based on their content, audio-visual presentation, usefulness, and aesthetic value.

On the other hand, the interview guide had seven open-ended questions intended to elicit qualitative data responses to answer the research questions. However, the reflection notes had only three open-ended questions to verify whether the students were consuming the video lessons collected during class hours. Moreover, all instruments were validated by a group of experts in mathematics education. Hence, content validation was established through the sound judgment of a group of experts. Experts' suggestions such as simplicity of the statement, using local language, proper punctuation marks, and proper use of words were carefully included in the revised version of the questionnaire and interview guide.

Table 2 depicts the questionnaire's reliability analysis using Cronbach's alpha. The questionnaire has good or excellent reliability indices, which signify the item's internal consistency, which means that it is reliable. The reliability indices were computed using the actual data.

Table 2. Reliability Analysis Using Cronbach's Alpha Questionnaire

Variable	n	α	Interpretation
Content	7	.890	Good
Audio-Visual Presentation	7	.932	Excellent
Usefulness	7	.927	Excellent
Aesthetic value	7	.896	Good

Data triangulation was used to establish rigor in action research (Mertler, 2021). Data were obtained using a survey questionnaire, students' reflection notes, and semi-structured interviews. The study could validate the accuracy of the overall data and clarify interpretations using numerous means of data collection. Hence, the findings' credibility and data accuracy were established (Mertler, 2022).

Data Collection

After instrument validation, permission from the school head was secured with the approval of a head teacher. Then, the link to the video lessons via YouTube, including the instructions, was given in the group chat on July 1-19, 2024. Hence, students -were instructed to construct a reflection note for each video lesson watched. A reflection note was collected every class hour, and the students might ask for clarification or additional explanation regarding the video lesson.

After three weeks, a survey questionnaire was distributed to the participants and was collected right after. Semi-structured interviews were conducted in the first week of August 2024 for 30 students who participated in NLC. All data were kept secret, and only the researchers had access. However, to ensure data validation, the transcript and data analysis were returned to the participants for their consent and to confirm the accuracy of the data as a member checking. Hence, member checking was done on the third week of August 2024. Member checking allowed the researcher to verify the correctness of participant voices by allowing them to accept or deny the data's completeness and accuracy (Candela, 2019). Also, member checking plays a significant role in confirming the outcomes of any action research project (Mertler, 2021).

For positionality, the researcher was the NLC teacher who implemented the intervention. She had direct contact with the students to help them learn more and better. Personal biases and influence on the students were set aside to make the study focus on objective and elicit merely facts. To avoid bias in data analysis, she consulted a master teacher to do the data analysis. Hence, the researcher strongly believes that teacher-made video lessons were better and student-friendly than the available online videos.

Ethical Considerations

Ethical concerns must be established in any part of the research, such as obedience to authority, participant rights protection, data confidentiality and participant identity secrecy, proper data storage, and responsible research sharing (Drolet et al., 2023). Following ethical guidelines, the researcher sought email approval from the modified questionnaire's authors. Before beginning the implementation phase, a formal letter of authorization was obtained from the school heads, the parents' informed consent was secured, and assent was obtained from student participants as part of the protocol. Participation was always voluntary, with no expectation of special treatment or reward.

Also, participants were free to refuse or cease their engagement at any time without consequence. Hence, their names were not revealed to anybody, and the data obtained from them was kept secret and confidential on the

researcher's personal computer for two years. Then, it will be deleted afterward. Privacy and confidentiality were strictly always adhered to. Pseudonyms replaced the students' real names, and the data were summarized. The participants felt free to express any questions about the study to the researcher, who was ready to help. Furthermore, the findings were disseminated to a broader audience via faculty meetings, research conferences, and online publications.

Data Analysis

Data were cleaned to remove outliers, correct mistakes, and reduce bias (Aziz et al., 2019). From sixty, these were trimmed down to fifty-five. The quantitative data were analyzed using Jamovi version 2.4.14. This application allowed for the computation of median ($\tilde{x}$) and interquartile range (IQR) for data's descriptive statistics. However, thematic analysis was utilized to analyze qualitative responses to produce themes (Clarke & Braun, 2016). Following Clarke and Braun's (2016) six-phase guide, thematic analysis was used. Maguire and Delahunt (2017) enumerated the following steps: familiarization of data, generation of initial codes, looking for themes, reviewing the generated themes, giving definitions for the themes, and producing the write-up.

