Enhancing Student Learning Outcomes in Social Studies: An Investigation Into The Lazarus Educational Game

Burhan[1*], Runniarsiti[2], Susalti Nur Arsyad[3], Fina Melani Putri[4], Agung Rinaldy Malik[5] (iD)

[1,2,3,4] Bosowa University, Makassar, Indonesia
[5] Universitas Madako Tolitoli, Sulawesi Tengah, Indonesia

ABSTRAK

Pesatnya kemajuan teknologi memberikan peluang yang semakin besar untuk memasukkan permainan digital dan alat berbasis teknologi lainnya ke dalam kurikulum IPS. Penelitian ini bertujuan untuk menganalisis pengaruh permainan edukasi Lazarus terhadap peningkatan hasil belajar sosial dan kognitif pada mata pelajaran IPS sekolah dasar. Pendekatan yang digunakan adalah pendekatan eksperimen kuantitatif, dengan sampel sebanyak 53 siswa kelas IV yang dibagi menjadi dua kelompok: kelompok eksperimen (IV-B) dan kelompok kontrol (IV-A). Data dikumpulkan melalui tes, wawancara, dan dokumentasi, dan dianalisis menggunakan regresi linier sederhana dan uji-t. Temuan penelitian mengungkapkan dampak positif permainan edukasi Lazarus terhadap perkembangan sosial siswa, yang menunjukkan peningkatan keterlibatan dan interaksi sosial siswa. Selain itu, perbedaan yang signifikan dalam hasil belajar kognitif diamati antara dua kelompok. Kelompok eksperimen (IV-B) menunjukkan hasil belajar yang lebih tinggi dibandingkan kelompok kontrol (IV-A), yang menunjukkan efektivitas permainan Lazarus sebagai alat pembelajaran. Penelitian ini memberikan kontribusi yang berharga bagi kemajuan metode pengajaran, khususnya dalam konteks mata pelajaran IPS. Pemanfaatan permainan edukasi Lazarus menjadi salah satu alternatif yang efektif untuk meningkatkan hasil belajar siswa khususnya dalam perkembangan sosialnya. Implikasi praktis dari penelitian ini menunjukkan bahwa pendidik dapat mempertimbangkan untuk memasukkan permainan edukatif Lazarus sebagai strategi pengajaran untuk meningkatkan pembelajaran di kelas, khususnya di bidang IPS.

ABSTRACT

The rapid advancement of technology gives the opportunity to incorporate digital games and other technology-driven tools into the IPS curriculum. This study aimed to analyze the influence of the Lazarus educational game on enhancing social and cognitive learning outcomes in the subject of Social Studies elementary school. A quantitative experimental approach was employed, with a sample of 53 fourth-grade students divided into two groups: an experimental group (IV-B) and a control group (IV-A). Data were collected through tests, interviews, and documentation, and analysed using simple linear regression and t-test. The research findings revealed a positive impact of the Lazarus educational game on students' social development, indicating an improvement in student engagement and social interactions. Additionally, a significant difference in cognitive learning outcomes was observed between two groups. The experimental group (IV-B) exhibited higher learning outcomes compared to the control group (IV-A), underscoring the effectiveness of the Lazarus game as a learning tool. This study makes a valuable contribution to the advancement of teaching methods, particularly in the context of the IPS subject. The use of the Lazarus educational game serves as an effective alternative for enhancing student learning outcomes, particularly in their social development. Practical implications of this research suggest that educators can consider incorporating the Lazarus educational game as a teaching strategy to improve classroom learning, particularly in the field of IPS.

Corresponding author
E-mail addresses: burhan@universitasbosowa.ac.id (Burhan)

1. INTRODUCTION

Technological advancement has rapidly evolved over time. Initially designed to simplify human labor, technology's scope has expanded beyond that purpose. It now permeates all aspects of life, including entertainment, notably in the form of gaming. Humans' persistent inclination to innovate, driven by their needs and desires, has led to a growing dependence on technology. People consistently indulge in technological comforts, which, although offering both positive and negative impacts on their lives, have become an integral part of their existence. The eras of Industry 4.0 and Society 5.0 demonstrate humanity's capacity to innovate, develop, and integrate technology into their daily activities (Sima et al., 2020; Xu et al., 2021). Japan, as a pioneer in Industry 5.0, showcases the potential for technology, particularly robotics, to serve as a valuable companion in human endeavors.

The 21st century represents the pinnacle of technological advancement, with widespread accessibility to information and communication technology across society. Technology has become integral to virtually all human activities, from remote communication and accessing information to education, entertainment, and fulfilling personal needs (Malik et al., 2023; Zolfaghari Mashhadi & Reza Kargozari, 2011). The field of information technology has undergone substantial changes due to technological progress, impacting various aspects of life, including the military, business, government, healthcare, industry, and education. The emergence of new media has provided opportunities for improving job performance, whether in traditional desktop environments or web-based settings. Smartphones, a rapidly evolving form of mobile information and communication technology, have played a central role in this transformation.

