IJAMS
INTERNATIONAL JOURNAL OF ADVANCED MULTIDISCIPLINARY STUDIES
Volume V, Issue 3, March 2025, eISSN: 2799-0664

Effectiveness of Contextualized Audio-Video Materials to The Test Scores Performance of The Grade 2 Pupils in Mathematics

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Abstract — This study was conducted to determine the Effectiveness of contextualized Audio-Video Materials to the test scores of the Grade 2 pupils in Mathematics in San Juan Elementary School, in San Juan, Palompon Leyte. The findings of the study were the basis for the proposed Enhancement Plan. The efficiency of incorporating contextualized audio-visual resources into the teaching of different mathematical competences during the second grading period was assessed in this study using a quasi-experimental research method. This concept worked especially well in educational environments where it might not have been possible to distribute students into groups at random. The study attempted to find significant differences in learning outcomes between students who used these multimedia tools and students who followed standard teaching techniques. This method offered insightful information on how these materials might have been successfully integrated into the curriculum in addition to enabling a comprehensive analysis of their effects on student engagement and comprehension. The test of difference between the pre-test and post-test scores of Grade 2 pupils in Mathematics before and after the integration of different contextualized audio-video materials. The results show a clear improvement in students' performance after the intervention. The analysis, which includes computed T-values, standard deviations, critical T-values, and decisions regarding the null hypothesis, indicates that the difference in scores between the pre-test and post-test is statistically significant. The computed T-value for the post-test far exceeds the critical T-value, leading to the rejection of the null hypothesis and confirming that the integration of audio-video materials had a positive effect on the students' learning outcomes. The substantial improvement observed in the students' test scores, from a "Good" to an "Excellent" performance level, supports the effectiveness of the multimedia intervention. The observed shift highlights the impact of contextualized audio-video materials in enhancing both engagement and comprehension of mathematical concepts. The rejection of the null hypothesis further suggests that the improvement in test scores was not due to random chance but rather a direct result of the intervention. This underscores the value of integrating multimedia tools tailored to the students' context, which can make abstract mathematical concepts more accessible and foster deeper understanding. These findings imply that multimedia-based teaching strategies can be effectively used in elementary education to improve student performance, especially in subjects like Mathematics, where abstract concepts often pose challenges for young learners.

Keywords — Effectiveness Contextualized Audio-video Lessons Performance Math Grade 2

I. INTRODUCTION

Adapting audio-visual resources to the Grade 2 curriculum is a creative way to take into account the various learning requirements and styles of young students. In a classroom situation, students often demonstrate various levels of comprehension and involvement, which can affect their overall learning experience. Teachers can build a more inclusive atmosphere that tackles these disparities by customizing multimedia materials, such audio stories, interactive

games, and movies, to specific curriculum goals. For example, an audio narration combined with text can help a struggling reader follow along and understand concepts without becoming overwhelmed. In addition to encouraging higher levels of engagement, this approach lets students study at their own speed and go over content again as needed to ensure they grasp it.

Furthermore, kids who struggle with language or learning difficulties also benefit from this customization. These students frequently deal with extra difficulties that make it difficult for them to utilize conventional teaching resources. Teachers can support these students in becoming more engaged with the material by offering alternative formats, such as simplified language options or visual aids for subjects that may be hard to explain orally. By leveling the playing field, this strategy guarantees that every student has an equal chance to achieve academic success. By empowering students to take charge of their education and cultivate a lifelong love of learning, the utilization of a variety of audio-visual resources can also help them feel confident and autonomous. Ultimately, educators may create a more helpful and productive learning environment by personalizing learning experiences in this way.

During Pandemic the used of Contextualized audio-video resources are made well-known. Even myself made my own Video-lesson just deliver lessons to my class. She believe this can enhance memory recall and retention by giving students both visual and aural cues.

In order to improve learning outcomes, contextualized audio-visual assets are being employed in education and training more and more. Multimedia resources that are intended for use in a particular setting, such as classroom, online courses, or training program, are known as contextualized audio-video resources.

To support particular learning objectives and results, educators and trainers frequently produce these products. We even develop our own DepEd TV Channel to bridge the gap between educational progress and pandemics.

Contextualized audio-video resources can help learners apply what they've learned to actual circumstances by giving them relevant examples and scenarios. Teachers can even contextualize and localized their lesson just to meet the needs of their students.