Results

Table 3 depicts the students' content evaluation of the mathematics video lessons. The video lesson effectively addressed lesson objectives by providing well-explained concepts, ideas, and topics in numbers, words, and math symbols. It was suitable for students' understanding levels, with varied activities and assessments anchored in learning objectives, demonstrating the importance of good learning material. Also, the video lessons presented the lesson content with workable assessments and activities. Overall, the video lesson content was highly effective supplementary learning material, as the students perceived it.

Table 3. Student's Content Evaluation of the Teacher-Made Mathematics Video Lessons

Statement	$\tilde{X}$	IQR	Interpretation
1. The video lesson illustrates the most significant part of what is taught as good learning material.	4	0	Highly Effective
2. The video lesson content is sufficient for achieving the lesson objectives.	4	0	Highly Effective
3. The video lesson content is effective supplementary learning material in addressing math misconceptions.	4	1	Highly Effective
4. The video lesson is adequate for the mathematics lesson's presentation and discussion.	4	0	Highly Effective
5. The video lesson's concepts, ideas, and topics are well explained with numbers, words, and math symbols that can easily be understood.	4	1	Highly Effective
6. The activities in the video lesson are varied, workable, and suited to the student's level of understanding.	4	1	Highly Effective
7. The assessment in the video lesson is workable and anchored in learning objectives.	4	1	Highly Effective

Table 4 presents the audio-visual presentation evaluation of the video lessons by the students. The video lesson's audio-visual presentation featured logical, sequential pictures, illustrations, and graphics, with carefully designed fonts and text for improved readability and visually aiding the message. Moreover, the speaker effectively used professional English confidently and clearly while selecting relevant facts and detailed information to reinforce the lesson. Overall, the audio-visual presentation was evaluated as highly effective by the students.

Table 4. Student's Audio-Visual Presentation Evaluation of the Teacher-Made Mathematics Video Lessons

Statement	$\tilde{X}$	IQR	Interpretation
1. The audio-visual presentation of the video lesson has appropriate pictures, illustrations, and graphics.	4	1	Highly Effective
2. The video presentation is logical and sequential and successfully delivers detailed knowledge of the lesson.	4	1	Highly Effective
3. The speaker talks appropriately for the context, utilizing professional English where necessary.	4	1	Highly Effective
4. The speaker speaks confidently, loudly, and clearly.	4	1	Highly Effective
5. The speaker selects relevant facts and detailed information to reinforce the lesson.	4	1	Highly Effective
6. The font formats and text are carefully designed to improve readability and content.	4	1	Highly Effective
7. The graphics that are visually appealing and assist the presentation's message.	4	0	Highly Effective

The video lessons were practical as additional learning material for mathematics students, as seen in Table 5. The video lesson effectively addressed students' mathematical learning needs by providing accessible, relevant, and valuable learning material. It fosters critical thinking, problem-solving, and active knowledge exploration and helps the students develop mathematical competencies by addressing their learning gaps. The students evaluated the teacher-made mathematics video lessons as beneficial supplementary learning materials.

Table 5. Student's Usefulness Evaluation of the Teacher-Made Mathematics Video Lessons

Statement	$\tilde{X}$	IQR	Interpretation
The video lesson is accessible, relevant, and useful learning material.	4	0	Highly Effective
The video lesson responds appropriately to students' mathematical learning needs.	4	1	Highly Effective
The video lesson helps the students to develop mathematical competencies.	4	0	Highly Effective
The video lesson encourages the students to think critically and solve math problems.	4	0	Highly Effective
The video lesson encourages an active search for new knowledge and ideas.	4	.25	Highly Effective
The video lesson addresses the students' learning gap in mathematics.	4	1	Highly Effective
The video lesson is valuable as supplementary learning material for mathematics learning.	4	0	Highly Effective

Table 6 shows the students' evaluation of the aesthetic value of mathematics video lessons. The video lesson was error-free, visually appealing, and creatively -designed for students, featuring pleasant color combinations and good sound quality. In addition, the video lesson created a favorable learning environment by using a visually attractive background that separates the material and images. Overall, the students evaluated the aesthetic value as highly effective.