In the realm of education, the integration of information and communication technology offers convenience and solutions for the learning process while fostering computer literacy (Haleem et al., 2022; Udayani et al., 2022). Effective use of educational media hinges on how well it is employed to convey knowledge to students, with a focus on ensuring the material remains engaging, especially when dealing with theoretical or repetitive content. It's crucial to present such material in a way that prevents students from becoming quickly bored and disengaged Technological advancements have also addressed human entertainment needs, notably through the use of online games. Consequently, parents must support their children's smartphone usage, even if they are in elementary school (Malik & Asnur, 2019; Passey et al., 2018). When connected to the internet, smartphones provide access to a wealth of information, necessitating parental monitoring and regulation, particularly for those working from home. Games have become a popular means of leisure for children, adolescents, and adults, offering various options for entertainment (Gallardo-Montes et al., 2022; Tisza & Markopoulos, 2023; Tkáčová et al., 2021; Wearing et al., 2022). Rapid technological development has led to various innovations in gaming formats, including the ability to play online games without facing a physical opponent.

These online games are digital applications that rely on internet connections or other remote communication methods. Online games now serve purposes beyond entertainment, with some individuals using them as a source of income. Not limited to online games, those that don't require an internet connection also attract people seeking amusement (Dogruer et al., 2011; Zhou et al., 2011). Previous study state Indonesia ranks third globally in online game usage, following only the Philippines and Thailand (Chia et al., 2020). This serves as evidence that the Indonesian population effectively incorporates technology into their daily activities, including mobile and computer gaming. The popularity of online games among Indonesians highlights their ability to access the internet with ease.

Online game users know no age limit, most of them are between 7-60 years old with different games and goals. There are users who play it for entertainment purposes and there are also some users who play it as a source of income. The positive or negative influence of online games for users is very drastic, there are even effects of online game addiction for users. Children and teenagers tend to spend more time playing games on their mobile phones or computers than doing physical games (Fadella et al., 2018; Snodgrass et al., 2017). Most online games contain violent elements such as games with an atmosphere of war, beating, and crashing, of course, this will have a negative impact on child characters who imitate styles or scenes in the game. This situation occurs because until now there have been no educational games played online. Most of the students play online games that have nuances of action, adventure, action-adventure, and sport.

Aligned with one of the key objectives of the Sustainable Development Goals (SDGs), which is to increase the supply of qualified teachers, the field of education calls for the integration of information and communication technology, especially through modern learning media. Today's students require diverse approaches to presenting educational material. To meet this need, learning technology in the form of contemporary applications and media designed for both theoretical and practical learning has become essential (Burhan & Saugadi, 2017; Segrave & Holt, 2003). Teachers play a pivotal role in the development of education and the success of students, serving as the most influential factor in achieving quality educational outcomes, a core mission of the SDGs

Given the rapid advancement of technology across various industries, including education, teachers who act as instructional facilitators must continuously enhance their professionalism. It is imperative that teachers adhere to legal mandates while incorporating technology into the classroom to enhance students' motivation for learning, which in turn can have a positive impact on their academic performance (Ferreira et al., 2011; Su, 2023). Strategies to support teachers in adapting to new technologies include providing necessary facilities, organizing routine ICT training programs, and conducting training activities focused on productive and effective teaching techniques (Agung Rinaldy Malik et al., 2020; Lytvyn et al., 2020). These measures are designed to offer practical solutions to teachers who may struggle with technology adoption.

The primary goal of social studies education is not merely to fill students' minds with factual knowledge but to cultivate their awareness of social responsibilities, both to their local communities and to the broader society, nation, and state. The educational approach in IPS is centered on using social scientific concepts to analyze real-life social issues, events, and phenomena. This approach aims to develop students' cognitive and practical problem-solving abilities to address these societal challenges. One of the challenges associated with social sciences (IPS) is the abundance of written material, which some individuals may find dull (Marschall, 2021; Rindawati et al., 2021). However, this subject fosters critical, analytical, contextual, and practical thinking skills among students. To make the learning process engaging, active learning strategies are highly recommended (Bambang Subiyakto, 2019; Tetep & Dahlena, 2021). Teachers play a crucial role in implementing effective and engaging teaching methods. Active learning is one such method, promoting students' active involvement in the learning process. This not only creates a more enjoyable learning environment but also enhances learning outcomes. Furthermore, with the rapid advancement of technology, there is a growing opportunity to incorporate digital games and other technology-driven tools into the IPS curriculum. These educational games can provide engaging and interactive ways for students to learn and understand the material. It is essential for educators to adapt to these technological advancements to provide more effective and engaging learning experiences for students.

