



The effect of wordwall digital game media on improving students' learning outcomes and communication skills in social studies at elementary school

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ABSTRACT

This research was conducted to investigate the effectiveness of Wordwall digital games in the context of elementary social studies learning. Specifically, the study sought to: (1) examine the extent to which the use of Wordwall media could enhance students' academic achievement; and (2) assess the contribution of this interactive platform in fostering students' communication skills during classroom activities. The study applied a pre-experimental approach using a one-group pretest-posttest design. In this design, a single class was observed without the inclusion of a control group. The participants consisted of 25 fourth-grade students enrolled at SDN Bontoranum II in Makassar. Data were gathered through the administration of tests, direct classroom observations, and the distribution of questionnaires. The collected information was subsequently analyzed using both descriptive and inferential statistical techniques. The results demonstrated a clear improvement in student performance following the integration of Wordwall digital games into the learning process. This progress was reflected in the students' quiz scores and the comparative analysis between pretest and posttest results. Before the use of Wordwall, the average pretest score in social studies was 68, which fell into the low category. After the intervention, the mean posttest score rose significantly to 88.0, categorized as high. Further statistical analysis through a t-test confirmed that the improvement was significant. The significance value obtained ($Sig = 0.013$) was smaller than the predetermined alpha level of 0.05, indicating that the use of Wordwall digital games had a meaningful impact on student learning outcomes in social studies. In addition to cognitive gains, the study also highlighted improvements in students' communication skills. The integration of Wordwall games encouraged greater classroom engagement, evidenced by students' active participation, enthusiasm in discussions, and increased confidence in expressing opinions during lessons. These findings suggest that Wordwall not only strengthens academic performance but also nurtures essential soft skills that support holistic student development.

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INTRODUCTION

Digital technology has grown quickly in Indonesia, and this has had a big impact on many parts of life, including education. This change is also influencing schooling. People are really interested in the digitalization of schooling. Adding digital tools to education makes big changes to the system, the culture, and the way people learn (Chakraborty et al., 2024; Kalyani, 2024). Education is very important for making human resources better. Schools and colleges need to keep up with how quickly science and technology are changing (Almenara, Cabero Julio, Carmen Llorente, Cejudo, Antonio Palacios, 2021). The development of education and the improvement of learning standards are both getting a lot of attention (Chakraborty et al., 2024). Giving people a good education is a direct way to make sure that they are competent and ready for work. These kinds of situations make it important for everyone in society to make education a priority as a way to help people reach their full potential through disciplined learning (Tuomi et al., 2023).

The evolution of a nation is intimately linked to the growth of its education system, which is a key part of national development. To speed up the realization of national goals, it is important to get future generations ready to be strong, smart, self-sufficient, and uphold spiritual values. Education is very important for improving the quality of life in the country because it creates people who are creative, skilled, innovative, and forward-thinking. These goals are in line with the goals of national education as set out in Law No. 20 of 2003 (UNESCO, 2020). To achieve these goals, teachers must respond constructively and objectively to enhance the quality of learning. Also, the current state of education has to slowly move away from traditional ways of teaching and toward the use of information and communication technology, which is happening because of the rapid rise of new technologies (Ethan Jian & Ryan Wei Sheng, 2023).

In today's digital world, it's important to use information and communication technology (ICT) in schools and other educational settings. For the millennial age, from elementary to higher education, learning activities are inextricably connected to technology advancement, especially through the prevalent use of ICT-based learning apps (Ginting, E. M. and Ginting, L. S. and Manurung, 2022). In this paradigm, teachers play a key role in guiding pupils and making sure that learning goals are met. Ki Hajar Dewantara, a well-known figure in Indonesian education, said that the most important part of education is guiding and fostering students' potential so that they can be happy and fulfilled as individuals and as members of society (Guntur et al., 2025).

To help students develop their skills, interests, and talents, all parts of the learning process must work together to get the best learning results. The basic parts that make this process work include teaching goals, teachers, students, subject matter, teaching methods, learning materials, and administrative and financial issues (Mhatre V. Ho, Ji-Ann Lee et al., 2012; Benoit et al., 2023). Each of these elements plays a vital role in ensuring the effectiveness of teaching and learning. As highlighted (Bates, 2019), teachers are not only responsible for mastering the subject matter but also for acting as communicators, mentors, motivators, and facilitators who shape students' attitudes, behaviors, and values.

