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ENHANCING MATH PROFICIENCY OF GRADE 6 USING KHAN ACADEMY'S VIDEO LESSONS

Alisa S. Alay[1], Lyca B. Dela Cruz[2], Glecyl Jane A. Verallo[3], Kristy Jane R. Muegna, PhD[4], Deveyvon L. Espinosa, PhD[5], Jocelyn D. Fernandez, EDD[6], Sherill O. Burlas, LPT[7]

[1]*Student Researcher, Institute of Teacher Education, Kapalong College of Agriculture, Sciences and Technology, Davao del Norte, Philippines*
[2]*Student Researcher, Institute of Teacher Education, Kapalong College of Agriculture, Sciences and Technology, Davao del Norte, Philippines*
[3]*Student Researcher, Institute of Teacher Education, Kapalong College of Agriculture, Sciences and Technology, Davao del Norte, Philippines*
[4] *Program Coordinator, Institutre of Teachers Education, Kapalong College of Agriculture, Sciences and Technology, Kapalong Philippines*
[5]*Dean, Institutre of Teachers Education, Kapalong College of Agriculture, Sciences and Technology, Kapalong Philippines*
[6]*Principal IV, Sampao Integrated School, Kapalong, Davao del Norte*
[7]*T-II, Sampao Integrated School, Kapalong, Davao del Norte*

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ABSTRACT

This action research aimed into enhancing math proficiency of grade 6 using Khan Academy's video lessons, exposing its effectiveness and insights of the respondents. The study utilized quasi-experimental research under quantitative method of research design. A total of 30 students were identified and utilized as sample size to this study and seven of them were chosen to answer questions about their insights to the intervention. There were 3 phases in the procedure: a pre-test assessing the baseline skills using the questionnaire from Khan Academy, implementation of Khan Academy's Video Lesson, and post-test to evaluate the outcome. Results revealed a significant improvement in enhancing math proficiency, with an average score increasing from 37.33% to 84.5% after the intervention, showing a statistically significant difference, $t(29)=14.5$, $p<.001$, and a large effect size (Cohen's $d = 2.64$). To enrich the quantitative findings, the reseachers conducted interviews with selected students, revealed that Khan Academy's video lessons enhanced proficiency in mathematics through using video lessons, access to simplified explanations in mathematics videos, change in perception toward mathematics, increased motivation to solve math problems, enhanced confidence through the use of video lessons, and learners also said their suggestions for independent use of video lessons. Thus, the study concluded that the intervention is effective to enhance math proficiency of grade 6 students. Moreover, it can be utilized in the classroom as teaching aid.

KEYWORDS: *Enhancing Math Proficiency, Grade 6, Khan Academy, Video Lessons, Khan Academy's Video Lessons, Math Proficiency, Sampao Integrated School, Elementary, Mathematics*

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INTRODUCTION

Mathematics is a fundamental subject that develops critical thinking and problem-solving skills, yet many students struggle to achieve proficiency. To address these challenges, researchers will explore strategies and tools to enhance learning outcomes. Khan Academy's video lessons, a widely used digital platform offers interactive lessons, videos, and exercises tailored to different skill levels. It provides personalized learning experiences, enabling the teachers to utilize it as a teaching aid, and for learners to practice at their own pace and strengthen their understanding of mathematical concepts. According to (Patil and Juanico, 2024) that khan academy's effectiveness in teaching elementary math and found that it helped students acquire math skills efficiently. Similarly, the study of (Kreller, 2022) states that Khan Academy, a popular learning tool provides video lessons, interactive exercises, and customized

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learning experiences, allowing students to learn at their own speed while supporting teachers in their instruction. Moreover, it is also supported by the study conducted by (Oreopoulos et. al., 2024) that incorporating khan academy as an intervention helped students, particularly those in primary grades, gain a better understanding of mathematics. Thus, this study examines how Khan Academy's video lesson intervention can support learners in achieving better performance in mathematics, bridging gaps in learning through modern technology intervention.

Mathematics is a core subject in many countries, yet students often struggle with it, leading to poor performance. In Malaysia, many learners face challenges due to weak foundational skills, which hinder further mathematical learning and may affect future career choices (May et al., 2024). Similarly, students in Saudi Arabia perform poorly in international assessments like PISA, often scoring at the lowest proficiency levels, highlighting the urgent need for targeted interventions (Kandeel, 2021). In India, difficulties in reading comprehension and understanding mathematical language contribute to students' struggles, emphasizing the importance of strategies that improve both literacy and problem-solving skills (Swain et al., 2023). These shared challenges underline the global need for effective, early interventions to enhance mathematics learning.

In the Philippines, many students struggle with mathematics due to varying learning styles and difficulties in understanding lessons through traditional methods. At Spring Integrated School in Sarangani, the lack of visual aids has hindered some learners' grasp of math concepts, prompting the use of educational video clips to enhance learning (Lanchita, 2024). Similarly, students at De La Salle University, Manila, face challenges with word problems, largely due to weak reading comprehension. To address this, Khan Academy was introduced, offering visual and real-life examples that improve understanding (Cerrado & Errabo, 2020). In Palawan, reliance on traditional instruction has left many students behind, especially in problem-solving. Khan Academy videos have proven effective here as well, offering flexible, paced learning that aids comprehension and supports independent study (Bacolod, 2022). These cases highlight the importance of integrating visual and interactive tools to support diverse learners in mathematics.