The specific focus on social sciences (IPS) and the use of educational games, such as Lazarus, to make learning more engaging and effective is an essential part of the passage. It recognizes the potential of educational games in improving students' learning outcomes, especially in subjects that may be perceived as less engaging (Bai et al., 2020; Bilqis et al., 2016). Overall, the text provides an overview of the evolving role of technology in education, emphasizing the importance of adapting to technological advancements and incorporating innovative methods, such as educational games, to improve the quality of education and engage students effectively. The success of the method using educational games like Lazarus in enhancing learning outcomes is implied but not explicitly discussed in the provided text. To better understand the success of the method, you may need to refer to relevant sources and research studies that evaluate the impact of educational games, such as Lazarus, on student learning outcomes in social studies (IPS) subjects (Hambali et al., 2017; Jumriani et al., 2021). These sources can provide empirical evidence of the method's effectiveness and its implications for improving education in Indonesia.

It was explained earlier that games that do not contain education are played by people from all walks of life, from children to the elderly even to the stage of addiction. So, if games that contain education can be used by students to play and learn, it will greatly help overcome student boredom, especially in social studies subjects. This educational game is then expected to be the latest alternative in increasing learning motivation and learning outcomes of students. The existing research developments in reputable journals are closely related to the topic under study, which focuses on the use of educational games, like Lazarus, to enhance learning outcomes in social studies (IPS) subjects. Previous studies have demonstrated the potential of educational games to make learning engaging and effective (Almeida & Simoes, 2019; Suparman, 2016). These studies have shown that incorporating technology and game-based learning methods can improve student motivation, participation, and ultimately their academic performance in various subjects.

The novelty of the current research lies in its specific application of educational games in the context of social studies (IPS) subjects in Indonesian elementary schools. While the use of educational games is not a new concept, this study addresses a gap in the existing research by focusing on a specific subject and a specific age group. It aims to explore the impact of Lazarus, a novel educational game, on the learning outcomes of elementary school students. The research aims to provide valuable insights into how this innovative approach can address student engagement issues in social studies and improve their overall academic performance.

2. METHOD

The experimental research design employed in this context is a group comparison design, specifically a static group comparison (Richey et al., 2004). The researcher will involve the division of

research subjects into two groups: the experimental group and the control group. The experimental group will receive an intervention that will be studied in the form of the educational game Lazarus as a learning medium. On the other hand, the control group will not receive this intervention. After the intervention has been applied, both the experimental group and the control group will be measured and compared by administering a test instrument in the form of a multiple-choice test with identical questions.

The research's target population includes all students at UPT SPF SD Inpres Galangan Kapal II in Makassar City, amounting to a total of 361 individuals. This study is specifically honed in on students who are currently enrolled in the subject of Social Studies (IPS). The sampling approach to be employed falls under nonprobability sampling, with a focus on using the purposive sampling method. The selection of the sample is guided by a clear and deliberate objective, considering that the educational game Lazarus pertains to the content of Social Studies, which is typically taught to fourth-grade elementary school students—hence aligning with the population of interest. The choice of the fourth-grade level is grounded in the belief that students at this stage possess the requisite cognitive abilities and understanding to effectively engage with the Lazarus educational game.

Data collection was carried out in three stages, which included multiple-choice tests, interviews, and documentation. Multiple-choice tests were employed to assess the impact of using educational games on students' cognitive learning outcomes. In these tests, students were presented with questions along with several answer choices, and they were required to select the most appropriate answer based on their understanding. Multiple-choice tests served as a means to gauge the students' mastery of the material learned during the learning process. Interviews involved guided discussions between the interviewer and the respondents. In this research, the interview technique was used to ascertain the students' perspectives and perceptions regarding the use of the Lazarus educational game in their learning experience. Additionally, documentation was used as a technique to collect evidence that supports the research hypotheses or findings. Documentation was conducted by recording the use of the Lazarus educational game in the learning process. This documentation served to provide tangible evidence and context to reinforce the study's findings.

The selected data analysis techniques play a crucial role in ensuring the validity and reliability of research outcomes. Prior to conducting data analysis, an essential step involves validating and assessing the reliability of the data (Creswell, 2014). Finally, a simple regression analysis and a t-test are performed. Regression analysis facilitates the determination of whether there is a linear or non-linear relationship between the independent variable (Lazarus educational game) and the dependent variable (learning outcomes). If a positive regression coefficient is obtained, it indicates a positive relationship between the two different variables. Conversely, if the regression coefficient is negative, it signifies a negative relationship between the variables. Meanwhile, the t-test is conducted to compare two samples with the aim of establishing whether the differences between the two samples are statistically significant or not.