Teachers are the main people in charge of the learning process and are responsible for getting future generations ready. Their role extends beyond fostering academic achievement to also developing students' resilience, adaptability, and creativity (Darling-Hammond, 2017). Because of this, teachers need to be able to create learning experiences that are both interesting and useful. Learning that is interesting to students is based on their interests and learning methods, whereas meaningful learning leads to beneficial improvements in attitudes, knowledge, and abilities (Wisniewski et al., 2020). Recent studies highlight the crucial role of teacher competencies in shaping student outcomes and overall achievement. For instance, (Raharja et al., 2022) found that teachers' competencies have a significant effect on both academic performance and character formation. Similarly, (Kalyani, 2024) demonstrated that incorporating active, enjoyable, and technology-supported learning strategies increases student engagement and contributes to more impactful educational outcomes.

Because people today care so much about getting better learning results, teaching methods need to change. Teachers need to think about what they do in order to enhance their teaching methods and make the learning experience better for their students. Nonetheless, despite the growing dependence

on novel pedagogical methods and ICT applications, the research has not yet identified the groundbreaking advancements or substantial breakthroughs required to transform existing educational practices. Recent research underscores the essential function of reflective practice in enhancing teaching quality and optimizing student learning outcomes (Gheith & Aljaberi, 2018) highlights how reflective practice enables teachers to critically analyze and refine their instructional strategies, thereby enhancing teaching efficacy and overall student performance. Additionally, (Gupta & Damodar, 2025) explore how the integration of ICT in education has the potential to transform teaching and learning processes, offering new opportunities for enriching educational experiences and outcomes. These findings underscore the need for continuous adaptation and innovation in teaching practices to meet the ever-evolving demands of modern education.

To deal with the problems of modern education, it is now more important than ever to improve the quality of teachers. An excellent teacher should come up with ways for students to learn that make them want to participate and be conscious of what they're learning, rather than just seeing it as a duty (Darling-Hammond, 2017). Teachers need to plan lessons and activities that get pupils excited about learning. Motivation in learning is a major factor that gets pupils to actively participate in the learning process (Ryan & Deci, 2019). It is thought that using technology in the classroom makes it easier for teachers to organize and manage learning resources (Katyendo & de Souza, 2022). With the help of new technology, it is now easier to manage the principles and content of learning. Technology enables learning to occur not only within the classroom but also outside spatial and temporal confines (Johnson, L., Adams Becker, S., Cummins, M., Estrada, V. & Freeman, A., and Hall, 2016; Pelletier & Brown, Pelletier, K., Brown, M., Brooks, D. C., McCormack, M., Reeves, J., Bozkurt, A., Crawford, S., Czerniewicz, L., Gibson, R., Linder, K., Mason, J., & Mondelli, 2021).

Various advancements in information technology have provided efficiency and accessibility that support the learning process (Pelletier & Brown, Pelletier, K., Brown, M., Brooks, D. C., McCormack, M., Reeves, J., Bozkurt, A., Crawford, S., Czerniewicz, L., Gibson, R., Linder, K., Mason, J., & Mondelli, 2021). Teachers work as mentors to help students learn and teach. Teachers should act like second parents by getting children to trust and like them. This will make them role models and make the lessons simpler to understand (Darling-Hammond, 2017). Teachers need to be able to keep their students interested in learning and working hard at it (Ryan & Deci, 2019). Teaching is more than just giving pupils facts. Teachers should know how to make the classroom a fun place to study without tension, doubt, or worry (Silvia, 2013; Wisniewski et al., 2020). The use of the current autonomous curriculum shows a fresh and new way of teaching that gives pupils more freedom to learn (Huang, 2023).

Initial observations indicated numerous obstacles in the execution of social studies education. These include: (a) the lack of interesting learning materials, especially technology-based tools, in the classroom; (b) students not paying attention during lessons, as shown by behaviors like talking to friends or doing things that aren't related to the lesson; (c) not having enough learning infrastructure; and (d) not having enough new teaching methods, which has made the learning process less effective. Because of these circumstances, teachers need to use more creative and new ways of teaching, especially in social studies, to make learning more interesting and relevant for fourth-grade elementary children. Moreover, results from interviews and first observations at Bontorannu Elementary School revealed that the utilization of instructional media is still limited. Teachers haven't used high-tech tools to their full potential when it comes to learning media. Students will be more active and remember what they learned better with the help of media. But pupils don't grow as much when they only consume media that is still limited and seems boring. In the IT area, media is still not used much and is not very advanced. Media includes photographs, movies, music, and power points. The media is used by utilizing an LCD. In class IV, a lot of pupils also seem less interested or eager about learning. Researchers think that the teaching strategies or methods used by teachers still need to be looked at and the learning media that needs to be improved since pupils who aren't as interested in learning social studies are not doing well. Additionally, some kids have scores that are below the set standards. Teachers haven't employed high-tech learning tools in the best way possible. Students will be more active and remember what they learned better if they have media to help them. In the learning process in class, students' ability to communicate at school is still lacking (Wisniewski et al., 2020). In the learning process, there are still many students who look passive and rarely