As a teacher for 15 years, she always faces situations where a student struggled with Mathematics, even simple fundamental operations, they found it hard to comprehend and solve simple Math problems. Throughout the years of teaching underlaying circumstances are being known. During our Math subjects some kids air out their fear and worry. They might be intimidated by their friends who were knowledgeable about it. This will hinder their ability to learn.

Another reason also was the lack of guidance from parents. Some parents can’t even help them do their assignments or work activities at home. So, with that kids are not follow-up on the lesson/s being discussed on that day.

In the advent of technology, she can now help my learners to learn better and to embrace Mathematics wholeheartedly with enough skills in learning the basic concepts of Math and applying it to their daily lives.

On my day-to-day encounter as a public-school teacher, I can’t deny the fact that some children are not performing well in Math. Many reasons arisen as I got to talk with the kids and communicate with their parents.

It's possible that some students don't get the help they require from parents, relatives or peers. Numerous things, including a lack of self-interest, lack of support from family members, may be to blame for this.

Students who struggle with math may get emotionally drained. They might believe that they are not smart enough, that they are failing, or that they are not good enough. Their general wellbeing, confidence, and sense of self-worth may all be impacted by this emotional conflict. Thus, the result of failing marks was reflected on their progress report card.

Through determining their hindrances on learning Math, parents, and guardians can collaborate to establish a more encouraging and comprehensive learning environment that cultivates mathematical competence and confidence in every youngster. Teachers must also delve into improving teaching strategies so that learners will enjoy, learn and love Math.

Based from the different premise above, The study is expected to contribute best performances specially in the numeracy skills performance of the Grade 5 learners specially that the learners are experiencing hardships in dealing with Mathematics subject.

This study was conducted to determine the Effectiveness of contextualized Audio-Video Materials to the test scores of the Grade 2 pupils in Mathematics in San Juan Elementary School, in San Juan, Palompon Leyte. The findings of the study were the basis for the proposed Enhancement Plan.

Specifically, the study sought to answer the following questions:

1. What is the pre-test score of the Grade 2 learners in Mathematics subject before the integration of contextualized Audio-Video Materials?

2. What is the posttest score of the Grade 2 learners in Mathematics subject before the integration of contextualized Audio-Video Materials?

3. Is there a significant difference between the pretest and posttest scores before and after the integration of contextualized Audio-Video Materials?

4. What enhancement plan can be proposed based on the findings of the study?

Statement of Hypothesis:

Ho: There is no significant difference between the pretest and posttest scores before and after the integration of contextualized Audio-Video Materials.

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II. METHODOLOGY

Design. The efficiency of incorporating contextualized audio-visual resources into the teaching of different mathematical competences during the second grading period was assessed in this study using a quasi-experimental research method. This concept worked especially well in educational environments where it might not have been possible to distribute students into groups at random. The study attempted to find significant differences in learning outcomes between students who used these multimedia tools and students who followed standard teaching techniques. This method offered insightful information on how these materials might have been successfully integrated into the curriculum in addition to enabling a comprehensive analysis of their effects on student engagement and comprehension. The main local of the study is in San Juan Elementary School to gather the necessary data needed in the study, the researcher utilized the Summative Test Questionnaire in Mathematics subject for Quarter 2 to get the pretest and posttest performances. Another tool to be utilized are the different kinds of audio-video materials which were validated by the different learning expert on the aforementioned subject in a given period of time. The proposed Enhancement Plan was taken based on the findings of the study.

Sampling. The respondents of the study were the Grade 2 learners of San Juan Elementary School. There were 10 males and 18 females with a total of 28 respondents that was involved in this study were being identified and the primary means of reach is during the actual conduct of the study as well as during the gathering of data in the school where the study was conducted.

Research Procedure. The researcher prepared the research design which is the quasi-experimental research method to gauge the Effectiveness of contextualized Audio-Video Materials to the test scores of the Grade 2 pupils in Mathematics. The researcher formulated the following steps or procedures to be guided during the gathering of data. The steps are the following:

In order to begin this research, the researcher submitted a formal Transmittal Letter requesting approval from the Schools Division Office, which was led by the School Division Superintendent. This letter described the goals of the study and how important it was to improve students' educational experiences. Copies of the letter were distributed to the Public-School District Supervisor, the School Principal, and the teachers working directly with the participating pupils in addition to the Schools Division Office. In order to create an atmosphere of cooperation and trust throughout the research process, it was imperative that this step be taken to guarantee transparency and get the required support from all parties.