In the Division of Davao del Norte, particularly at Sampao Integrated School, a significant observation made by the researchers during Field Study courses revealed that most of the Grade 6 students struggle with fundamental Mathematical skills, which was also revealed in pre-test indicating that the grade 6 students had a very low math proficiency. Indeed, there was a need to conduct this study since they are already in the last stage of elementary level where mathematical proficiency must be attained for them to become ready on their next academic journey.

In addition, in spite of the existence of related international studies addressing the math difficulties, such as "Integrating Digital Technology in Mathematics Education: A Swedish Case Study" by Viberg et. al (2020), "Non-Digital Games That Promote Mathematical Learning in Primary Years Students: A Systematic Review" by Russo et. al (2024), "The Role of Interactive Videos in Mathematics Learning Activities" by Karmila et. al (2021), and "Enhancing Engagement of High School Student through the Utilization of Game (Games-Based Approaches to Engagement) Intervention" by Biona et. al (2024) delves into different teaching intervention of improving mathematical skills of the learners. The former centered on MathAid digital technology, next utilized gamification in dealing with the problem, the third one used interactive videos for addressing the problem of learners in mathematics, and the last utilized games-based approach to enhance engagement in classroom setting. Thus, the studies that were mentioned did not delve specifically in utilizing Khan Academy's Video Lessons as an intervention on improving the Mathematical proficiency among the grade 6 learner of Sampao Integrated School.

This study aimed to apply the Khan Academy's Video Lessons in enhancing the math proficiency of Grade 6 students. The researchers highlight the need for improved math proficiency among Grade 6 who are facing difficulties in mathematics as observed by the researchers. The goal was to provide a foundation for schools' agendas and initiatives in enhancing mathematical proficiency.

Research Questions

The study's primary purpose was to determine the impact of the problem intervention, which is the Khan Academy's Video Lessons among grade 6 students. Specifically, this study sought to answer the following questions:

1. What is the level of students' math proficiency before the Khan Academy's Video Lessons intervention?
2. What is the level of students' math proficiency after the Khan Academy's Video Lessons intervention?
3. What is the difference of grade 6 math proficiency between before and after using the intervention?
4. What are the insights of Grade 6 students about the Khan Academy's Video Lesson as intervention?

Proposed Intervention/Action Plan

On the first day of assessment, a pre-test consisting of 20 questions was administered, evaluating the initial proficiency in Mathematics of Grade 6 students. This pre-test served as a benchmark to determine the starting point of math proficiency of students before the instructional interventions.

After administering the pre-test, the Khan Academy's Video Lessons were introduced. The intervention was utilized during NMP (National Mathematics Program) time, in which the teachers/researchers navigated the online academic learning, utilizing it as a teaching aid.

This intervention lasted for 4 weeks, covering one quarter. The intervention was actively carried out with frequent follow-ups and progress assessments using the intervention, ensuring that

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the students stay on the track with their learning goals and allowing for ongoing evaluation to check if there was development in attaining math proficiency and to have necessary adjustment, if needed.

Lastly, on the last day of week 4, post-test was administered consisting of 20 questions, evaluating the effectiveness of the Khan Academy's Video Lessons intervention for improving the math proficiency of Grade 6 students. This assessment measured the students' math proficiency after the weeks of implementing the intervention. It served as a means to assess the impact of intervention on students' math proficiency, providing valuable feedback on the effectiveness of the interventions towards enhancing Grade 6 students' math proficiency.

Week 1	Week 2	Week 3	Week 4
Day 1: Administering Pre-test **Day 2-4** **Focus:** Area of a Circle ● Area of a circle intuition ● Area of a circle ● Area of circles review (Exercise/Practice)	**Day 5-6** **Focus:** Composite Figures ● Area of composite figure with circles (Exercise/Practice) **Day 7-8** **Focus:** Pie Graphs and Data Presented in Table and Graphs ● How to draw a pie chart? with example ● Representing data ● Frequency tables and dot plots (Exercise/Practice)	**Day 9-10** **Focus:** Pie Graphs and Data Presented in Table and Graphs (*Continuation*) ● Histograms ● Interpreting Histograms (Exercise/Practice) **Day 11-12** ● Stem-and-leaf plots ● Reading stem and leaf plots (Exercise/Practice)	**Day 13** **Focus:** Greatest Common Factor (GCF) and Least Common Multiple (LCM) ● Greatest common factor explained ● Greatest common factor examples (Exercise/Practice) **Day 14** ● Least common multiple ● least common multiple: repeating factors (Exercise/Practice) **Day 15** ● GCF and LCM word problems (Exercise/Practice) **Day 16:** Administering Post-test

RESEARCH METHODOLOGY

Research Design

The method to be used in this study is quasi-experimental research in pretest and posttest design. This kind of research design measures the impact of a program or event, such as in action research. Moreover, there are also in-depth interviews, collecting and analyzing the insights of the participants about their experiences towards the intervention (Cook et al., 1979). In the context of this study, quasi-experiment research was utilized to determine if there is improvement in students' math proficiency after implementing the design intervention (Khan Academy's Video Lesson). This instructional intervention will include mentoring and follow ups assessment that aims in improving their proficiency in mathematics for over 4 weeks.