communicate either asking or answering questions from the teacher (Neimann et al., 2021). Providing learning motivation by the teacher and supported by the use of interesting media is essential to improving student engagement (Ryan & Deci, 2019). Many students in class still have trouble turning their thoughts, feelings, experiences, or knowledge into spoken language (William Dylan, 2013). A lot of kids want to tell stories to share their ideas and thoughts, but they have trouble since they aren't motivated to study and the visual media they employ (Katyudo & de Souza, 2022). The media is usually the person or thing that sends the word to the one who gets it (Mayer & Fiorella, 2021). Teachers use media to get kids excited about learning (Miller, 2020). Using media in the classroom is a real example of how people learn (Mayer & Fiorella, 2021). Learning media help students understand the ideas behind the subjects, which makes them an important part of good teaching. Media are useful teaching tools because they give students access to the information they need to learn and teach (Katyudo & de Souza, 2022). The use of media must fit the individual circumstances and setting of the learning environment. As a result, teachers need to be able to create, choose, and use the right learning materials, whether they are already accessible or new ones they come up with themselves, to make sure that students reach their learning goals (Huang, 2023).

There are several types of media that can be used to help people learn and teach. In general, learning media are very helpful for getting pupils excited and motivated, which are both important for learning (Mayer & Fiorella, 2021). Because it is so important, teachers need to show effort, knowledge, competence, and professional abilities when they use media in their lessons (Huang, 2023). From a professional standpoint, learning media are indispensable instruments that enhance the dissemination of knowledge and elevate the overall quality of classroom interactions (Katyudo & de Souza, 2022). However, in practice, the use of media is often ignored or done wrong because of a number of problems, such as not having enough time to prepare, not being able to find the right resources, and the high cost of making learning media (Mayer & Fiorella, 2021). Because of these problems, schools are encouraged to use more interesting and new media in the classroom to boost students' enthusiasm and learning (Johnson, L., Adams Becker, S., Cummins, M., Estrada, V. & Freeman, A., and Hall, 2016).

Teachers must now come up with new ways to use learning media. Innovation is vital to make learning more fun and useful (Huang, 2023). Teachers can do a lot of things, such use different types of media, use technology, and so on. Using old material could make students less involved in class (Mayer & Fiorella, 2021). As a result, using media in the classroom should include creating or combining several types of media to teach the material well (Clark et al., 2021). Even if resources are still limited, schools are still trying to set up learning activities that fit the needs of today's world (Johnson, L., Adams Becker, S., Cummins, M., Estrada, V. & Freeman, A., and Hall, 2016). People think that quickly expanding technology and information will help the field of education evolve toward better and easier ways to communicate (Ally M, 2018). To improve and speed up the learning process, new ways of learning need to be found (Huang, 2023). Educators are required to be creative by utilizing technology as a medium that will support the success of learning objectives (Ryan & Deci, 2019).

In elementary education, social studies instruction requires the use of media that can stimulate students' interest and engagement. As a classroom strategy, learning media functions to actively involve students in the learning process, thereby creating a more effective and enjoyable learning experience. (Mayer & Fiorella, 2021). Seeing the current gaming habits of children using Android makes researchers interested in using game media as something that children like to include in the learning process (Bahl & Hagen, 2017). Games that are played later can be used primarily for entertainment, or fun, but can also function as a means of learning and practice (Barr, 2013). Through this game, it is expected to hone intelligence and brain skills (Franceschini et al., 2022).

Seeing the current gaming habits of children using Android makes researchers interested in using game media as something that children like to include in the learning process. Games that are played later can be used primarily for entertainment, but can also function as a learning tool and evaluation tool (Bahl & Hagen, 2017). Through this game, it is expected to hone intelligence and brain skills (Franceschini et al., 2022). Therefore, it is necessary to make educational games that lead students to be active and excited in learning activities (Li et al., 2024). Researchers are also interested in developing learning media based on digital Wordwall games. The media is useful in learning, namely

increasing students' enthusiasm in participating in learning. Attractive appearance/features with more varied games that are easy for students to use in understanding learning (Katyendo & de Souza, 2022). The use of digital games in learning also provides a new, interesting and not boring experience for students, especially in social studies learning (Clark et al., 2021).

