The Use of Digitalized Learning Materials on Offline Grade 6 Learners in Learning Social Studies

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Abstract

This research determined the effectiveness of integrating ICT simulation in improving the Social Studies proficiency of Grade 6 learners at Mahayag Elementary School in Bayugan City, Agusan del Sur. The study employed a quasi-experimental design with a pre-test and post-test administered to both a control group (traditional instruction, n=38) and an experimental group (ICT-integrated instruction, n=45). The selection of these groups was done through a lottery method. The same 40-item Social Studies unified test from the Division of Bayugan City was used for both pre-test and post-test to measure the learners' Mean Percentage Scores (MPS). Data analysis involved frequency counts, percentage distribution, and a Paired Sample T-test to identify significant differences in the students' performance before and after the intervention. The findings from the paired t-test analysis reveal that both the control and experimental groups of Grade 6 learners showed significant improvements in their performance in Social Studies from pretest to posttest. The control group's mean score increased from 16.80 to 24.42, while the experimental group's score rose from 19.26 to 29.50. The t-values for both groups (-30.634 for the control and -25.828 for the experimental) with corresponding p-values of .000 indicate statistically significant differences between pretest and posttest scores, leading to the rejection of the null hypothesis. These results confirm that the learning strategies used in both groups effectively enhanced student performance. Notably, the experimental group, which utilized Digitized Learning Materials (DLM), not only had a higher posttest mean but also exhibited a more consistent performance as shown by a lower standard deviation (SD=3.889), suggesting that more learners in this group reached higher levels of achievement. This supports the conclusion that while both methods were effective, DLMs provided a more uniform and elevated learning gain, especially in an offline learning environment.

Index Terms: Enhanced student performance, Digitized learning material, Instructional materials,

I.INTRODUCTION

Understanding Social Studies from a global lens is crucial in our interconnected world. It cultivates cultural understanding, develops critical thinking for analyzing complex global issues, and fosters an appreciation for diverse perspectives. By examining historical, economic, political, and cultural relationships across regions, individuals gain insights into global interdependence and become more effective and responsible citizens capable of informed decision-making for the public good. This interdisciplinary approach enhances problem-solving skills and promotes empathy, essential for navigating the challenges and opportunities of a globalized society (Uopeople, 2024).

In the Philippine curriculum, Social Studies is often perceived by students as dull and uninteresting. This perception stems from its content-heavy nature, focusing on history, economics, politics, geography, and civic responsibilities. These areas require a precise and comprehensive teaching mode to effectively convey their importance and relevance. However, learners often struggle to find the subject meaningful, hindering their engagement and academic performance. Recognizing the significance of making Social Studies more appealing, teachers are challenged to adopt innovative teaching methods that foster understanding and interest among students (Flores, 2020).

One of the significant challenges educators face is the limited time available for classroom instruction. Teachers are pressured to cover a wide range of topics within a single academic year, often leading to condensed lesson delivery and reduced opportunities for collaborative learning. At Mahayag Elementary School, while the overall academic performance is commendable, the Mean Percentage Score (MPS) in Social Studies is notably low, with only 48%—the lowest among all subject areas. The Grade 6 curriculum in Social Studies includes complex topics such as the Philippine struggle for independence, the American and Japanese occupations, the early Philippine Republic, and the country's socio-political and economic development. These topics require more than rote memorization; they demand contextual understanding and critical thinking—skills that can be nurtured through engaging and interactive instructional methods (Flores, 2020)

Despite national efforts by the Department of Education (DepEd) to promote the integration of ICT and digital tools in teaching through initiatives such as the DepEd Computerization Program (DO No. 78, s. 2010) and guidelines on multimedia material use (DM 039, s. 2023), many learning interventions still rely heavily on traditional approaches. Most notably, there is a lack of studies and implementations focusing on offline interactive digitized materials**,** which could be highly beneficial in areas with limited internet connectivity. Furthermore, Grade 6 learners, at a transitional stage of development, often lack the confidence and independence to complete tasks independently. This raises the need for more teacher-facilitated yet learner-centered resources that cater to their learning needs in an engaging and age-appropriate manner.