3. RESULT AND DISCUSSION

Result

The results of the study were obtained from learning outcome data from Class IV-B as the experimental group and Class IV-A as the control group. Before data analysis is carried out, normality tests and homogeneity tests are carried out first. The normality test was performed using the residual normality test by looking at the Shapiro-Wilk significance. In this test, the significance value is used as the basis for decision making, where if the significance value is greater than 0.05, then the data distribution is considered normal, while if the significance value is less than 0.05, then the data distribution is considered abnormal. The data of normality test result is show in Table 1.

Table 1. Social Studies Learning Outcomes Data Normality Test Results

Class		N	Shapiro-Wilk		
			Statistical Value	Significant Value	5% Significance Rate
Social Studies Learning Outcomes	Experimental Group	27	0.925	0.54	0.05
	Control Group	26	0.934	0.98	0.05

Table 1 show learning outcome data, in the post-test in the experimental class the significance value was 0.054 and in the post-test in the control class the significance value was 0.98. Then it can be concluded that the two classes used are normally distributed. Then the data of homogeneity is show in Table 2.

Table 2. Social Studies Learning Outcomes Data Homogeneity Test Results

Uji Levene	df1	df2	Significant Value	5% Significance Rate
0.625	1	51	0.433	0.05

Based on the results of data processing as show in Table 2, a significance of 0.433 > 0.05 was obtained so that it can be said that the learning outcomes of students taught through face-to-face methods using Lazarus educational game learning media have the same variance (homogeneous). The following are the results of homogeneity data processing based on SPSS 21. The result of simple linear regression coefficients is show in Table 3.

Table 3. Simple Linear Regression Coefficients

Model	Non-Standard coefficient		Standard Coefficient
	B (Coefficient value)	Standard Error	Beta
Constant	81.061	4.968	
Educational Games	0.06	0.159	0.76

Base on Table 3, regression analysis allows determining the relationship between the independent variable and the dependent variable. Based on the given table, it is known that the value of the constant () is 81.061 and the value of the regression coefficient (is 0.060. Therefore, the regression equation can be written as follows.$\beta 0 \beta 1$). The independent sample test is used to determine whether or not there is an average difference between two unpaired samples. The t test is carried out by looking at the significance value of the research data. If the value of sig. (2-tailed) < 0.05, so there is a significant difference between learning outcomes in class IV-A and class IV-B. Conversely, if the value of sig, (2-tailed) > 0.05, then there is no significant difference between learning outcomes in class IV-A and class IV-B. Statistical values of experimental and control classes is show in Table 4.

Table 4. Statistical Values of Experimental and Control Classes

Class		N	Average	Standard Deviation	Average Error Standard
Social Studies	Experimental Class	27	82.44	10.959	2.109
Learning Outcomes	Control Class	26	28.04	14.203	2.785

Table 4 shows the results of data processing through SPSS, the average score of the two classes shows a significant difference in experimental class or class IV-A has an average value of 82.44, while the control class or class IV-B has an average value of 28.04. Apart from the Mean or Mean, it can also be seen that the Standard Deviation in the experimental group the Standard Deviation is lower than the control group. This means that there is less risk to the instruments used. Independent sample test results is show in Table 5.

Table 5. Independent Sample Test Results

		Levene Test with Variant Equation		Test t with Average Equation		
		F	Itself.	t	df	Sig. (2-tailed)
Social Studies	Equal variances assumed	0.625	0.433	15.648	51	0.000
Learning Outcomes	Equal variances not assumed			15.572	47.022	0.000

Based on Table 5 there has been a significant difference between the two classes. Furthermore, from the data presented, it can be seen that the value of Sig. (2-tailed) is 0.000 < 0.05. This fact shows that there is a significant difference between the learning outcomes of students in the control class (class IV-A) and the experimental class (class IV-B). The following are the results of the t-test using the Independent Sample Test.

Discussion

From the results of the evaluation of multiple-choice questions as many as 12 numbers conducted in both classes, a normality test was carried out and it was found that the significance value of the experimental group's learning outcomes was 0.054 and the control group was 0.98. While the homogeneity test results obtained a significance value of 0.433. Previous study suggests that a data is said to be normally

distributed and homogeneous if the significant value is greater than 0.05 (Farikah, 2019). Therefore, it is concluded that the data is normally distributed and homogeneous and worthy of analysis.

There are several theories that support this result, an educational game researcher, saying that educational games can help students learn more effectively because they can help overcome anxiety and pressure that often hinder learning. Other opinions such which states that the use of appropriate learning media can reduce boredom in students (Borgonovi et al., 2023). In addition, there is study also revealed that learning media is a means to improve the teaching and learning process which functions to clarify the meaning of the message conveyed so that learning objectives are achieved properly and perfectly (Perdana et al., 2018). One of the learning media that can increase the effectiveness and efficiency of learning is learning media based on CAI (computer assisted instruction), for example educational games.