Participants

The respondents of this study were the Grade 6 students of Sampao Integrated School, enrolled in the school year 2024-2025. This group was chosen because they are in their final year of elementary education and continue to face challenges in mastering essential prerequisite mathematical skills needed for a smooth transition to Junior High School. Researchers will utilize purposive sampling, involving 30 Grade 6 students from Sampao Integrated School aligns with this guidance, balancing sample size and practicality. Selecting the participants will be based on the pre-test scores, which showcasing challenges in the subject mathematics, in which by the end of the study they should showcase improvement in their math proficiency with the help of Khan Academy's Video Lessons.

Research Instrument

The pre-test and post-test questionnaires were utilized in the study to assess the level of math proficiency of the respondents. Additionally, parallel to the questionnaires during pre-test, the post-test was used to determine if the digital, which is Khan Academy's Video Lessons intervention, effectively enhanced students' math proficiency.

Data Gathering Procedure

To gather necessary data for this research, the following steps were undergone by the researchers. First, before starting the study, researchers send a request to the school principal of

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Sampao Integrated School, where the participants enrolled. Then, the pre-test administered by the researcher to determine the prior level of students' math proficiency. Then, 4 weeks intervention using the Khan Academy's Video Lessons which were utilized during NMP (National Mathematics Program) time. During the last day of week four, post-test will be administered to test the level of math proficiency of the students, if it shown development, and this will assess the impact of the instructional interventions on enhancing the math proficiency of grade 6 learners. The data gathered from the pre-test and post-test were tabulated.

Data Analysis

Quantitative data analysis involves interpreting numerical information using mathematical computations and statistical methods. This process helps uncover patterns, relationships, and trends, allowing for more informed decision-making (Hotjar, 2018).

Mean. It is used to determine the level of performance of the students before and after the implementation of the Khan Academy's Video Lesson.

Standard deviation. In the context of this study it measures the change in participants' performance from the pre-test to the post-test, that were assessed through statistical analysis to ensure that the improvement due to Khan Academy's Video Lessons is not random but a result of the intervention itself.

Paired t-test, in this research, the paired t-test was applied to determine if there is a statistically significant difference between the average scores of the pre-test and post-test, allowing the researchers to assess whether changes in mean scores were significant or merely due to random variation, thus proving to be an essential tool for identifying and measuring any changes or progress resulting from the intervention.

Cohen's d. In this study, Cohen's d will be used to assess the effectiveness of the Khan Academy's Video Lessons intervention on Grade 6 learners' proficiency in math in order to determine not only if there is a statistically significant improvement in math proficiency but also how meaningful the change is in practical terms.

Lastly, in qualitative, it includes **coding**, labelling and organizing data to determine patterns and themes; **data reduction**, to ensure that all data were aligned and essential to the study; and **thematic analysis,** was utilized to identify, analyze, and interpret the pattern or themes in a given data set.

Ethical Consideration

It is significant to adhere into the ethical standards, because it helps to achieve the aims of the study, such as knowledge, truth, and accuracy, while minimizing the risks of errors. Additionally, these standards foster essential values for effective collaboration, such as trust, accountability, mutual respect, and fairness. To ensure ethical research, this study strictly adhere to the principles of research ethics from the Belmont Report (2010).

The following principles include: **respect for autonomy** by providing clear information to participants, and ensuring **beneficence and non-maleficence** by prioritizing their safety and minimizing harm. **Justice** was upheld through fair and equal treatment, while **informed consent** ensured participants' voluntary involvement based on trust. **Confidentiality** was maintained through coded identities in line with the Data Privacy Act of 2012. **Integrity** was observed through honesty and fairness, and potential conflicts of interest were acknowledged to prevent compromising the research's credibility.

RESULTS AND DISCUSSION

This section presents the findings and elaboration of the results of Khans Academy's Video Lesson as intervention for enhancing Math proficiency of Grade 6 students of Sampao Integrated School. It presents the data gathered by the researchers, which was meticulously organized, presented, analyzed, and interpreted in order to attain a comprehensive understanding of the collected information.

Additionally, it also presented the answers to the research questions which were presented earlier in this paper. This is composed of the analysis of data on the performance of the students through their pre-test and post-test.

Research Question No.1: What is the level of students' math proficiency before the Khan Academy's Video Lessons intervention?

Table 1 shows the pre-test data on the level of Math proficiency of Grade 6 learners. Out of 40 students in one section, there were 30 students considered as participants for enhancing math proficiency of grade 6 using Khan Academy's Video Lessons as intervention. The data revealed that it has an average percentage score of 37.33%, equivalent to overall mean score of 7.47 and a standard deviation of 2.47 indicating a very low performance in math proficiency among the grade 6 students. The highest score was 12 which was obtained by one student with a percentage of 3.3, and the lowest score was 2 which was obtained by the two students and has a total percentage of 6.7.

Additionally, these findings revealed the need of intervention for enhancing math proficiency of grade 6, which was supported by the study of Svane et. al (2023) in their systematic literature stated that developing or integrating interventions for enhancing math proficiency was indeed necessary because math skills lay the foundation for children's long-term success. The found interventions definitely increased students' proficiency in math subjects, most especially those who struggled in mathematics.