This study aims to explore how the use of offline digitalized learning materials can enhance student engagement and academic performance in Social Studies The research seeks an innovative solution that bridges technological limitations and instructional challenges by utilizing interactive, multimedia-based tools that do not require Internet access. The goal is to present a teaching method that not only captures the attention of young learners but also deepens their understanding of historical and social concepts. Through this investigation, the researcher hopes to contribute to more effective pedagogical practices in Social Studies education and encourage the broader adoption of digital resources in offline classroom settings.

II. RESEARCH ELABORATIONS

The study is anchored to the cognitive theory of multimedia learning (CTML) that Richard E. Mayer developed in the 1990s at the University of California, Santa Barbara (USA). Mayer's CTML is based on principles from cognitive psychology and focuses on how people learn more effectively from words and pictures than from words alone, emphasizing the importance of managing cognitive load in multimedia learning. It represents a continuing and evolving attempt to understand how meaningful learning works for the grade 6th learners of Mabuhay ES by enhancing their ability to understand and retain complex concepts through carefully designed multimedia materials. This CTML theory emphasizes the value of presenting information using visual and verbal elements, which helps grade 6th learners process information more effectively. For learners in Social Studies , interactive, digitized learning materials combining images, text, and possibly audio can make historical events, cultural practices, and geographic concepts more tangible and easier to understand.

Furthermore, meaningful learning occurs when the learner engages in appropriate cognitive processing during learning, including attending to the relevant information in a lesson, mentally organizing the incoming information into a coherent cognitive structure (i.e., organizing), and connecting it with relevant knowledge activated from long-term memory (i.e., integrating; Mayer, 2021, 2022). Meaningful learning is indicated by performance on transfer tests, which involves using the learned material in new situations. CTML focuses on learners learning meaningfully from academic material containing words and graphics. It focuses on techniques that prime appropriate cognitive processing during learning.

In this study, the CTML is highly advantageous in teaching Social Studies as it enhances students' understanding, engagement, and retention of key concepts. Since Social Studies involves complex topics such as history, geography, governance, and economics, integrating multimedia elements like images, videos, maps, and interactive simulations helps

learners process information more effectively. CTML emphasizes that learning is more meaningful when verbal and visual channels are utilized, allowing students to grasp abstract ideas more easily. Additionally, multimedia materials make lessons more engaging, encouraging active participation and deeper interest in the subject. By presenting content in various formats, CTML also supports diverse learners, catering to different learning styles and ensuring inclusivity in the classroom. Moreover, using multimedia tools in teaching Social Studies fosters higher-order thinking skills, enabling students to analyze historical events, compare governance systems, and evaluate socio-economic issues critically. Ultimately, applying CTML principles in Social Studies improves comprehension and makes learning more interactive, dynamic, and effective for students.

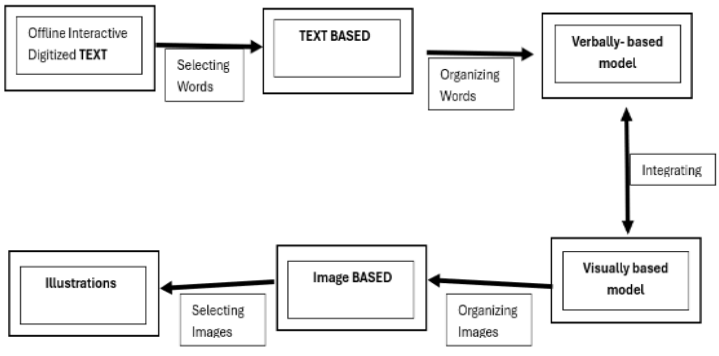
Thus, this theory benefits Social Studies , where understanding context and relationships is crucial. By engaging multiple senses and encouraging active learning, CTML empowers Grade 6 learners of Mahayag ES to build a more meaningful and lasting understanding of the subject, supporting their academic success in a way that is engaging and accessible.