Previous t-test data support Maria Montessori's theory of learning that children are the primary focus and require adults as guides. The Montessori method is in line with the learning theory of progressivism that children have the freedom to learn, both in physical terms and thinking to develop children's talents, abilities, and creativity. According to previous study has research relevant to this study, where the use of interactive and fun learning media can improve the cognitive learning outcomes of learners (Sahronih et al., 2019). Cognitive learning outcomes themselves can be interpreted as children's ability to learn new skills and concepts, understand phenomena in their environment, and integrate memory and skills in solving simple problems. Previous findings are also in line with research which shows that learning activities are considered successful if they have achieved the learning goals that have been set (Divjak & Tomić, 2011). In addition, reflective learning resources are also proven to improve student learning outcomes.

Based on the results of research and analysis using t-tests, as well as previous theories, the author concludes that the use of the Lazarus educational game as a learning medium can improve student social studies learning outcomes. Students can develop themselves and be able to solve problems during the learning process by using the educational game Lazarus (Castronovo et al., 2022; Koesoemadinata, 2022). Through the educational game Lazarus, students are guided to carry out the learning process but students are the main focus and can develop their creativity. The experimental class given the Lazarus educational game intervention showed a higher average score compared to the control group, indicating that students could learn new skills and concepts and were able to solve simple problems correctly (Rohmah & Bukhori, 2020; Supeni et al., 2019). The learning objectives set out in this study were also successfully achieved. Therefore, Lazarus educational games can be categorized as reflective and effective learning media in improving student learning outcomes in social studies subjects.

The interview is in line with B.F. Skinner's behavioristic learning theory which states that all human, animal, and plant behavior can be learned through interaction with the environment that can be observed by the senses. Although thoughts and feelings are recognized as internal factors, only behavior can be observed and studied by scientists (Syahrial et al., 2019; Welsen et al., 2023). Skinner gives examples of how to control human behavior, namely through social control and self-control. However, all control ultimately depends on the environment. Meanwhile, according to previous study external factors that affect learning outcomes include family factors, school environmental factors, and community environmental factors (Ardoin et al., 2020; Hoang & Huy, 2021). School environmental factors can include the availability of facilities and infrastructure for learning, including learning media.

After analyzing the results of interviews and previous theories, the author concludes that the use of Lazarus educational games as a learning medium can increase the motivation, interest, ability, and personality of students. The students show enthusiastic behavior and enjoy learning with the game, and show good skills and personalities when using the educational game Lazarus (Oktaviane et al., 2021; Supeni et al., 2019). Therefore, the educational game Lazarus is considered as one of the external factors that affect the learning outcomes of students, including in the availability of learning facilities.

The research findings show that using educational games, like Lazarus, can make learning more fun and help students do better in their studies. This is a great idea for teachers and schools to improve how kids learn. It also matches what famous educators like Montessori and Dewey have said about letting students learn in a way that's more interactive and interesting. Plus, the research reminds us that having the right tools and learning materials is really important for students. So, using games in the classroom is a smart move, not just for better grades but also for motivating students and developing their personalities. The research suggested that Lazarus not only motivated students but also improved their skills and personalities. However, there were limitations to this study. One challenge was the availability of inadequate facilities, which could have impacted the implementation of Lazarus. Additionally, the game itself had some shortcomings. Furthermore, the sample size was relatively small, and the study focused on a specific subject, "Stories about My Area." It would be valuable to explore the effectiveness of Lazarus across various subjects

and with a larger and more diverse group of students. These limitations should be considered when interpreting the research findings.

4. CONCLUSION

The research outcomes unequivocally underscore the positive impact of incorporating the Lazarus educational game to enhance the social studies curriculum for fourth-grade students at UPT SPF SD Inpres Galangan Kapal II, Makassar City. The empirical evidence paints a compelling picture, revealing that students who actively engaged with the Lazarus educational games achieved significantly elevated average learning outcomes when juxtaposed with their counterparts who did not have access to such educational tools. Beyond the statistical findings, a deeper layer of insight emerges, demonstrating that the students who embraced the Lazarus educational games exhibited heightened enthusiasm, increased overall satisfaction in the learning process, and demonstrated a notably improved capacity to address and resolve complex academic challenges.

5. REFERENCES

Agung Rinaldy Malik, Emzir, & Sri Sumarni. (2020). Pengaruh Strategi Pembelajaran Mobile Learning Dan Gaya Belajar Visual Terhadap Penguasaan Kosakatabahasa Jerman Siswa Sma Negeri 1 Maros. *Visipena Journal*, *11*(1), 194–207. https://doi.org/10.46244/visipena.v11i1.1090.