Table 6. Student's Aesthetic Value Evaluation of the Teacher-Made Mathematics Video Lessons

Statement	$\tilde{X}$	IQR	Interpretation
The video lesson content is free from error.	4	1	Highly Effective
The video lesson content is pleasant to the eyes and ears.	4	1	Highly Effective
The video lesson is creatively created for the student.	4	1	Highly Effective
The video lesson has pleasant color combinations and good sound.	4	1	Highly Effective
The video lesson has a pleasant feeling associated with a positive mood and contentment.	4	1	Highly Effective
The video lesson creates an environment conducive to self-paced learning.	4	0	Highly Effective
The video lesson's background appeals to the learners and is distinct from the content and pictures.	4	1	Highly Effective

Figure 2 reveals that teacher-made mathematics video lessons served as the students' additional learning resources because these supplemented the learning content of the students' module. Also, the video lessons made the lesson easy to understand because they can watch the videos via YouTube anytime and repeatedly. Hence, these made the learning activities understandable to the students. In addition, after watching, additional explanations from the teacher about the lesson content allowed them to understand the activities they needed to accomplish in their learning materials. So, the video lessons via YouTube supplemented the learning materials of the NLC since the student-teacher interaction lasted for forty-five minutes.

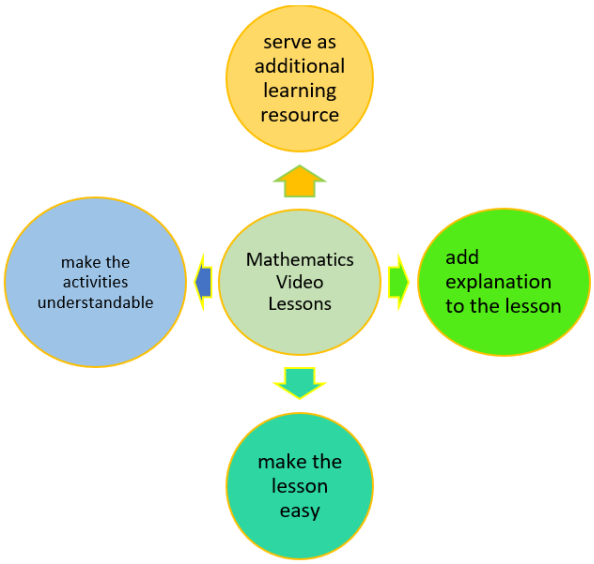

Figure 2. Themes on How Teacher-Made Mathematics Video Lessons Supplement the Students' Learning Materials

The excerpts from the interview transcript support the findings above.

> "The videos helped me because when I watch, I can answer the activities." – Student 8
>
> "Through video lessons via YouTube, I learned what was taught and answered the activities." – Student 20

Figure 3 depicts the strengths of teacher-made video lessons on YouTube based on students' perceptions. The video lessons were easy for the students to understand since the mathematics teacher explained the content loudly and aligned it with the students' workbooks. Also, the content was appropriate to the student's understanding, containing the review part and activities to be answered. Moreover, the video lessons were accessible anytime if the student's device had an internet connection and could be watched repeatedly. In addition, the review part of the video lessons prepared the students for new learning, while the activities allowed them to apply their acquired competencies.

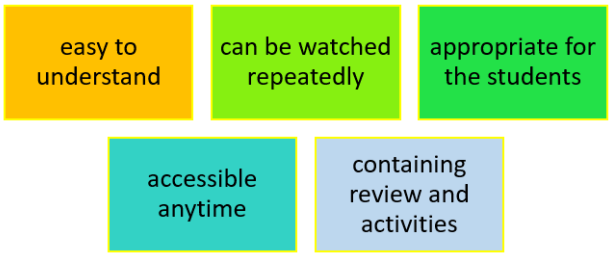

Figure 3. Strengths of Teacher-Made Video Lessons on YouTube

The findings above are supported by the participants' words from the transcripts.

> "The strength of the video lessons made by the teacher is that we understand the lesson." - Student 13
>
> "The video lessons are appropriate for us to understand the lessons." – Student 21

Figure 4 shows the perceived weaknesses of the video lessons on YouTube. Students found few examples and computation methods in the video lessons due to the limited time. Also, the teacher used the English language to explain the content with some unfamiliar words for grade 7 students. Similarly, they looked at the design as old-fashioned colors that needed to be more attractive because the teacher used plain colors only. So, video lessons can be improved by the teacher for the next NLC implementation.