The researcher provided a pretest to evaluate students' performance prior to integrating the technology-based intervention materials, once approvals had been obtained. This baseline evaluation was crucial since it determined the pupils' initial level of mathematical understanding and ability. The researcher could determine particular areas of strength and weakness by examining the pretest results; these findings guided the ensuing instructional tactics. This preliminary evaluation also functioned as a benchmark to gauge any performance alterations following the intervention, demonstrating the efficacy of the novel pedagogical approaches.

Ethical Issues. The right to conduct the study was strictly adhered through the approval of the principal, approval of the Superintendent of the Division. Orientation of the respondents both School Principal, teachers and parent were done.

Treatment of Data. The following statistical formulas were used in this study:

The quantitative responses were tallied and tabulated. The data was treated statistically using the following statistical tool.

Simple Percentage. This was utilized to assess the performance of the Grade 2 learners in Mathematics.

T-Test for Mean Difference- This tool was used to calculate the academic performance of the Grade 2 learners in Mathematics.

III. RESULTS AND DISCUSSION

Table 1
Pre-Test Performance of Grade 2 Learners in Math

Score Range	Description	PRETEST	
		Frequency	%
17-20	Excellent	0	0
13-16	Very Good	6	20
9-12	Good	23	77
5-8	Fair	1	3
0-4	Poor	0	0
Total		30	100
Weighted Mean		**10.84**	**Good**

Table 1 presents the pre-test performance of Grade 2 learners in Mathematics before the integration of different contextualized audio-video materials into their learning process. The table details the distribution of students' scores across various score ranges, describing the frequency and percentage of learners in each category, from "Excellent" to "Poor." The data shows that the majority of students (77%) fall into the "Good" range, with only a small percentage (3%) performing in the "Fair" category. The weighted mean score of 10.84 suggests that, on average, the Grade 2 learners'

performance was "Good," indicating that they had a basic understanding of mathematical concepts prior to the introduction of the multimedia intervention.

In the pre-test, most of the Grade 2 learners scored within the "Good" range, with 23 students achieving scores between 9 and 12, and 6 students falling within the "Very Good" range with scores between 13 and 16. However, the lack of any students in the "Excellent" range (17-20) or the "Poor" range (0-4) suggests that while most students performed reasonably well, there was still significant room for improvement. The small proportion of students in the "Fair" category, with just one student scoring between 5 and 8, highlights a minor struggle among a few learners. This initial distribution reflects a class that has a decent understanding of the basic math concepts but may benefit from targeted interventions to enhance their understanding and application of these concepts.

The weighted mean of 10.84 and the distribution of scores indicate that the learners' mathematical abilities were generally at a "Good" level before any instructional changes were implemented. This suggests that the Grade 2 students already had some foundational knowledge of mathematics but needed support to reach higher levels of proficiency. The intervention in the form of contextualized audio-video materials was intended to engage students more effectively and enhance their understanding. The pre-test performance provides a baseline, showing that while students were not in the lowest categories, there were clear gaps in their mastery of mathematical concepts that could be addressed with the use of multimedia resources designed to promote greater engagement and understanding.

The results in table 1 implied that the learners' current performance in Mathematics is stable but shows room for improvement, particularly in engaging the higher-performing students to consistently maintain or improve their mastery of the subject. With 77% of the students categorized as "Good," the use of multimedia intervention strategies such as audio-video materials may help push more students into the "Very Good" or "Excellent" categories. This also suggests that providing diverse, engaging, and interactive materials could support students in solidifying their foundational skills and addressing any gaps in their understanding. Moreover, with a small portion of students in the "Fair" range, these learners might particularly benefit from these new instructional methods as they offer more dynamic and accessible ways to learn difficult concepts.

Table 2
Post-Test Performance of Grade 2 Learners In Math

Score Range	**Description**	**POST-TEST**	
		Frequency	**%**
17-20	Excellent	19	63
13-16	Very Good	11	37
9-12	Good	0	0
5-8	Fair	0	0
1-4	Poor	0	0
		30	100
Weighted Mean		**17.50**	**Excellent**