Almeida, F., & Simoes, J. (2019). The Role of Serious Games , Gamification and Industry 4 . 0 Tools in the Education 4 . 0 Paradigm. *Contemporary Educational Technology*, *10*(2), 120–136. https://doi.org/10.30935/cet.554469.

Ardoin, N. M., Bowers, A. W., & Gaillard, E. (2020). Environmental education outcomes for conservation: A systematic review. *Biological Conservation*, *241*, 108224. https://doi.org/10.1016/j.biocon.2019.108224.

Bai, S., Hew, K. F., & Huang, B. (2020). Does gamification improve student learning outcome? Evidence from a meta-analysis and synthesis of qualitative data in educational contexts. *Educational Research Review*, *30*, 100322. https://doi.org/10.1016/j.edurev.2020.100322.

Bambang Subiyakto, M. (2019). Internalisasi Nilai Pendidikan Melalui Aktivitas Masyarakat Sebagai Sumber Belajar Ilmu Pengetahuan Sosial. *Khazanah: Jurnal Studi Islam Dan Humaniora*, *17*(1), 137–166. https://doi.org/10.18592/khazanah.v17i1.2885.

Bilqis, Syachruroji, A., & Taufik, M. (2016). Perbedaan Hasil Belajar Siswa pada Mata Pelajaran Ilmu Pengetahuan Alam antara Model Problem Based Learning dengan Model Pembelajaran Langsung. *JPSD (Jurnal Pendidikan Sekolah Dasar)*, *2*(2), 147–155. https://doi.org/10.30870/jpsd.v2i2.794.

Borgonovi, F., Pokropek, M., & Pokropek, A. (2023). Relations between academic boredom, academic achievement, ICT use, and teacher enthusiasm among adolescents. *Computers & Education*, *200*, 104807. https://doi.org/10.1016/j.compedu.2023.104807.

Burhan, B., & Saugadi, S. (2017). Peranan Guru Terhadap Mutu Pendidikan. *Visipena Journal*, *8*(1). https://jayapanguspress.penerbit.org/index.php/cetta/article/view/2142.

Castronovo, F., Stepanik, N., Van Meter, P. N., & Messner, J. I. (2022). Problem-solving processes in an educational construction simulation game. *Advanced Engineering Informatics*, *52*(February), 101574. https://doi.org/10.1016/j.aei.2022.101574.

Chia, D. X. Y., Ng, C. W. L., Kandasami, G., Seow, M. Y. L., Choo, C. C., Chew, P. K. H., Lee, C., & Zhang, M. W. B. (2020). Prevalence of Internet Addiction and Gaming Disorders in Southeast Asia: A Meta-Analysis. In *International Journal of Environmental Research and Public Health* (Vol. 17, Issue 7). https://doi.org/10.3390/ijerph17072582.

Creswell, J. W. (2014). *A concise introduction to mixed methods research*. Sage Publications.

Divjak, B., & Tomić, D. (2011). The impact of game-based learning on the achievement of learning goals and motivation for learning mathematics—literature review. *Journal of Information and Organizational Sciences*, *35*(1), 15–30. https://doi.org/10.31341/jios.

Dogruer, N., Eyyam, R., & Menevis, I. (2011). The use of the internet for educational purposes. *Procedia - Social and Behavioral Sciences*, *28*, 606–611. https://doi.org/10.1016/j.sbspro.2011.11.115.

Fadella, E. F., Sugiarto, & Prabowo, A. (2018). Keefektifan Problem-Based Learning Berbantuan Komik Matematika terhadap Kemampuan Pemecahan Masalah dan Rasa Ingin Tahu. *PRISMA (Prosiding Seminar Nasional Matematika)*, 77–86. https://journal.unnes.ac.id/sju/index.php/prisma/article/view/19573.

Farikah, F. (2019). Developing the Students' Character through Literacy Activities in A Child-Friendly School Model. *Dinamika Ilmu*, *19*(2), 187–196. https://doi.org/10.21093/di.v19i2.1540.

Ferreira, M., Cardoso, A. P., & Abrantes, J. L. (2011). Motivation and relationship of the student with the school as factors involved in the perceived learning. *Procedia - Social and Behavioral Sciences*, *29*, 1707–1714. https://doi.org/10.1016/j.sbspro.2011.11.416.

Gallardo-Montes, C. del P., Caurcel Cara, M. J., & Rodríguez Fuentes, A. (2022). Technologies in the education of children and teenagers with autism: evaluation and classification of apps by work areas. *Education and Information Technologies*, *27*(3), 4087–4115. https://doi.org/10.1007/s10639-021-10773-z.

Haleem, A., Javaid, M., Qadri, M. A., & Suman, R. (2022). Understanding the role of digital technologies in education: A review. *Sustainable Operations and Computers*, *3*(February), 275–285. https://doi.org/10.1016/j.susoc.2022.05.004.