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Table 1. ***Pre-Test***

Score	Frequency	Percentage
2	2	6.7%
3	1	3.3%
5	1	3.3%
6	5	16.7%
7	6	20.0%
8	6	20.0%
9	3	10.0%
10	2	6.7%
11	3	10.0%
12	1	3.3%
Average Percentage Score		**37.33%**
Overall Mean		**7.47**
Standard Deviation		**2.47**
Description		**Very Low**

The result can be supported by the study of Benardo et. al (2022), stated that Filipino students obtained scores that below the lowest proficiency level in Mathematics subject. This result was taken on the mathematics assessment conducted by the Programme for International Student Assessment or PISA, in which more than 50% percent of the young Filipino participants performed poorly on the said assessment.

Additionally, according to Metsamuuronen et. al (2022) study, it stated that elementary students had the lowest proficiency level when it comes to mathematics. The reasons or factors behind the difficulty were lack of familiarity with basic number concepts, did not grasp the sequential nature of numbers, and had little or no understanding about the other concepts related to mathematics.

Research Question No.2: What is the level of students' math proficiency after the Khan Academy's Video Lessons intervention?

Table 2 shows the post-test data on the level of math proficiency of grade 6 after the weeks of implementing the intervention. Data revealed a significant improvement of grade 6 math proficiency after the Khan Academy's Video Lessons intervention. One student obtained the highest score which is 20 equivalents to 3.3% of the total. The lowest score was 11, obtained by one student which is also equivalent to 3.3 percent of the total. The average percentage of the post test is 84.5%, equal to overall mean score of 16.9 and standard deviation of 2.17 indicating high level of performance after implementing the intervention.

In terms of scores, the pre-test showed a mean of 7.47, with a standard deviation of 2.47, while the post-test showed a mean score of 16.9 with standard deviation of 2.17. The mean difference between the pre-test and post-test is 9.43, which means that the scores increased about 9.43 points.

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Table 2. ***Post-Test***

Post-Test Score	Frequency	Percentage
11	1	3.3%
13	1	3.3%
14	3	10.0%
15	3	10.0%
16	3	10.0%
17	2	6.7%
18	10	33.3%
19	6	20.0%
20	1	3.3%
Average Percentage Score		**84.5%**
Overall Mean		**16.9**
Standard Deviation		**2.17**
Description		**High**

Through a parallel study of Diri (2023), students who found using Khan Academy videos during math lessons performed better than those taught through traditional methods. Thus, video-based learning impacted students' performance through improving their understanding, leading to their higher academic achievement. Learners were suggested to be given time to utilized Khan Academy videos outside the four corners of the room to practiced self-pace learning in order to support their own learning.

A finding by Dipon et. al (2024), showed that educational videos have a big impact on students' academic performance. Videos help students who struggles on grasping ideas and thorough understanding, keeping the lesson more understandable and allowing them to stay interested on the topic. Thus, it revealed that utilizing videos as support to the teaching and learning process is a powerful tool to effectively teach various subjects.

Moreover, a study conducted in Brazilian primary public schools which was supported by the study of Ferman et. al (2020) found that using the Khan Academy platform had a significant impact on students' attitudes towards math. In the study, students attended weekly computer lab sessions where teachers used the platform as a replacement for regular math classes. The study suggested that when the program was properly implemented—particularly when each student had access to their own computer and no infrastructure issues were present—it had more promising effects. This highlights the potential of technology-based learning tools in enhancing education, especially when effectively integrated into the school environment.

Research Question No.3: What is the difference of grade 6 math proficiency between before and after using the intervention?
Presented in Table 3 the results of the significance difference between the pre-test and post-test scores, $t(29)=14.5$, $p<.001$. Since the probability value ($p<.001$) is below the level of significance difference ($=0.05$), the null hypothesis is being rejected. Therefore, there is a significant difference between the pre-test and post-test.

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Table 3: ***Significant Difference between the Pre-test and Post-test Scores***

Paired Samples T-Test									
			Student's t statistic	**df**	**p**	**Mean difference**	**SE difference**		**Effect Size**
Pre-test	Post-test		14.5	29.0	<.001	9.43	0.652	Cohen's d	2.64

In addition, the effect size or the *Cohen's d* in the context of this study revealed a data of 2.64, which means that it is a very large effect size. Thus, this indicates that the improvement from Pre-test to Post-test is practically meaningful and not just statistically significant.

The study of Tan et. al (2021), stated that video-based learning helps students in mathematics, especially that a lot of students struggle on understanding key concepts and problem-solving steps. Video lessons can help learners to enhance their math proficiency skills by re-watching the videos to improve their understanding. Although teachers do not have enough time to repeat lessons, they can utilize the videos to repeat the lesson with simpler explanations leading to better learning in math.

According to the study of Gyeltshen and Dorji (2023), stated that in today's modern classroom, the use of technology, especially online tools like YouTube, plays an important role in making teaching and learning more effective. A study conducted at Mendrelgang Primary School looked into how YouTube videos can help teach Mathematics to sixth-grade students. The researchers used a pre-test to make sure both groups were similar before the experiment, one group used YouTube videos during lessons (experimental group), while the other followed the traditional method (control group). The findings showed that YouTube videos can improve students' understanding and performance in Mathematics. However, the success of this method depends on choosing the right videos. The study also suggests that more research with larger groups and different teaching levels should be done to better understand YouTube's impact on learning.

Moreover, the study of Zakiyah et. al (2023), mathematics education plays an important role in developing a person's thinking and character. However, many students struggle to understand lessons in math class. This often happens because teaching methods are not effective or engaging. To solve this issue, new teaching strategies have been introduced, including the use of educational videos. These videos can make learning math easier and more enjoyable for students. In recent years, math videos have become more popular among both teachers and students. One important factor in using these videos is how teachers view their quality and usefulness in teaching math.