Conceptual Framework of the Study

The foundation of this study is on the performance of the Grade 6 learners of Mahayag ES through the application of the Offline Interactive Digitized Learning Materials in Social Studies. The two variables were addressed and analyzed. The independent variable is the effects of Interactive Materials in Social Studies among Grade 6 learners on Mahayag Elementary School's identified competency, and the dependent variable is academic performance.

Cognitive Theory of Multimedia Learning (CTML) in the context of Social Studies revolves around the interplay of multimedia elements and cognitive processes to enhance learning outcomes. CTML posits that learners process information more effectively when instructional materials combine verbal and visual representations, such as text, images, videos, and animations. This dual-channel approach aligns with the principles of Social Studies, where complex topics like historical events, cultural dynamics, governance structures, and economic systems can be better understood through engaging and interactive multimedia. The framework is grounded on three core principles: dual-channel processing, where learners use both auditory and visual channels to absorb information; limited capacity, which ensures multimedia materials are designed to avoid cognitive overload; and active learning, which promotes the integration of prior knowledge with new information through well-organized multimedia content. By leveraging these principles, educators in Social Studies can create inclusive, meaningful, and compelling learning experiences that cater to diverse learners, align with the goals of 21st-century education, and foster critical thinking and a deeper understanding of the subject matter. The model below presents the conceptual framework of the study. It depicts how the Offline Interactive Digitized Learning Materials in Social Studies impact the academic performance of Grade-6 learners in Social Studies . The arrow connecting the boxes illustrates how the CTML facilitates the study.

Fig 1 Offline Interactive Digitized Materials Design based on CTML Model



III.RESEARCH METHODOLOGY

The study employed a quasi-experimental design with a pre-test and post-test administered to both a control group (traditional instruction, n=38) and an experimental group (ICT-integrated instruction, n=45). The selection of these groups was done through a lottery method. The same 40-item Social Studies unified test from the Division of Bayugan City was used for both pre-test and post-test to measure the learners' Mean Percentage Scores (MPS). The digitized learning materials used by the experimental group underwent a validation process at the school, division, and LRMDS levels. Data analysis involved frequency counts, percentage distribution, and a Paired Sample T-test to identify significant differences in the students' performance before and after the intervention.

III. RESULTS AND DISCUSSION

The pretest performance of the Grade 6 learners in Social Studies

Table 1 presents the Pretest Performances of the Grade 6 learners in Social Studies

Table 1 *Pretest Performances of the Grade 6 learners in Social Studies*

Proficiency Ranges	GROUP		Total	Descriptive Level
	Control Group	Experimental Group		
81-100%	0	0	0	Advanced
61-80%	6	8	14	Highly Proficient
41-60%	17	22	39	Proficient
21-40%	19	8	27	Approaching Proficiency
1-20%	3	0	3	Beginner
Total	45	38	83	

The Table shows the pretest performance results reveal that most Grade 6 learners, both in the control and experimental groups, were clustered within the Proficient (41–60%) and Approaching Proficiency (21–40%) ranges, indicating that while students possess some foundational knowledge in Social Studies , there remains a significant gap in achieving higher levels of mastery. This is true in the study of (Valerio, 2023); the performance of the Grade 6 pupils in Social Studies before the utilization of home-based video lessons was interpreted as good in his study; it means that before the utilization of the intervention in teaching Social Studies , the performance of the Grade 6 pupils is already good. This implies that there are already pupils who could master the skills, but most need intervention to improve their performance and achieve mastery.