Hambali, H., Darsono, D., & Pargito, P. (2017). Peningkatan Social Skills Siswa Dalam Pembelajaran IPS Melalui Pendekatan Model Intergrated. *Jurnal Studi Sosial/Journal of Social Studies*, *5*(3). http://jurnal.fkip.unila.ac.id/index.php/JSS/article/view/14102.

Hoang, N. T., & Huy, D. T. N. (2021). Determining factors for educating students for choosing to work for foreign units: Absence of self-efficacy. *Jett*, *12*(2), 11–19. https://dialnet.unirioja.es/servlet/articulo?codigo=7956027.

Jumriani, J., Mutiani, M., Putra, M. A. H., Syaharuddin, S., & Abbas, E. W. (2021). The Urgency of Local Wisdom Content in Social Studies Learning: Literature Review. *The Innovation of Social Studies Journal*, *2*(2), 103. https://doi.org/10.20527/iis.v2i2.3076.

Koesoemadinata, M. I. P. (2022). Visual Adaptation Of Wayang Characters In Teguh Santosa's Comic Art. *Mudra Jurnal Seni Budaya*, *33*(3), 401. https://doi.org/10.31091/mudra.v33i3.544.

Lytvyn, A., Lytvyn, V., Rudenko, L., Pelekh, Y., Didenko, O., Muszkieta, R., & Żukow, W. (2020). Informatization of technical vocational schools: Theoretical foundations and practical approaches. *Education and Information Technologies*, *25*(1), 583–609. https://doi.org/10.1007/s10639-019-09966-4.

Malik, A. R., & Asnur, M. N. A. (2019). Using Social Media As A Learning Media Of Foreign Language Students In Higher Education. *Bahtera: Jurnal Pendidikan Bahasa Dan Sastra*, *18*(2), 166–175. https://eric.ed.gov/?id=ED620822.

Malik, A. R., Pratiwi, Y., Andajani, K., Numertayasa, I. W., Suharti, S., Darwis, A., & Marzuki. (2023). Exploring Artificial Intelligence in Academic Essay: Higher Education Student's Perspective. *International Journal of Educational Research Open*, *5*, 100296. https://doi.org/10.1016/j.ijedro.2023.100296.

Marschall, G. (2021). The role of teacher identity in teacher self-efficacy development: the case of Katie. In *Journal of Mathematics Teacher Education* (Vol. 25, Issue 6, pp. 725–747). Springer Science and Business Media LLC. https://doi.org/10.1007/s10857-021-09515-2.

Oktaviane, J., Prestiliano, J., & Prasida, T. A. S. (2021). Designing Educational Board Games for Children on Snake Handling Using Competitive Mechanisms. *Indonesian Journal Of Educational Research and Review*, *4*(1), 1–8. https://doi.org/10.23887/ijerr.v4i1.30443.

Passey, D., Shonfeld, M., Appleby, L., Judge, M., Saito, T., & Smits, A. (2018). Digital Agency: Empowering Equity in and through Education. *Technology, Knowledge and Learning*, *23*(3), 425–439. https://doi.org/10.1007/s10758-018-9384-x.

Perdana, Y., Djono, D., & Ediyono, S. (2018). The Implementation of Multicultural Education in History Learning At SMAN 3 Surakarta. *International Journal of Multicultural and Multireligious Understanding*, *5*(3), 11. https://doi.org/10.18415/ijmmu.v5i3.135.

Richey, R. C., Klein, J. D., & Nelson, W. a. (2004). Developmental research: Studies of instructional deisgn and development. *Handbook of Research for Educational Communications and Technology*, 1099–1130. https://doi.org/10.1007/978-1-4614-3185-5_12.

Rindawati, R., Abbas, E. W., & Putra, M. A. H. (2021). Identification of Social and Cultural Changes Materials in Social Studies. *The Innovation of Social Studies Journal*, *3*(1), 68–75. https://doi.org/10.20527/iis.v3i1.3786.

Rohmah, F. N., & Bukhori, I. (2020). Pengembangan Media Pembelajaran Interaktif Mata Pelajaran Korespondensi Berbasis Android Menggunakan Articulate Storyline 3. *ECOEDUCATION (Economic & Education Journal)*, *2*(2), 169–182. https://doi.org/10.33503/ecoducation.v2i2.892.

Sahronih, S., Purwanto, A., & Sumantri, M. S. (2019). The effect of interactive learning media on students' science learning outcomes. *Proceedings of the 2019 7th International Conference on Information and Education Technology*, 20–24. https://doi.org/10.1145/3323771.3323797.

Segrave, S., & Holt, D. (2003). Contemporary Learning Environments: Designing e-Learning for Education in the Professions. *Distance Education*, *24*(1), 7–24. https://doi.org/10.1080/01587910303044.