Research Question No.4: What are the insights of Grade 6 students about the Khan Academy's Video Lesson as intervention?

To answer this question, in-depth interviews were conducted to the participants of this study. Seven students among the 30 participants were chosen to answer the specific question. Probing questions were asked to elicit responses regarding their observation and experiences with the impact of the Khan Academy's Video Lesson as intervention of enhancing grade 6 math proficiency. The major themes and sample statements were presented in Table 4. Participants shared their own experiences and observations; thus, 6 major essential themes were emerged: (1) *enhanced proficiency in mathematics through video lessons;* (2) *access to simplified explanations in mathematics videos;* (3) *change in perception toward mathematics;* (4) *increased motivation to solve math problems;* (5) *enhanced confidence through the use of video lessons;* (6) *suggestions for independent use of video lessons.*

Table 4. ***Insights of Grade 6 students about the Khan Academy's Video Lesson as Intervention.***

Essential Themes	Supporting Statements
Enhanced Proficiency in Mathematics through Using Video Lessons	• *"Now, I can solve it quickly because the video already explained it beforehand."* **IDI-01** • *"My knowledge in mathematics improved because of the video we watched, especially in solving for the radius, diameter, and other related topics*." **IDI-02** • *"Because of the video intervention, I don't find math that difficult anymore—it actually seems easy since the formula doesn't change; it really stays the same."* **IDI-06** • *"My experience with math is that it's difficult, but there are parts I find easy because of the video, since it was well explained. After class, I still found it a bit hard, but because of the video, it became a bit easier."* **IDI-03** • *"The video was helpful because it really taught us how to solve the problems, and allow us to enhance our problem-solving skills."* **IDI-05**

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	• *"I was able to learn more because of the video, plus you also explained it to us, ma'am, after playing the video. The video also showed how to solve the problem step by step."* **IDI-07**
Access to Simplified Explanations in Mathematical Videos	• *"Ma'am, the video helped me because it had examples and instructions on how to solve the given questions."* **IDI-02** • *"The video explained well how to answer, and it really simplified the process. It helped me because it was clearly explained. But with the video we watched, everything was properly explained, and I could really understand it because they simplified the explanation."* **IDI-03** • *"Because of the video, ma'am, I learned how to solve the problems. I was motivated because the explanation in the video was really clear—it made the difficult parts easy to understand."* **IDI-06** *"It helped me improve my mathematics proficiency because it made hard things easier, and the formulas were already given."* **IDI-07**
Change in Perception Toward Mathematics	• *"The Khan Academy video lesson intervention changed my mind and made me realize that math isn't really that difficult, ma'am."* **IDI-01** • *"I can also say that my thoughts about math being very hard have changed because of the videos you let us watch—now I find it a bit easier, ma'am."* **IDI-02** • *"Khan Academy changed my perception as someone who struggles with math, making me see that it can be easy when it is explained properly, like in the videos."* **IDI-04** • *"Math is really difficult, ma'am, because mathematics isn't something you can take lightly—there are questions that really need to be understood well. But after our class, ma'am, I can say that math is actually easy, especially if you just listen to the video."* **IDI-04**
Increased Motivation to Solve Math Problems	• *"I was motivated to answer because of the video. Solving became easier for me since the video already explained it beforehand."* **IDI-01** • *"The video lesson had a big impact on me in learning mathematics because it motivated me to answer, thanks to the intervention of letting us watch the video."* **IDI-03** • *"I became more motivated to answer because the video showed how to solve the problems."* **IDI-04**
Enhanced Confidence through the Use of Video Lessons	• *"My confidence was affected in a positive way—it increased a bit because of the video."* **IDI-01** • "*My self-confidence increased to the point that I am no longer shy to participate."* **IDI-04** • *"After class, I felt more confident and I am no longer afraid to answer—I am now very confident when answering.***" IDI-06** • *"I now have the confidence to answer because of the video and the clear explanations it provided."* **IDI-07**
Suggestions for Independent Use of Video Lessons	• *"My suggestion, ma'am, is that instead of just watching on TV, the students could also be allowed to use technology themselves to answer."* **IDI-02** • *"My suggestion, ma'am, is that we also be allowed to click and use the computer so we can better understand the parts we did not get, and it would be easier for us if we can rewatch the video."* **IDI-04** • *"It would be better, ma'am, if we also get to experience using Khan Academy ourselves so we can replay the video as many times as needed."* **IDI-05** • *"My suggestion, ma'am, is not just to show us the video, but also let us try manipulating the computer ourselves so we can go back to the parts we did not understand."* **IDI-07**

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Theme No.1: Enhanced Proficiency in Mathematics through Using Video Lessons

Participants observed that their math proficiency improved through the use of Khan Academy video lessons. They expressed that the visual and step-by-step explanations helped them better understand the concepts. As a result, they found it easier to solve math problems compared to before.

This theme was supported by the study of Ofril et. al (2024), revealed that students who used Khan Academy video lessons more often showed better results in math. This means using video lessons in teaching mathematics helps students understand concepts better by reducing mental effort and providing clear visual explanations. This approach supports improved math skills and overall performance by making learning more engaging and easier to follow.