Table 2 presents the post-test performance of Grade 2 learners in Mathematics after the integration of different contextualized audio-video materials. The table provides a breakdown of the learners' scores across various score ranges, illustrating the frequency and percentage of students in each category, from "Excellent" to "Poor." The results show a dramatic improvement from the pre-test, with 63% of students scoring in the "Excellent" range (17-20) and 37% in the "Very Good" range (13-16). Notably, there are no students in the "Good," "Fair," or "Poor" categories, and the weighted mean score has increased to 17.50, categorized as "Excellent," indicating a significant improvement in student performance after the intervention. After the integration of the contextualized audio-video materials, the learners' performance shows a remarkable shift, with 63% of students scoring in the "Excellent" category. In contrast to the pre-test, where no students scored in the "Excellent" range, this post-test result demonstrates a substantial enhancement in mathematical understanding. The percentage of students in the "Very Good" category is also notable, with 37% of the

class falling into this range, indicating that nearly all students experienced improvements in their math scores. The absence of students in the "Good," "Fair," or "Poor" categories further emphasizes the success of the intervention in elevating the learners' understanding of mathematical concepts. The post-test weighted mean of 17.50 categorizes the class as having "Excellent" performance, which is a significant increase compared to the "Good" classification in the pre-test.

The post-test results imply that the integration of contextualized audio-video materials had a profound and positive impact on the students' mathematical performance. The drastic improvement in the students' scores suggests that the multimedia resources used during the intervention helped enhance their understanding, engagement, and application of mathematical concepts. The fact that all students scored within the "Very Good" or "Excellent" categories indicates that the intervention was highly effective, allowing most students to reach higher levels of proficiency than in the pre-test. The strong shift in performance suggests that interactive, multimedia-based learning tools can be highly effective in capturing the attention of young learners and improving their academic outcomes, especially in subjects like mathematics where visualization and engagement are key to comprehension.

These results underscore the potential of contextualized audio-video materials in transforming the learning experience for Grade 2 students. The positive impact of these materials highlights the importance of integrating multimedia tools into educational practices to enhance students' comprehension and engagement, particularly in subjects like Mathematics that may otherwise be perceived as challenging. The absence of students in the lower performance categories after the intervention demonstrates the effectiveness of these materials in leveling the playing field, ensuring that all students benefit from the same high-quality learning experience. The results further suggest that the use of multimedia resources can help address gaps in student understanding and improve overall academic achievement in elementary education.

Table 3
Test of Difference Between in the Pre-Test and Post-Test Scores

Test Scores		**Standard Deviation**	**Computed T**	**Critical T**	**Decision**	**Interpretation**
Post	10.84	3.23	9.641	2.344	Reject H_o	Significant
Post	17.50					

Table 3 presents the test of difference between the pre-test and post-test scores of Grade 2 pupils in Mathematics before and after the integration of different contextualized audio-video materials. This table includes the standard deviations, computed T-values, critical T-values, decisions regarding the null hypothesis (Ho), and the interpretation of the results. The test compares the performance of the pupils on their pre-test (with a weighted mean score of 10.84) and their post-test (with a weighted mean score of 17.50), which reflects the change in their test scores after the intervention. The computed T-value for the post-test is 9.641, which is much higher than the critical T-value of 2.344, leading to the rejection of the null hypothesis and confirming that the difference between the pre-test and post-test scores is statistically significant. This suggests that the integration of audio-video materials significantly improved the students' performance in Mathematics.

The results from Table 3 indicate a substantial improvement in the students' test scores after the introduction of contextualized audio-video materials. The pre-test scores, with a weighted mean of 10.84, were categorized as "Good," whereas the post-test scores saw a marked increase, with a weighted mean of 17.50, categorized as "Excellent." This shift demonstrates a clear enhancement in the students' mathematical performance, with a significant increase in the number of pupils achieving higher scores after the intervention. The computed T-value of 9.641 for the post-test far exceeds the critical T-value of 2.344, which supports the rejection of the null hypothesis (Ho). This indicates that the observed improvement in scores is not due to chance, and the intervention had a positive and statistically significant effect on the

students' learning outcomes. The substantial difference between the pre-test and post-test scores underscores the effectiveness of integrating multimedia tools into the classroom to enhance learning.

The results in table 3 implied that the integration of contextualized audio-video materials is a highly effective strategy for improving students' performance in Mathematics. The significant improvement from "Good" to "Excellent" performance indicates that multimedia learning tools not only enhance engagement but also support deeper comprehension and retention of mathematical concepts. This suggests that multimedia tools, especially those tailored to the students' context, can effectively facilitate the learning process, making abstract concepts more accessible and engaging. The rejection of the null hypothesis highlights the importance of using interactive, multimedia-based approaches to achieve meaningful learning outcomes, particularly in elementary education. Teachers and educators can adopt similar strategies in their classrooms to improve students' engagement and academic performance, especially in subjects that may traditionally present challenges for young learners, such as Mathematics.