Sima, V., Gheorghe, I. G., Subić, J., & Nancu, D. (2020). Influences of the Industry 4.0 Revolution on the Human Capital Development and Consumer Behavior: A Systematic Review. *Sustainability*, *12*(10), 4035. https://doi.org/10.3390/su12104035.

Snodgrass, J. G., Dengah, H. J. F., Lacy, M. G., Bagwell, A., Van Oostenburg, M., & Lende, D. (2017). Online gaming involvement and its positive and negative consequences: A cognitive anthropological "cultural consensus" approach to psychiatric measurement and assessment. *Computers in Human Behavior*, *66*, 291–302. https://doi.org/10.1016/j.chb.2016.09.025.

Su, Y. (2023). Delving into EFL teachers' digital literacy and professional identity in the pandemic era: Technological Pedagogical Content Knowledge (TPACK) framework. *Heliyon*, *9*(6), e16361. https://doi.org/10.1016/j.heliyon.2023.e16361.

Suparman. (2016). Meningkatkan Prestasi Belajar Pengetahuan Sosial Melalui Gabungan Metode Ceramah dengan Metode Belajar Aktif Model Pengajaran Autentik pada Siswa Sekolah Dasar pada Siswa Kelas IV SDN Beji IV Kec. Beji Kabupaten Pasuruan Tahun Pelajaran 2013/2014. *Jurnal Ilmiah Edukasi & Sosial*, *7*(1), 98–104. https://doi.org/10.31004/jptam.v3i3.319.

Supeni, S., Hakim, L., & Jumintono. (2019). Strengthening Character Education of Early Childhood through Javanese Traditional Game Dakon. *International Journal of Recent Technology and Engineering*, *7*(6S2), 243–249. https://www.atlantis-press.com/proceedings/ijcah-20/125947406.

Syahrial, S., Asrial, A., Kurniawan, D. A., Nugroho, P., Septiasari, R., Pratama, R. A., & Perdana, R. (2019). Increased Behavior of Students' Attitudes to Cultural Values Using the Inquiry Learning Model Assisted by Ethnoconstructivism. *Journal of Educational Science and Technology (EST)*, 166–175. https://doi.org/10.26858/est.v5i2.9670.

Tetep, T., & Dahlena, A. (2021). Fun Pattern Based Learning Approach for Social Studies Learning during the Covid-19 Pandemic. *Al-Ishlah: Jurnal Pendidikan*, *13*(3), 1571–1580. https://doi.org/10.35445/alishlah.v13i3.1025.

Tisza, G., & Markopoulos, P. (2023). FunQ: Measuring the fun experience of a learning activity with adolescents. *Current Psychology*, *42*(3), 1936–1956. https://link.springer.com/article/10.1007/s12144-021-01484-2.

Tkáčová, H., Pavlíková, M., Jenisová, Z., Maturkanič, P., & Králik, R. (2021). Social Media and Students' Wellbeing: An Empirical Analysis during the Covid-19 Pandemic. In *Sustainability* (Vol. 13, Issue 18). https://doi.org/10.3390/su131810442.

Udayani, N. K. R. T. K., Wibawa, I. M. C., & Rati, N. W. (2022). Development Of E-Comic Learning Media On The Topic Of The Human Digestive System. *Journal of Education Technology*, *5*(3), 472–481. https://doi.org/10.23887/jet.v5i3.34732.

Wearing, S. L., Porter, D., Wearing, J., & McDonald, M. (2022). Exploring adolescent computer gaming as leisure experience and consumption: some insights on deviance and resistance. *Leisure Studies*, *41*(1), 28–41. https://doi.org/10.1080/02614367.2021.1942525.

Welsen, S., Wanatowski, D., & Zhao, D. (2023). Behavior of Science and Engineering Students to Digital Reading: Educational Disruption and Beyond. *Education Sciences*, *13*(5), 484. https://doi.org/10.3390/educsci13050484.

Xu, X., Lu, Y., Vogel-Heuser, B., & Wang, L. (2021). Industry 4.0 and Industry 5.0—Inception, conception and perception. *Journal of Manufacturing Systems*, *61*, 530–535. https://doi.org/10.1016/j.jmsy.2021.10.006.

Zhou, Z., Jin, X.-L., Vogel, D. R., Fang, Y., & Chen, X. (2011). Individual motivations and demographic differences in social virtual world uses: An exploratory investigation in Second Life. *International Journal of Information Management*, *31*(3), 261–271. https://doi.org/https://doi.org/10.1016/j.ijinfomgt.2010.07.007.

Zolfaghari Mashhadi, V., & Reza Kargozari, M. (2011). Influences of digital classrooms on education. *Procedia Computer Science*, *3*, 1178–1183. https://doi.org/10.1016/j.procs.2010.12.190.