Moreover, the present findings further strengthen the study made by Bufasi and Cuka (2022) which highlights the idea that the students often struggle with mathematics, particularly in areas involving calculations, conceptual understanding, and methodological processes. To effectively develop students' mathematical skills, it is essential for educators to adopt the most impactful teaching strategies. The integration of technology—such as smartphones and interactive digital resources has significantly transformed how students engage with and internalize information. In this context, utilizing Khan Academy video interventions can serve as a powerful tool to enhance students' proficiency in mathematics by providing accessible, visual, and structured learning experiences.

Theme No.2: Access to Simplified Explanations in Mathematical Videos

Mathematical videos in Khan Academy contain examples and explanations that are understandable to the learners, in which the students found it helpful as they can now access a simpler discussion of the lessons. Thus, this help learners enhance their comprehension on how to solve problems in math.

This finding supports the concept by the study of Thurm (2025), it stated that Khan Academy stands out by offering clear, well-structured, and simplified explanations made by trusted educators. These videos help break down complex math topics into easy-to-understand steps. Therefore, Khan Academy plays a key role in meeting the demand for reliable and effective math explanations. This shows how essential it is to provide students with clear and high-quality video resources in their learning journey.

This study also revealed that the intervention played a significant role in enhancing math proficiency of the learners by using videos during class has become an important way to help students keep learning. This finding is supported by Delos Santos et. al (2022) who emphasizes that video lessons give step-by-step instructions that make it easier for students to understand new topics and learn new skills. They are a helpful tool to support what teachers do in the classroom. Video tutorials are also a great way to share information and can be used in many different ways of learning. These videos make lessons more interesting and easier to follow than printed materials especially when they give clear and simple explanations, like in math videos, which help students understand better.

Theme No.3: Change in Perception Toward Mathematics

Participants shared that most of the time, they thought that mathematics is difficult. However, when Khan Academy's Video Lessons were implemented, along the way their perception in math changed into something positive. They now look at mathematics as a subject that can be handled if the lesson were explained in an easy way.

This is supported by Duverger and Steffes (2021) found that learning becomes more fun and interesting when videos are used instead of just listening to the teacher talk. YouTube videos, for example, help students learn better by using both pictures and sound, which makes it easier to understand and remember things. Since YouTube is seen as a useful and real-world tool, it grabs students' attention and makes learning more exciting. This kind of video learning creates a fun and active classroom environment. When students enjoy learning through videos especially in subjects like math that many find difficult it can help change their negative view of mathematics. Clear and engaging video explanations can make math feel easier and more enjoyable, helping students build confidence and a more positive attitude toward the subject.

The findings further revealed that students often feel that videos from online platforms help grab their attention during class. Research conducted by Otchie and Pedaste (2020) states that videos can be a useful teaching tool. This is proven by students' positive attitudes toward using videos in their math lessons. In particular, using Khan Academy's video lessons can help change how students see mathematics. With clear explanations and easy-to-follow steps, these videos make math less scary and more understandable, helping students develop a more positive view of the subject.

Theme No.4: Increased Motivation to Solve Math Problems

Participants shared that because of the intervention, they were now motivated to learn mathematics and at the same time to answer, and share their answers to their fellow learners.

This supported by the study of Ulum (2023) stated that video lessons in Khan Academy provide clear and easy explanations that help learners to understand math. This flexibility, along with instant feedback and progress tracking, increases student motivation to solve math problems. Research has shown that personalized learning and real-time feedback contribute significantly to higher achievement in mathematics.

In a parallel study, Khan Academy's feedback system plays a vital role in enhancing the learning process by helping students pinpoint areas where they struggle. This finding is supported by Da Silva et. al (2025) through immediate and personalized feedback, learners can understand their mistakes and take steps

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to improve. This system encourages a sense of progress and self-awareness, which supports deeper learning and skill development. As students recognize their growth through feedback, they become more confident in tackling challenging topics. This growing confidence leads to increased motivation, especially when paired with engaging Khan Academy video lessons. As a result, students are more eager to solve math problems, seeing each challenge as an opportunity to learn and succeed.

Theme No.5: Enhanced Confidence through the Use of Video Lessons

Through the intervention, the confidence of learners was affected. Participants stated that they can now participate without any hesitations and fear. Thus, video lessons in Khan Academy affect the confidence of learners in a positive manner.

This is supported by the study of Gomez and Muñiz (2023), stating that due to integrating Khan Academy's video lessons students' confidence increases in their mathematical abilities. The platform allows the learners to be more engaged in academic learning which leads them to perform better academically and decrease the tension they feel in studying.

According to Diri (2023), highlights the role of Khan Academy (KA) as a widely used platform fosters increased interaction and engagement in mathematics instruction. By offering a personalized learning experience, KA allows students to build skills based on their individual needs, which supports better understanding and mastery of concepts. With over 10,000 videos and 150,000 exercises, learners are continuously engaged in interactive and meaningful practice. This access to self-paced learning helps students gain clarity on difficult topics, reducing anxiety and building confidence over time. As students repeatedly experience success through KA's video lessons and guided feedback, their belief in their mathematical abilities improves. Thus, the use of Khan Academy's video lesson intervention contributes significantly to enhanced confidence in learners, making them more willing to tackle challenging problems (Diri, 2023).

Theme No.6: Suggestions for Independent Use of Video Lessons

Participants shared their desire to allow the learners in manipulating the Khan Academy, so that in this way they can fully have their own pace in learning mathematics. Thus, this will help every learner to understand the topic on their own.