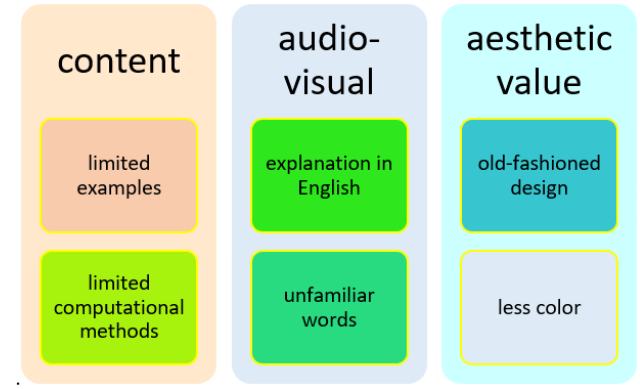

Figure 4. Weaknesses of Teacher-Made Video Lessons on YouTube

The excerpts from the interview support the findings above.

> "The weakness is that there are only a few examples that are explained in English." – Student 4
>
> "The design is not good and put a more colorful design so that viewers will like it more." – Student 9

Students' suggestions for improving video lessons are shown in Figure 5. The students requested more video lessons with more examples and explanations in the Filipino language and to use common English words to understand the content better. Also, they asked for more computational methods by the teacher in solving mathematical problems. In addition, they wanted to enhance the design of the video using more colorful text and images to make them more attractive to watch.

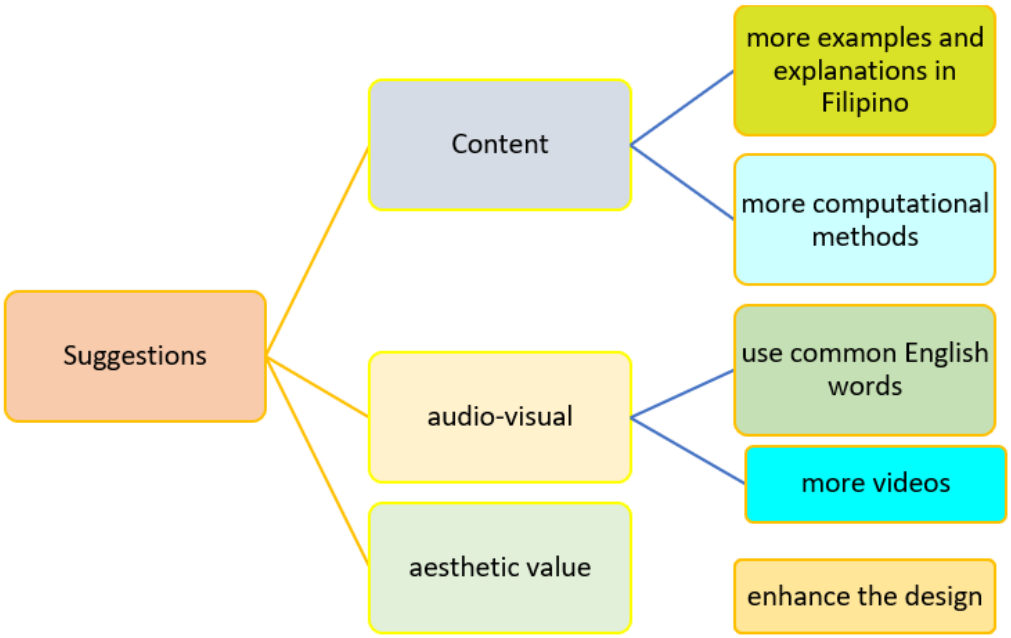

Figure 5. Student's Suggestions to Improve the Teacher-Made Video Lessons on YouTube

The interview excerpts support the findings above.

> "The teacher may add more examples and problems about the topic." – Student 7
>
> "I suggest explaining further the computation in getting the solution to the problem." – Student 24

Discussion

The study aims to evaluate teacher-made mathematics video lessons via YouTube as supplementary learning materials for the national learning camp. The students evaluate the video lesson content, audio-visual presentation, usefulness, and aesthetic value as highly effective supplementary learning materials. Hence, they serve additional learning resources that make the lesson easy to understand due to the explanations given by the teacher. Also, the video lesson can be accessed anytime in a way parallel to Nielsen's (2023) findings and contains easy-to-understand content appropriate for Grade 7 students.