The highest number of students, 39 out of 83, fell within the Proficient range (41–60%). This indicates that while most learners demonstrated a moderate understanding of the subject matter before any intervention, there remains significant potential for academic growth. The dominance of this proficiency level suggests that the learners possess foundational knowledge but may require additional support and more engaging instructional strategies to deepen their understanding. This finding is crucial to the study as it provides a clear baseline from which the efficacy of the digitized learning materials can be measured. If a noticeable improvement is observed in the posttest, particularly a shift from the "Proficient" level to "Highly Proficient" or "Advanced." While the lowest number of students, only 3 out of 83, fell within the Beginner range (1–20%). This suggests that very few learners demonstrated minimal understanding of the subject before the intervention. While this indicates that most students had at least some foundational knowledge, the presence of learners in the lowest proficiency level is still significant. It highlights the need for differentiated instruction and support for struggling learners. In the study context, this small group indicates how well the digitized learning materials can cater to learners with minimal prior knowledge. Suppose these students show considerable improvement in the posttest. In that case, it will further validate the effectiveness of the digitized materials in addressing learning gaps and promoting inclusivity among diverse learners, particularly those with the greatest need for academic support.

The study's findings revealed that using digitized learning materials significantly improved the academic performance of Grade 6 offline learners in Social Studies. Based on the comparison of pretest and posttest results, students in the experimental group who utilized digitized materials demonstrated notable gains in proficiency levels compared to those in the control group who were exposed to traditional instructional methods. This aligns with recent studies emphasizing the effectiveness of multimedia-based and interactive learning tools in enhancing student engagement and knowledge retention, particularly in social studies subjects (Delos Santos et al., 2023) and supported by (Reyes et al., 2022). The positive shift in learners' performance using digitized content suggests that such materials can bridge learning gaps, especially in resource-limited settings where online connectivity is challenging. The findings support the growing body of research advocating for integrating technology-driven resources in basic education to foster improved academic outcomes (Gonzales et al., 2024).

Post-test performance Grade 6 learners in Social Studies

Table 2 presents the post-test performance of the Grade 6 learners in Social Studies

Table 2 *Posttest Performances of the Grade 6 learners in Social Studies*

Proficiency Ranges	GROUP		Total	Descriptive Level
	Control Group	Experimental Group		
81-100%	4	10	14	Advanced
61-80%	20	27	47	Highly Proficient
41-60%	15	1	16	Proficient
21-40%	6	0	6	Approaching Proficiency
1-20%	0	0	3	Beginner
Total	45	38	83	

The Table shows the post-test performance of the Grade 6 learners in Social Studies , which indicates a significant improvement in the academic achievement of the experimental group compared to the control group. A notable number of learners in the experimental group (10) reached the Advanced level (81–100%), whereas only 4 learners from the control group attained the same level. Similarly, 27 learners in the experimental group were classified as Highly Proficient (61–80%), outperforming the 20 learners from the control group. In contrast, most learners in the control group remained within the Proficient and Approaching Proficiency ranges, and none from the experimental group scored in the lowest categories. This shift in performance suggests that the Digitized Learning Material (DLM) positively affected the learners' comprehension and mastery of the subject. These results align with recent findings emphasizing the effectiveness of digital and multimedia learning tools in increasing learner engagement and academic performance, particularly in social studies subjects (Delos Santos et al., 2023) and supported by (Gonzales et al., 2024). The data supports the conclusion that using well-designed digitized materials can significantly enhance learning outcomes, especially in offline learning contexts.

It can be gleaned that the study carries important implications for instructional design and delivery in Social Studies particularly for Grade 6 learners in offline learning contexts. The significant improvement in post-test scores among students who used the Digitized Learning Material (DLM) suggests that incorporating technology-enhanced, interactive, and accessible learning tools can greatly improve academic performance. This reinforces the value of developing instructional resources aligned with curriculum standards and responsive to diverse learner needs, even in non-digital or low-connectivity environments (DepEd, 2022). The positive outcomes also imply that digitized materials, when well-designed, can enhance learner engagement, promote deeper understanding, and reduce performance gaps between learners. Furthermore, the results highlight the need for schools and educators to invest in and adopt innovative teaching approaches that are flexible and inclusive, especially in preparation for blended and distance learning modalities (Santiago et al., 2023). Overall, the study underscores the transformative potential of DLMs in improving the quality and equity of education in the basic education system.