This theme is supported by the study of Vidergor and Amram (2020), stating that in order to effectively support students in their learning, autonomy must be promoted. Thus, students should be allowed to explore Khan Academy videos independently. This approach encourages deeper understanding and self-investment in learning.

In a parallel study, findings add to the understanding of students' perceptions of the effectiveness of integrating Khan Academy (KA) in their math learning. Research conducted by Vidergo and Amram (2020). These insights reveal how students benefit from KA's features, especially its ability to support self-paced and individualized instruction. Understanding these perceptions can guide educators in making informed decisions about how to use the platform more effectively in the classroom. One important suggestion that emerges is the value of allowing students to independently use Khan Academy videos. This approach encourages autonomy and responsibility in learning, helping students take control of their progress. By promoting independent use of KA, we further enhance personalized learning and better prepare students with the skills they need to thrive in an ever-changing world.

CONCLUSION

The results revealed that Khan Academy's Video Lessons as intervention for enhancing math proficiency of Grade 6 students has a great impact. Data showed that from pre-test with a mean of 7.47 indicating a very low performance in math proficiency to post-test with a mean of 16.9 indicating a high performance after four weeks of intervention, revealed that the students' scores increased for about 9.43 (mean difference). Also, Cohen's d data revealed an effect size of 2.64 revealing that the intervention is not just statistically significant but practically meaningful.

Additionally, based on the shared observations and experiences of the students, several essential themes were revealed about how Khan Academy's video lessons as an intervention for enhancing their proficiency in math impacted the Grade 6 students. Thus, 6 essential themes was shown: (1) *enhanced proficiency in mathematics through using video lessons,* in which learners said that through the intervention they able to enhanced their learning when it comes to math; (2) *access to simplified explanations in mathematics,* where students experienced to easily understand the lessons because the videos made it simple and clear; (3) *change in perception toward mathematics,* in which learners change their perception from always thinking negative about math to thinking that everything became easy because of the videos; (4) *increased motivation to solve math problems,* students experienced being more motivated to answer math equations; (5) *enhanced confidence through the use of video lesson,* in which students were experienced confidence in participating; (6) *suggestions for individual use of video lesson,* in which most of the students suggested to allow learners during the math time to manipulate the Khan Academy's video lessons.

RECOMMENDATION

This study identified that the intervention which is Khan Academy's video lessons enhances the math proficiency of Grade 6 students from the data that was being discussed earlier. With the data in hand, it is time to consider using Khan Academy's video lesson as a teaching aid to enhance the learners math proficiency, especially at the elementary level. This may nurture the academic performance of elementary students in mathematics which lead to their success for their future endeavors. Additionally, further research includes exploring different Grade levels, especially those in primary

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level for enhancing math proficiency using Khan Academy's video lessons as intervention. Grades 1 to 3 can be the focus respondents in which further research can adopt similar research design and approach.