This study has considerable potential to contribute to the advancement of future educational practices. By examining the influence of digital game-based media, particularly Wordwall, on students' learning outcomes and communication abilities, the research offers important insights into how technology can support both cognitive development and social interaction in learning (Bahl & Hagen, 2017). As the role of Information and Communication Technology (ICT) in education becomes increasingly prominent, the results of this study may guide the creation of learning resources that are not only more engaging but also more effective (Tondeur et al., 2008).

This study contributes to the field of educational technology by investigating how interactive media can promote a more engaging and student-centered learning environment. It demonstrates the potential of digital games, such as Wordwall, to enrich social studies instruction by shifting from conventional approaches toward more dynamic and enjoyable learning experiences for elementary students (Bahl & Hagen, 2017). In this context, the research emphasizes the importance of teachers adapting to technological advancements in order to enhance student engagement and improve academic achievement (Ally M, 2018; Mayer & Fiorella, 2021).

In addition, this research offers valuable contributions to the study of communication skills development. It explores the role of digital games not only in enhancing academic competence but also in fostering essential communication abilities that support children's social integration (Bahl & Hagen, 2017). By strengthening students' capacity to articulate ideas both verbally and in writing, the study promotes a holistic educational perspective that integrates academic success with social and emotional growth (Li et al., 2024).

In the long run, the results of this study have the potential to inform the development of future educational tools that integrate game based learning, particularly in addressing students' diverse needs and fostering competencies that extend beyond conventional academic domains (Bahl & Hagen, 2017). Consequently, this research could serve as a foundation for future innovations in educational technology aimed at enhancing both the quality of learning and the social dimensions of student development on a global scale (Ally M, 2018; Mayer & Fiorella, 2021).

Based on this phenomena, the researcher was motivated to undertake a development-oriented study (research and development) aimed at exploring the utilization of digital technologies to enhance the learning experience. As a result, the researcher has opted to continue examine this topic under the title: "The Impact of Wordwall Digital Game Media on Enhancing Students' Learning Outcomes and Communication Skills in Social Studies at the Elementary School Level." This research aims to explore the utilization of interactive, game-based media to develop learning environments that are more engaging and successful for young learners.

RESEARCH METHOD

This research utilized a pre experimental approach, in which only one experimental class was involved and no control group was included. (Jack R., Fraenkel, Norman E., W., Helen H., 2020). The experimental group consisted of 25 students from SDN Bontorannu II in Makassar City, which is equipped with complete infrastructure to support the learning process. According to (Ofosu-Boateng, 2017), such designs are appropriate for examining interventions in natural settings, although they may be limited by external variables that could influence the dependent variable. Data were collected through a combination of tests, observations, and questionnaires, ensuring data triangulation and enhancing data reliability and validity (John W. & J. David Creswell, 2018).

The data were analyzed using descriptive statistics to provide an overview of student performance, followed by a paired samples t-test to determine the significance of differences between the pretest and posttest results (Field, 2018; Julie, 2022). The use of a t-test is consistent with common practices in educational research, particularly when working with small sample sizes in pre-posttest designs (Julie, 2022).

In quantitative research, data analysis is the crucial phase that follows data collection. It involves reviewing, organizing, and grouping data with the aim of developing working hypotheses and elevating them into conclusions or theories as researcher findings (Gravetter et al., 2020). This process encompasses inspecting, cleaning, transforming, and modeling data to uncover essential information, suggest conclusions, and support decision-making (Jack R., Fraenkel, Norman E., W., Helen H., 2020).

In this study, hypothesis testing was conducted using a t-test with a significance threshold (α) of 0.05 or 5%. The judgment rule used was this: if the significance value (Sig) is larger than 0.05 or the estimated t-value is less than the crucial t-table value, then H_0 is accepted. This means that the independent variable does not have a significant effect on the dependent variable. On the other hand, if the significance value (Sig) is less than 0.05 or the estimated t-value is higher than the t-table value, then H_0 is not true, which means that the independent variable has a big effect on the dependent variable. This study employed both descriptive and inferential statistical methods for data analysis. The descriptive analysis was conducted to describe and summarize the learning outcomes of students who received instruction via Wordwall game-based media. The students' performance before and after exposure to the media was compared to determine effectiveness (Field, 2018). After the data were obtained, inferential statistical techniques, specifically the paired samples t-test, were employed to assess whether the differences observed were statistically significant (Gravetter et al., 2020).