Using video lessons as mathematics learning materials suits the students (Rauf & Fauziah, 2021). In addition, reviews and activities are added to the video lesson to keep the students interested while watching. The video lessons make the lesson exciting and accessible, similar to Caratiquit's (2022) findings. Also, students have control over the video lessons, which gives them flexibility and ample time to watch (Antonio, 2022). So, video lessons are proven effective as supplementary learning materials aligned with the findings of Insorio and Macandog (2022), Perez (2023), and Timbreza (2022).

However, some limitations arise, like limited examples due to limited time, purely explained in English with unfamiliar words, limited computational methods presented, and an old-fashioned background similar to the classroom. So, students' suggestions are elicited to improve the teacher-made video lessons, such as adding more examples and methods to explain using the local language, using common English words for the explanation, enhancing the background, and adding more video lessons. To sum up, the video lessons must be created by the teacher of the students who consume them to supplement the teaching and learning outside the school because it motivates and engages the students (Mendeja & Chavez, 2024). Teacher-made video lessons are suitable for the students as supplementary learning materials (Caratiquit, 2022; Perez, 2023; Widiastuti & Hidayati, 2023).

On the other hand, YouTube is the best repository of teacher-made video lessons that enhance students' understanding of the lesson (Insorio & Macandog, 2022; Jia, 2019; Lausa et al., 2021). Since most students have mobile phones and internet connections, video lessons via YouTube become more accessible. The picture and auditory elements of the video lessons via YouTube motivate the students to watch as learning resources (Widiastuti & Hidayati, 2023). So, the content, audio-visual presentation, and aesthetic value must be considered when developing video lessons.

Through multimedia learning theory, the learning content can be delivered through teacher-made video lessons that portray visual and auditory elements. The students may combine previous knowledge with the visual and audio content of the video lessons and store them as new learning in their memory. Also, interest simulation theory justifies that learning and creativity are promoted when students' curiosity and imagination are developed in video lessons (Timbreza, 2022).

The video lessons must aesthetically appeal to students' creativity to lead learning. On the other hand, the study contributes to interest simulation theory by making the teacher-made video lessons more appealing if the students feel that the video content is needed to learn. The students' excitement and interest are elicited more if the teacher motivates the students to watch the uploaded video lessons on YouTube.

The teacher admits that the action research intervention is imperfect and that lapses have been encountered. However, students' suggestions are considered in refining the teacher-made mathematics video lessons, and weaknesses are addressed for the next implementation cycle of action research. Improvement is done by considering the loopholes in the implementation and students' suggestions. Similarly, more video lessons will be uploaded to the YouTube channel and shared with the students as supplementary learning resources.

Conclusions

The students evaluate the teacher-made mathematics video lesson as highly effective supplementary learning materials for a national learning camp. The content, audio-visual presentation, usefulness, and aesthetic value are rated highly effective. The intervention serves as additional learning materials that further explain the lessons and make them easy to understand. Also, students can understand the activities since they have the control to watch the video lesson again as long as they have an internet connection. Hence, the video lessons via YouTube are easy to understand as perceived by the students, containing reviews and activities appropriate for the students. In addition, the accessibility and availability of the video lessons make them useful for the students. However, the students find limited examples and computation with unfamiliar words, uncolorful, and poorly designed because the teacher used the classroom setting as background. So, the students suggest adding more examples and using the local language to explain the content. Also, they ask for more computational techniques and more videos. Similarly, they recommend enhancing the design and using common English words only.

Recommendations

The study is limited to one school problem since action research is the nature of the study. So, future researchers may conduct similar studies using experimental design to determine the effectiveness of mathematics video lessons as supplementary learning materials. Similarly, they can develop video lessons by considering the suggestions in this study, which suit the student's preferences. On the other hand, mathematics teachers may utilize YouTube as a repository of teacher-made video lessons and share them with their students, who can have an internet connection. However, they may share video lessons directly to the students' mobile phones if an internet connection is impossible.

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Author Information

Jorelyn E. Insorio

https://orcid.org/ 0000-0001-7195-9145

Pacific InterContinental College/ Pacita Complex

National High School

City of San Pedro, Laguna

Philippines

Contact e-mail: *jorelyn.insorio@deped.gov.ph*