IV. CONCLUSION

Based on the results of this study demonstrate a significant improvement in the Grade 2 pupils' Mathematics performance after the integration of contextualized audio-video materials. The comparison between the pre-test and post-test scores, along with the rejection of the null hypothesis, highlights the effectiveness of this multimedia intervention in enhancing students' learning outcomes. The substantial increase in the post-test scores, from "Good" to "Excellent," underscores the positive impact of using multimedia tools to support deeper understanding and engagement with mathematical concepts. These results emphasize the value of incorporating interactive, contextually relevant audio-video resources in the classroom, offering a promising strategy for improving student performance, particularly in subjects like Mathematics, which can present challenges for young learners.

V. RECOMMENDATIONS

1. The intervention Plan should be implemented.

2. Teachers are encouraged to integrate contextualized audio-video materials as a regular part of their instructional strategy to enhance student engagement and improve comprehension in Mathematics

3. School heads should support the incorporation of technology and multimedia tools in classrooms by providing necessary resources, such as audio-visual equipment and training for teachers. They should also encourage a collaborative environment where teachers can share successful practices and resources, fostering a school-wide commitment to improving student outcomes through innovative teaching methods.

4. District supervisors should prioritize the inclusion of contextualized audio-video materials in the curriculum across various grade levels, especially in subjects like Mathematics. They should work with local education providers to ensure the availability of proper training, resources, and technology.

5. Education Program Supervisors should create professional development opportunities for teachers focused on the effective use of multimedia resources in the classroom. They should also facilitate ongoing evaluation of these teaching methods to measure their effectiveness in improving student performance.

6. Parents are encouraged to support the use of multimedia learning tools by helping to create a conducive environment for their children to engage with such resources. They can assist by ensuring that students have access to the required technology at home, as well as offering encouragement and guidance as their children explore these materials.

7. Stakeholders, including local government units, community organizations, and educational technology providers, should work together to provide the necessary infrastructure and funding to support the integration of contextualized audio-video materials in schools.

8. Researchers are encouraged to continue exploring the impact of multimedia-based learning on students' academic performance, especially in other subjects or age groups. Longitudinal studies that track the sustained impact of audio-video materials on students' learning and retention over time could further validate the effectiveness of such interventions.

9. Future researchers should consider conducting comparative studies on the use of different types of multimedia, such as audio-only or video-only resources, to determine which combination or format is most effective in improving specific academic skills. Research could also focus on the long-term benefits of using contextualized audio-video materials on students' overall academic achievement, motivation, and attitudes toward learning, particularly in subjects that require conceptual understanding like Mathematics.

ACKNOWLEDGEMENT

The researcher wishes to express her profound gratitude to the following who had contributed to the success of the study:

Dr. Bryant C. Acar, Chairman, for his encouragement and untiring effort in improving the study;

Dr. Dr. Annabelle A. Wenceslao, the writer's research adviser for his valuable suggestions, full support and encouragement;

Dr. Jasmine B. Misa and Dr. Elvin H. Wenceslao, as members of the Panel of Examiners for giving their professional suggestions and recommendation for the realization of this study;

Mrs. Marisa S. Magan, Schools District Supervisor, for giving permission to conduct the study in San Juan Elementary School in Palompon North District.

To the respondents of San Juan Elementary School pupils, for their honesty and cooperation in completing the data needed.

The researcher's family, whose unconditional love and understanding inspired him to finish this book

Above all, to God Almighty for the blessings and opportunity given to be able to pursue the graduate studies thus gaining professional development. More importantly, thanks to His guidance and enlightenment.

To all those who helped make this research paper done.

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AUTHOR'S PROFILE

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The author was born in Palompon, Leyte, Philippines, on October 16, 1986. She completed the Bachelor of Home Technology Education program at Palompon Institute of Technology with honors, earning a Cum Laude. She had a strong interest in journalism in high school and college. She was the assistant editor-in-chief of their campus publication before joining the campus journalism team. She won multiple honors in the field as well. As a journalism aficionado who is currently employed as a teacher, this motivates her to address certain issues in the field of education at Western Leyte College of Ormoc City, she is presently completing her Master of Arts in Education with a major in Elementary Education. She teaches grades two at San Juan Elementary School in Barangay San Juan, Palompon, Leyte, Philippines, and is currently a Master Teacher I in the Department of Education. She coordinates two student and teacher-focused school organizations: School Journalism and Research Development. She thinks that understanding how to address specific problems and concerns in the field.