For data collection, this study implemented pre-test and post-test assessments to evaluate students' learning outcomes and communication skills in Social Studies. Such a design is frequently applied to capture changes resulting from educational interventions (John W. & J. David Creswell, 2018). These assessments provided quantitative data on students' academic performance and communication abilities.

To guarantee the reliability of the instruments, several validation procedures were carried out. The assessments of learning outcomes and communication skills were examined in terms of content validity and internal consistency. Reliability was tested using Cronbach's Alpha, which demonstrated a high level of measurement consistency (John W. & J. David Creswell, 2018). Furthermore, the test items were designed to comprehensively reflect the core competencies of the fourth-grade Social Studies curriculum, thereby ensuring their alignment with instructional objectives and the skills emphasized in the Wordwall intervention (Jack R., Fraenkel, Norman E., W., Helen H., 2020).

The hypothesis was tested at a significance level of 5% ($\alpha = 0.05$). The decision rule indicated that H_0 would be allowed if the t-value was lower than the critical value from the t-table or if the significance level (p-value) was higher than 0.05, which signified that there was no significant effect. On the other hand, H_0 would be rejected and H_1 would be allowed if the estimated t-value was higher than the t-table value or if the p-value was lower than 0.05, which would mean that there was a significant effect. (Julie, 2022). The analysis led to the rejection of H_0 and the acceptance of H_1 , demonstrating that Wordwall gaming medium substantially enhanced students' learning outcomes and communication abilities in Social Studies at SDN Bontorannu II Makassar City.

RESULT

The initial phase was conducted to analyze the needs of social studies learning media, especially at the level of elementary school education units. This is done to obtain accurate information on the objective conditions in the field regarding the needs of social studies learning media currently.

Student Communication Skills

The use of digital games in learning Wordwall media is a set of activities that students can use as media, learning tools, and tests to improve their communication abilities. Through play and learning activities that are tailored to the requirements and situations of children, especially in the present independent curriculum. In this time of constant change, teachers are becoming more and more crucial in developing and inspiring the next generation. It's incredibly crucial for teachers to come up with new ideas. In education, innovation doesn't just imply using new technology or advanced learning tools. It also means changing or updating the ways, methods, and strategies used to teach and learn. A teacher can fulfill the many learning needs of their pupils, make them more interested

in studying, stay up with new technology, help them become more creative and smart, and make future leaders by being creative. So, teachers need to always be looking for new methods to enhance and change how they educate. When students use multimedia in a planned and creative way, they can learn more profoundly and understand what they are being taught. Teachers may make learning more interesting, exciting, interactive, and valuable for students by employing a lot of different types of media, especially multimedia. Using multimedia in the classroom can also make students more interested, focused, and motivated. It's not just the teacher's role to give out information. A teacher is both a guide and a helper. They are in charge of aiding, mentoring, teaching, and leading students so that they can attain their full potential in a way that fits with the needs of the present and the world around them. Teachers also need to maintain learning throughout their lives so they can stay up with changes in society. This lets them give students learning experiences that are up-to-date, useful, and engaging. According to (Gandasari & Pramudiani, 2021) wordwall is an interactive learning media game that can be accessed online and has a varied and attractive appearance, the game will be answered by students, so it is expected to attract student motivation in learning. Teachers are both facilitators and mentors. Their job is to guide, teach, and encourage students so that they can reach their full potential in a way that fits with their surroundings and the needs of modern society. Teachers are also supposed to be lifelong learners who keep learning new things and getting better at what they do. This lets them make learning experiences that are still meaningful, useful, and fun.

Table 1 Student communication achievement

Assessment Indicator	Communication Skills	
	Frequency	Percentage
Developing Very Well	10	40.0
Developing as expected	14	56.0
Beginning to appear	1	4.0
Not yet visible	0	0

Based on Table 1, it's clear that 10 of the 25 students (40%) had very well-developed communication abilities. This shows that pupils can tell or share what they learnt in a clear and organized way. There are 14 pupils (56%), which is what we expected, which means that students can tell items as expected. Then, during group discussions in class, it became clear that one student was able to communicate well. For the learning process to work well and for students to get the best results, both teachers and students need to be actively involved. Good engagement makes learning more meaningful, useful, and interesting. Communication is one way that people commonly interact in the classroom. Communication that happens all the time will help people get along with each other. They both work together to create a relevant learning environment. The achievement of learning objectives can be assessed through both the learning process and the evaluations conducted. In this study, evaluation was carried out by observing students' communication skills and monitoring their overall classroom activities during the implementation of digital Wordwall media. The activities carried out by children in this section are playing while learning. When students are discussing with each group, the teacher then monitors each student individually by using the student communication skills observation sheet which includes student understanding, especially what is expected is the occurrence of many-way communication, both communication between teachers and students and students with other students.