Significant difference in the pre-test and post -test performance of the grade 6 learners in Social Studies

Table 3 shows the result of the paired t-test, which was employed to determine if there existed a significant difference between the pretest and posttest performance of the learners in Social Studies.

Table 3 *Paired t-test between the Pretest and Posttest Performance of the Grade 6 Learners*

Group	Test	Mean Score	SD	t-value	p-value	Decision on H_o	Interpretation
Control Group	Pretest	16.80	5.525	-30.634	.000	Reject H_o	Significant
	Posttest	24.42	6.100				
Experimental Group	Pretest	19.26	4.642	-25.828	.000	Reject H_o	Significant

In the pretest, the mean score of the learners in the control group (m=16.80) was raised in the posttest (m=24.42). The pretest scores are less diverged from the mean score (SD=5.525) than the scores in the posttest (SD=6.100). This indicates that the learners' performance level was almost the same as their posttest performance. In the posttest, there is more variation in scores because many learners already had obtained higher performance levels. The pretest performance of the learners in the experimental group (m=19.26) also improved in the posttest (m=29.50). It can be noted that while their scores in the pretest had a higher divergence (SD=4.642), their scores in the posttest more or less converged concerning the mean score (SD=3.889). This indicates that in the pretest, only a few attained the highest level, while most attained the middle level. In the posttest, most of them had attained higher levels beyond the middle level.

Further analysis yielded that the data on the control group (t=-30.634; p=.000) and the experimental group (t=-25.828; p=.000) indicate a significant difference in the pretest and posttest performance of the learners in both groups. Thus, the null hypothesis is rejected for both groups. This indicates that both groups of learners had significantly improved their performance in the posttest after exposure to their respective learning strategies. The findings of this study indicate that both learning strategies employed by the learners were equally effective in enhancing their performance. This aligns with the research of Flores (2021), which demonstrated that contextualizing Social Studies instruction facilitates deeper conceptual understanding and fosters a learning environment relevant to learners' cultural backgrounds.

Table 4 presents the independent t- t-test on the Gain Scores of the Learners in Both Groups

Table 4 *Independent t-test on the Gain Scores of the Learners in Both Groups*

GROUP	N	Mean Gain Score	SD	t-value	p-value	Decision on H_o	Interpretation
Control Group	45	7.62	1.669				
Experimental Group	38	10.24	2.443	-5.763	.000	Reject H_o	Significant

The independent t-test result in Table 4 shows that the mean gain score of the learners in the control group (m=7.62) is smaller than the mean gain score in the experimental group (m=10.24). This difference is confirmed to be significant at the .01 level, as evidenced by the t-value of -5.763 at p=.000. This is proof that the use of digitized learning material is more effective than the usual way of teaching in the classroom in improving the performance of learners in Social Studies .This

aligns with the findings of Gonzales and Bautista (2024), who emphasized the positive impact of technology-enhanced instruction on learner achievement, and with DepEd (2022), which advocates for the integration of digitized learning tools in response to diverse learner needs, especially in offline or limited-resource environments. The results affirm that well-designed digital materials can be powerful tools for improving comprehension, engagement, and mastery of subject matter in the basic education curriculum.

The digitized learning material (DLM) in Social Studies possessed several key features that made it more engaging and contextualized, facilitating more effective learning among Grade 6 learners. One of its standout features was localized content and real-life examples that connected historical and civic concepts to the learners' daily experiences, making abstract topics more meaningful and easier to grasp. This approach is consistent with the principles of contextualized learning, which highlight the importance of relating lessons to the learner's environment and culture (Corpuz & Salandanan, 2021).