REFERENCES

1. *Bacolod, D. (2022). Application of khan academy as a worked-example video podcast to supplement in learning. IJSAR. https://www.researchgate.net/publication/361021923*
2. *Bernardo, A., Cordell, M., Lapinid, M., Teves, J., Yap, S., & Chua, U. (2022). Contrasting profiles of low-performing mathematics students in public and private schools in the Philippines: Insights from machine learning. Journal of Intelligence 10: 61. https://doi.org/:10.3390/jintelligence10030061*
3. *Biona., M, Repuela, W., Salarda, C., Bese, C., Almodiel, J., Espinosa, D., Escandallo, J., Generalao, R., Muegna, K., & Cerna, C. (2024). Enhancing engagement of high school students through the utilization of game (games-based approaches to engagement) intervention. A Multidisciplinary Journal Psychology and Education. https://doi.org/10.5281/zenodo.13270446*
4. *Bufasi, E., Cuka, K., (2022). Video for improving students' math performance. European Journal of Education and Pedagogy 3(5):13-15. https://doi.org/:10.24018/ejedu.2022.3.5.430*
5. *Cerrado, P., Errabo, D.m (2020). Utilizing khan academy to improve reading comprehension in solving mathematical word problems. International Conference on Education and New Learning Technologies. https://doi.org/:10.21125/edulearn.2020.0877*
6. *Cook, T. D., & Campbell, D. T. (1979). Quasi-experimentation: Design & analysis issues in field settings. Boston, MA: Houghton Mifflin.*
7. *Da Silva, C.E., Nascimento, I.F., Da Costa, R., Carvalho, R., & Neto, G. (2025). Khan academy as a tool for teaching mathematics: Research on the use of gamification in student motivation. file:///C:/Users/user/Downloads/KHAN+ACADEMY+AS+A+TOOL+FOR+TEACHING+MATHEMATICS.pdf*
8. *Delos Santos, K., Juaban, J., Eduarte, A., Abdul R. (2022). Effects of video tutorials on the mathematics achievement of students. https://www.researchgate.net/publication/362657994*
9. *Diri, E. (2023). Khan academy video-based instructions and students' performance in mathematics in Yenagoa Local Government area of Bayelsa State. Faculty of Natural and Applied Sciences Journal of Mathematics and Science Education. https://doi.org/:10.13140/RG.2.2.12003.77600*
10. *Dipon, C. H. & Dio, R.V. (2024). A meta-analysis of the effectiveness of video-based instruction on students' academic performance in mathematics. International Journal on Studies in Education (IJonSE) 6(4):732-746. https://doi.org/10.46328/ijonse.266*
11. *Duverger, P., & Steffes, E. M. (2021). Using YouTube videos as a primer to affect academic content retention. Metropolitan Universities, 23(2), 51-66. https://eric.ed.gov/?id=EJ988179*
12. *Ferman, B., Finamor, L. & Lima, L. (2020). Are public schools ready to integrate math classes with khan academy? https://mpra.ub.uni-muenchen.de/99845/1/MPRA_paper_99845.pdf*
13. *Gómeza, K. & Muñizb, L. (2023). Performance and mathematical self-concept in university students using Khan Academy. Heliyon. https://doi.org/:10.1016/j.heliyon.2023.e15441*
14. *Gyeltshen, G., Dorji, C., (2023). Effectiveness of using YouTube videos in mathematics classes of class vi students. International Journal of All Research Education & Scientific Methods 11(10):1679-1692. https://www.researchgate.net/publication/375026023*
15. *Kandeel, R. A. A. (2021). Learners' mathematics proficiency levels on Pisa 2018: A comparative study. International Journal of Instruction, 14(3), 393-416. https://eric.ed.gov/?id=EJ1304699*
16. *Karmila, D., Putri, D., Berlian, M., Pratama, D. (2021). The role of interactive videos in mathematics learning activities. Atlantis Press. https://doi.org/:10.2991/assehr.k.210227.024*
17. *Kreller, S. (2022). Examining the effectiveness of khan academy as an instructional tool. https://www.researchgate.net/publication/369654338*
18. *Lanchita, A. (2024). Improving math achievement: Khan academy videos at spring integrated school. https://www.researchgate.net/publication/381394057_Improving_Math_Achievement_Khan_Academy_Videos_at_Spring_Integrated_School*
19. *Maglasang, A. & Pinili, L. (2024). Teaching strategies and math proficiency a study of k-3 learners and teachers. https://www.researchgate.net/publication/384285361_Teaching_Strategies_and_Math_Proficiency_A_Study_of_K-3_Learners_and_Teachers*
20. *May, Y., Anal A., Hoe F. (2024). Enhancing the Basic Mathematical Skills of Pupils with Mathematical Learning Difficulties. June 2024 ·3(1):20-26. https://doi.org/: 10.5281/zenodo.12567016*
21. *Metsämuuronen, J. & Ukkola A. (2022). Rudimentary stages of the mathematical thinking and proficiency: Mathematical skills of low-performing pupils at the beginning of the first grade. LUMAT: International Journal on Math, Science and Technology Education. https://doi.org/10.31129/LUMAT.10.2.1632*
22. *Ofril, A., Balo, V., Ofril, M. (2024). Video-Based Teaching and Learning in Mathematics. https://doi.org/:10.5281/zenodo.14532992*
23. *Oreopoulos, P., Gibbs, B., Jenson, K., & Price, B. (2024). Teaching Teachers to Use Computer Assisted Learning Effectively. https://doi.org/10.3386/w32388*
24. *Otchie, W., Pedaste, M. (2020). Can YouTube videos facilitate teaching and learning? Bulletin of the Technical Committee on Learning Technology 20(1):3-8. https://www.researchgate.net/publication/344806820*
25. *Patil, P., Juanico, J. (2024). The Effectiveness of Khan Academy in Teaching Elementary Math. https://doi.org/:10.1007/s40617-024-00982-6*
26. *Swain, B. Das, B.S & Rout, N. (2023). Learning difficulties of elementary school students in mathematics. https://www.researchgate.net/publication/371465649_Learning_Difficulties_of_Elementary_School_Students_in_Mathematics*

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Volume: 11| Issue: 6| June 2025|| Journal DOI: 10.36713/epra2013 || SJIF Impact Factor 2025: 8.691 || ISI Value: 1.188

27. *Tan, S., Zou, L. & Wijiya, T. (2021). Using video learning to improve students' mathematical ability. Journal of Didactic Mathematics. https://doi.org/10.34007/jdm.v1i3.364*
28. *Thurm, D., (2025). The quality of mathematical explanation videos: A quantitative cross-topic analysis. Front. Educ. https://doi.org/:10.3389/feduc.2025.1509019*
29. *Ulum, H. (2023). The impact of khan academy learning platform on mathematics achievement in primary school fourth grade students. Necatibey Faculty of Education Electronic Journal of Science and Mathematics Education. https://doi.org/:10.17522/balikesirnef.1348871*
30. *Viberg, O., Gronlund, A., & Anderson, A. (2020). Integrating digital teachnology in mathematics education: A Swedish case study. Interactive Learning Environments, 31(1), 232–243. https://doi.org/10.1080/10494820.2020.1770801*
31. *Vidergor, H. & Amram, P. B. (2020). Khan academy effectiveness: The case of math secondary students' perceptions. https://www.sciencedirect.com/science/article/abs/pii/S0360131520301834*
32. *Zakiyah, Z., Karlima, Hdayat, S. (2023). Elementary School Teachers' Perceptions on Video-Based Mathematics Learning in Classroom Model towards Learning Quality. NUMERICAL Jurnal Matematika dan Pendidikan Matematika 7(1):49-58. https://doi.org/:10.25217/numerical.v7i1.3462*