The use of Wordwall game media in the learning process is designed to encourage the development of students' communication skills, particularly in expressing opinions and mastering subject matter, while remaining aligned with child development, instructional objectives, and learning procedures. The effectiveness of this process is determined by the quality of interaction between teachers and students. As highlighted by (Muatet & et.al., 2019), digital Wordwall games are intended to transform learning activities into educational games. The educational value of games can be observed in their function as tools to: (1) enhance awareness and motivation; (2) train practical skills; (3)

expand knowledge; (4) foster communication and collaboration; and (5) integrate various learning experiences.

Student Learning Outcomes

Description of Student Pretest Learning Outcomes

The description of students' initial learning outcomes in social studies subjects is obtained based on the results of working on pretest questions done by students. The following is presented in table 1 regarding data on student pretest learning outcomes in relation to aspects of student initial learning outcomes after working on social studies learning outcomes test questions.

Table 2 Data on social studies pretest learning outcomes

Value	Category	Frequency	Presentation
90 - 100	Very High	1	4
80 - 89	High	3	12
70 - 79	Medium	8	32
60 - 69	Low	10	40
0 - 59	Very Low	3	12
Total		25	100

Source: Research Data Year 2024

Referring to Table 2, the pretest results indicate that 3 students (12%) were categorized as very low, 10 students (40%) as low, 8 students (32%) as medium, 3 students (12%) as high, and 1 student (4%) as very high.

The observation results regarding the execution of the social interaction component during the trial indicated that in the initial and subsequent meetings, many elements were only partially implemented. This happened because the kids didn't know how to use the digital Wordwall game medium very well, especially at first while they were learning how to play. But after students were shown how to play and use the game, they learned more about it and become more comfortable with it. At the first meeting of the digital game introduction stage, all the kids seemed to like the digital wordwall game, especially when they utilized it to learn. It was observed during the game's installation that certain students within their groups engaged in gameplay independently, neglecting to collaborate with peers in the pursuit of solutions, resulting in suboptimal scores. The researcher then worked with the teacher to explain to the students again that they needed to work together in their groups to find the right answer quickly. Teamwork is what makes a group successful, especially when it comes to getting the most points. The time it takes to finish the question is actually a separate test in the game, along with the points. To find out how the game is being played in order of importance. Because of the reflection, everything about the social system went well at the next meeting. Overall, the kids seemed to be more involved in the group, and they worked together better when the game was played in class.

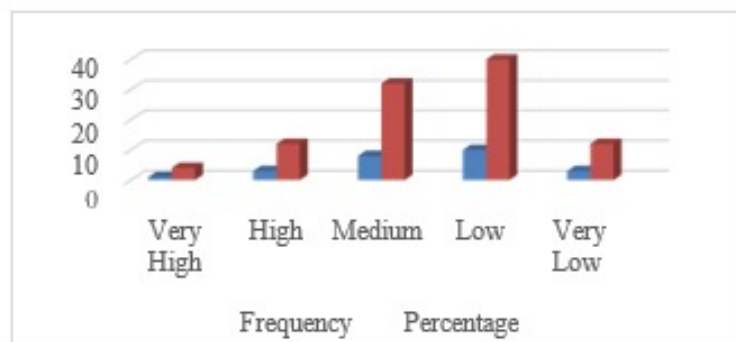


Figure 1: Bar Chart of Pretest Results

The percentage of mastery in Social Studies learning outcomes based on students' pretest results is presented in the following table:

Table 3 Percentage of Pretest Completion

Criteria for Completion	Category	Frequency	Presentation
0 - 69	Not Completed	12	48
70 - 100	Completed	13	52
	Total	25	100

Source: Research Data Year 2024

According to Table 3, the average scores for Social Studies demonstrate that 48% of students did not meet the requirements for completeness, while 52% did. These results show that total learning mastery was not fully achieved, since only 16 out of 25 pupils met the needed standard.

Overview of Posttest Learning Outcomes

The description of students' initial learning outcomes in social studies subjects is obtained based on the results of working on posttest questions done by students. The following is presented in table 3 regarding data on student posttest learning outcomes in relation to aspects of student initial learning outcomes after working on social studies learning outcomes test questions.