Additionally, the material integrated interactive multimedia elements such as images, audio narration, and simple animations that catered to different learning styles and kept learners interested throughout the lesson. Including offline-accessible features, such as clickable navigation and self-check quizzes, also empowered learners to explore the material independently at their own pace, promoting self-directed learning (Flores, 2022 & Delos Santos et al., 2023). The learner-friendly interface, with clear instructions and scaffolded activities, further enhanced usability and minimized cognitive overload, which is crucial for young learners (Guzman & Santiago, 2023).

Most importantly, the DLM is strictly aligned with DepEd's Most Essential Learning Competencies (MELCs), ensuring relevance and curriculum fidelity (DepEd, 2022). This alignment and the integration of culturally responsive content and offline functionality made the material both inclusive and effective, particularly in areas with limited access to the internet or printed modules. These features collectively contributed to a more engaging, contextualized, and impactful learning experience for the students. The study of Talosa et. al (2021) revealed that self-regulated learning and digital or technological self-efficacy are the two themes found as a learning opportunity with the current learning modality. This fact points out the new normal idea that learning is no longer limited to using physical textbooks or paper and pen; it is borderless. Furthermore, with the rapid growth of technological advancements, educators and learners should maximize their use to enhance teaching and learning.

Talosa, and Dirain (2021) findings are highly significant to the present study as they highlight how self-regulated learning and technological self-efficacy have become essential components of education in the new normal. These insights align with the current study's focus on the efficacy of Digitized Learning Materials (DLM) in enhancing learners' academic performance, particularly in offline settings. As traditional learning tools like textbooks and printed modules become increasingly supplemented or replaced by digital resources, learners must develop the confidence and ability to navigate technology independently. The improvement in post-test results among students who used the DLM affirms this idea, demonstrating that their engagement and understanding can significantly improve when they are equipped with digital tools and the skills to use them. Thus, the study by Talosa et al. reinforces the value of integrating technology in education, supporting the effectiveness and relevance of digitized materials as powerful tools for promoting learner autonomy and deeper learning. These insights validate the study's results and further highlight the importance of fostering digital competence and independent learning skills, critical for success in modern education. Ultimately, the study implies the importance on how integrating well-designed, expert-validated digital materials can bridge learning gaps and support the development of 21st-century skills among students, even in resource-constrained environments.

IV. CONCLUSIONS AND RECOMMENDATIONS

The post-test results revealed a marked improvement in learner performance, with the experimental group using the Digitized Learning Material (DLM) outperforming the control group. Many students reached the Advanced and Highly Proficient levels, while those in lower proficiency ranges noticeably decreased. These findings confirm the effectiveness of DLM in enhancing academic achievement and support its integration as a valuable tool for promoting quality and equitable education, especially in offline learning environments. The paired t-test results showed significant improvement in both groups' performance, with the experimental group using Digitized Learning Materials (DLM) achieving a higher mean score

and more consistent results. The statistical findings confirm that both teaching strategies were effective, but the DLM had a greater impact on learning outcomes. This highlights the DLM's potential to provide more uniform and enhanced academic gains, especially in offline learning contexts. Provide teacher training based on the Learning Action Cell (LAC) on the effective use and facilitation of DLMs to ensure that educators can maximize their instructional potential and address the diverse needs of learners.

It is recommended that schools adopt and regularly update Digitized Learning Materials (DLMs) through expert validation to ensure their continuous alignment with curriculum standards and effectiveness in supporting diverse learners, especially in offline settings.Educators and curriculum developers may integrate the Digitized Learning Material (DLM) into regular instruction in Araling Panlipunan to enhance academic performance and ensure inclusive, engaging, and accessible learning experiences, especially for offline learners. Schools may adopt and expand the use of Digitized Learning Materials (DLM) in Social Studies to further improve learner performance and bridge educational gaps, particularly in areas with limited internet access. Digitized Learning Materials (DLM) may be integrated into the regular teaching approach, particularly offline, to maximize student learning gains and ensure consistent academic improvement.

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