Table 4 Posttest social studies learning outcome data

Value	Category	Frequency	Presentation
90 - 100	Very High	7	28
80 - 89	High	8	32
70 - 79	Medium	10	40
60 - 69	Low	0	0
0 - 59	Very Low	0	0
	Total	25	100

Source: Research Data Year 2024

As presented in Table 4, the posttest results of students' Social Studies learning show that none of the students (0%) were in the very low or low categories. A total of 10 students (40%) fell into the medium category, 8 students (32%) were classified as high, and 7 students (28%) were placed in the very high category.

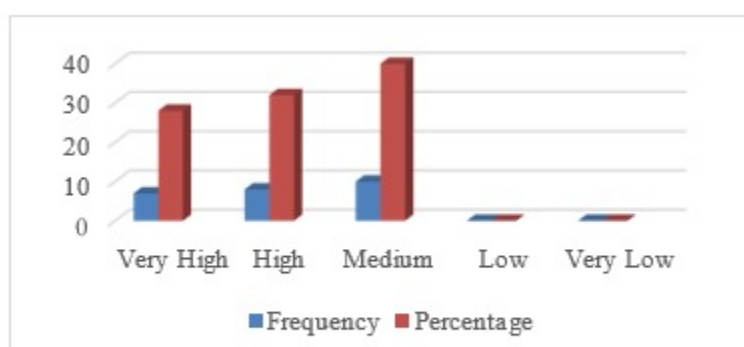


Figure 2. Bar Chart of Posttest Results

The percentage of mastery in Social Studies learning outcomes based on students' posttest results is presented in the table below:

Table 5 Percentage of Completion on *Posttest*

Criteria for Completion	Category	Frequency	Presentation
0 - 69	Not Completed	0	0
70 - 100	Completed	25	100
Total	25	100	

Source: Research Data Year 2024

According to table 5 above, the average score for social studies learning outcomes shows how well students did, and the completeness of social studies learning outcomes shows that 0% were incomplete and 100% were complete. Based on the results, it can be said that the teaching and learning process was complete because 25 pupils reached completeness. Based on the students' posttest learning outcomes, we may conclude that the social studies learning outcomes were "very high" because a lot of kids had test scores with a competence level of 70 to 100. These results show that using digital Wordwall gaming media in the classroom had a good effect on students' Social Studies scores, as seen by the fact that they all got very high marks. Instructional effect is when students reach their learning goals directly because they are steered toward them. This is seen by more students participating and better Social Studies performance. There are also indirect consequences, such better cooperation between teachers and students and between students and their peers, which builds trust in the learning process. Students also gain the confidence to speak their minds in public, as shown by their improved communication skills and ability to get their views across clearly. Wordwall games also help kids learn to be responsible, work together, and compete in a healthy way with other groups. They also help students learn to appreciate other people's points of view and control their emotions when they win or lose.

Student Activity Results

There were a lot of problems when Wordwall games were originally introduced in class. For instance, children didn't listen to the teacher, left the room without permission, were too excited when they played alone instead than with others, and had difficulties controlling their feelings when they won or lost. But as the teacher and researcher talked about it, things changed in the next sessions, and the students' terrible behavior eventually got better as they learned. The study of how engaged students were during Social Studies lectures using digital Wordwall games showed a number of positive outcomes. Teachers often helped students use the Wordwall app, which made the classroom more fascinating and fun. Students worked together more to find answers, shared their ideas, and asked questions of their teachers and classmates. Also, the way the learning materials were given out was interesting, which made the pupils very intrigued. Kids worked better together in groups, and kids were more excited to play Wordwall games. They might also better handle their emotions, win or lose. The teacher's rewards kept students interested in learning by offering them more reasons to do so. Most students had a good reaction to the use of digital Wordwall game-based media in Social Studies lectures. The examination of student engagement in Social Studies classes utilizing digital Wordwall media revealed numerous favorable outcomes. Teachers always helped students use the program, and the classroom became a more fun and productive place to learn. Students worked together better to solve challenges in the games, shared their thoughts, and had interactive discussions with both their peers and their teachers. The learning materials were delivered in an engaging manner, which fostered greater curiosity among students. These results are consistent with the view of Anastasiadis, Theofylaktos, Georgios Lampropoulos, and Kerstin Siakas (2018) who argue that digital game-based learning provides an environment that helps students maintain focus and concentration during the learning process.

Teacher activity results in classroom

The results of classroom observations demonstrated that teachers' activities got better from one meeting to the next. 1) The teacher was observed to be deficient in facilitating apperception among pupils during the initial meeting. But after noticing this problem, the teacher made sure to include apperception before the lesson in the next sessions. 2) The teacher told the students what they would be learning at the start of the first meeting, but they didn't do enough to get them excited about it. The teacher focused on getting pupils excited for the next meeting because they saw this gap. 3) The teacher did a good job of explaining the content and giving the students group problem-solving activities during the first lesson. The teacher was better at explaining the content and setting up group exercises by the next meeting. 4) At this point, the pupils were put into groups of five to six people. 5) The teacher gave each group a detailed explanation of the student work. 6) After this, the teacher used the Wordwall app to make quizzes that were fun and interesting. 7) The teacher gave prizes to all the groups, and 8) Finally, the teacher and the pupils went over what they had learnt. To assess the practicality of using the Wordwall digital learning media in Social Studies, data was collected through the teacher's responses, as seen in Table 6.

Tabel 6. Components observation

Assessment Indicator	Average	Description
Content quality/relevance	3.78	Very suitable
Knowledge Construction	3.70	Very suitable
Ease of Access	3.45	As per

Referring to Table 6, the average teacher response to the use of Wordwall game media reveals that the quality and relevancy of the content are very suited for the learning process. Using Wordwall to help pupils learn new things is also a great way to help their brains grow. However, the ease of access is assessed as "appropriate," which means that there are some problems with the network connection during learning sessions.

To evaluate the effectiveness of the intervention, a t-test was employed to compare the results of the pretest and posttest. The analysis showed a significant difference in students' performance before and after the intervention, confirming the positive influence of Wordwall game media on both learning outcomes and communication skills (Field, 2018; Kalyani, 2024). These results align with earlier studies that reported the benefits of digital game-based learning in enhancing student engagement and academic achievement (Julie, 2022). Nevertheless, this research offers a distinctive contribution by specifically examining the application of Wordwall media in elementary Social Studies, whereas most prior studies have focused on broader educational contexts.

The findings from teacher responses, which highlight the practicality of Wordwall game media, indicate that it serves as an effective instrument for improving the quality of learning in elementary classrooms. Accordingly, this study adds to the expanding body of research on digital game integration in education by showing its potential to enhance both academic performance and communication skills. The uniqueness of this research lies in its emphasis on the practical application of Wordwall media within Social Studies instruction, thereby addressing gaps in previous studies concerning subject-specific contexts and the incorporation of ICT in elementary education.

CONCLUSION

Incorporating technology into teaching is now an important part of learning in the 21st century. In this context, technology serves as a medium that significantly enhances and shapes students' learning experiences. The framework of 21st-century education also stresses how important it is for teachers to understand, adapt to, and apply new technologies, especially when it comes to information technology. In the classroom, using technology has been proved to have good effects, notably on how kids learn.

The results of this study show that: (1) using Wordwall digital gaming media improved primary students' learning outcomes, as seen by higher quiz scores and a big difference between the pretest and posttest results. The pretest results for social studies learning outcomes were in the low range before the digital media game wordwall was used. The posttest score has gone up, and it is now in the high range. (2) The use of Wordwall digital game media was found to improve students' communication skills, as seen by their improved involvement and confidence in sharing their thoughts during Social Studies lectures. This media also helped people work together and be better team players when used in groups. Digital game wordwall is not only a media and learning tool, but it is also a fun way for pupils to test their knowledge in the classroom. Consequently, it can be inferred that the digital game wordwall exerts a beneficial impact on enhancing the educational results and communication abilities of elementary school pupils studying social subjects. Even if there are a lot of learning tools and technology is changing quickly, the teacher's involvement in the learning process is still very important. No new technology can totally replace the presence and role of a teacher. This emphasizes and strengthens the need to use instructional technology to make the learning process more fun and exciting for pupils. Teachers are lifelong learners who must always improve their knowledge and abilities to keep up with the times. This is so they may teach students in a way that fits their learning environment and makes learning more exciting and meaningful. So, teachers, as the front line of education, are supposed to help students reach their full potential and create great future generations who are ready to face both current and future issues. The findings of this research suggest that the incorporation of technology, especially digital learning platforms like Wordwall, is crucial for enhancing student engagement and academic performance. The results show how important it is for teachers to keep learning new things so that they can use technology effectively in the classroom. Teachers who keep up with changes in technology are better able to meet the needs of all of their students while also helping them do well in school and grow as people.

Future studies should investigate the enduring effects of digital game-based learning tools on other aspects of student development, such as critical thinking, teamwork, and problem-solving skills. Moreover, educational institutions should invest in professional development programs that provide teachers with the necessary skills to effectively incorporate technology into their instructional practices, thereby facilitating the creation of more interactive and engaging learning experiences. Teachers are also required to be coming up with new ways to teach so that they can keep up with how quickly technology is changing and how education needs are changing.

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