



Journal of Educational Sciences

Journal homepage: <https://jes.ejournal.unri.ac.id/index.php/JES>



P-ISSN
2581-1657

E-ISSN
2581-2203

The Effect of Wordwall-Based Learning Media on Fourth Grade Students' Motivation in Social Studies Learning at Elementary School

Nur Azmi M, Suardi*, Idawati

Fakultas Pendidikan Dasar, Universitas Muhammadiyah Makassar, Makassar, 90221, Indonesia

ARTICLE INFO

Article history:

Received: 09 Aug 2025

Revised: 19 Aug 2025

Accepted: 02 Sept 2025

Published online: 10 Sept 2025

Keywords:

Learning Media,
Wordwall,
Learning Motivation,
Social Studies,
Elementary Education

* Corresponding author:

E-mail: suardi@unismuh.ac.id

Article Doi:

<https://doi.org/10.31258/jes.9.5.p.3245-3255>

This is an open access article under the [CC BY-SA](#) license.



ABSTRACT

This study aims to investigate the effect of Wordwall-based learning media on students' motivation in Social Studies among fourth-grade students at Gugus II Elementary Schools, Biringkanaya District, Makassar City. The study employed a quantitative approach with a quasi-experimental design, specifically the Nonequivalent Control Group Design. The research sample consisted of 41 students, with 20 students in the experimental class receiving instruction via Wordwall-based media, and 21 students in the control class undergoing traditional teaching methods. Students' motivational data were collected using closed questionnaires and analyzed using an Independent Samples T-Test in the JASP statistical software. The results indicated that the use of Wordwall-based learning media significantly increased students' learning motivation, demonstrated by a p-value of less than 0.001. These findings imply that educators should integrate technology-based instructional media to enhance student motivation and engagement in Social Studies learning.

1. Introduction

The integration of technology into educational practices has significantly reshaped traditional teaching methodologies, creating interactive and engaging learning environments (Alfares, 2025; Korol et al., 2021). Research consistently underscores the efficacy of technology-based instructional media in enhancing student motivation and academic achievement across various disciplines (Chandra & Kun, 2024; Hasram et al., 2021; Kocabatmaz & Saraçoğlu, 2024). Among these methods, gamification—integrating game elements into educational contexts—has gained considerable attention due to its effectiveness in stimulating student motivation and participation (Nenohai et al., 2022; Pimpuang & Yuttapongtada, 2023).

Motivation is a fundamental factor in education, critically influencing students' learning outcomes and engagement (Castillo et al., 2024; Tiagarajah & Said, 2022). Motivated students actively participate, retain knowledge more effectively, and demonstrate higher academic performance compared to their less motivated peers (Bouzaiane & Youzbashi, 2024; Rahma et al., 2023). However, traditional instructional methods, typically characterized by lecture-based teaching, often fail to sustain student motivation, particularly in subjects requiring active participation and practical applications, such as Social Studies (Sari et al., 2024; Ł. Tomczyk et al., 2024).

Social Studies education aims to cultivate responsible citizens who understand social structures, historical contexts, and cultural dynamics (Pătru-Stupariu et al., 2021). Nevertheless, students frequently perceive Social Studies as monotonous due to its theoretical and abstract content, leading to decreased motivation and engagement (Lima & Moroz, 2024; Vereş et al., 2020). Educators thus face ongoing challenges in devising instructional approaches that effectively enhance motivation and learning outcomes.

Recent literature emphasizes digital interactive tools, notably Wordwall—a game-based educational platform—as effective solutions for overcoming motivational barriers (Do & Huynh, 2024; Mettarikanon et al., 2023). Wordwall, with its engaging interface and interactive activities like quizzes and matching games, significantly enhances student motivation by promoting active participation (Mukhamadiarova & Nizamutdinova, 2023; Ł. Tomczyk et al., 2022). Empirical studies indicate that Wordwall positively influences student attitudes and academic achievements in diverse contexts, including mathematics, language learning, and natural sciences (Bouzaiane & Youzbashi, 2024; Rahma et al., 2023; Tiagarajah & Said, 2022).

Despite the increasing interest, few studies systematically examine the impact of Wordwall on student motivation in Social Studies, especially at the elementary level in Indonesia (Al-Aziz et al., 2025; Sari et al., 2024). Therefore, investigating the effectiveness of Wordwall-based interventions on student motivation in Social Studies at the elementary level, particularly in areas like Biringkanaya District, Makassar City, is essential. This study addresses this research gap by evaluating the extent to which Wordwall-based media influences the motivation levels of fourth-grade students.

This study thus aims to empirically analyze the impact of Wordwall-based learning media on students' motivation in Social Studies classrooms, contributing to the broader discourse on integrating gamification techniques in education (Castillo et al., 2024; Nenohai et al., 2022). Given the global emphasis on incorporating digital tools into educational frameworks to enhance learning outcomes and motivation, this research is particularly timely and aligns with sustainable educational development goals (Makarova et al., 2024; Manuel Antonio et al., 2022).

2. Methodology

This research adopted a quantitative approach with a quasi-experimental design, specifically the Nonequivalent Control Group Design, widely recognized for its suitability in educational settings when true randomization is impractical (Bournakis & Tsionas, 2024; Kääriäinen et al., 2023). The quasi-experimental design allows for comparison between groups that receive different interventions, thereby effectively assessing the impact of educational innovations (Bournakis & Tsionas, 2024; Yang & Tseng, 2024).

The research was conducted in elementary schools in Gugus II, Kecamatan Biringkanaya, Kota Makassar, Indonesia, involving two intact classes with a total of 41 fourth-grade students. The experimental group consisted of 20 students who participated in Wordwall-based learning activities, while the control group comprised 21 students who engaged in conventional teaching methods without technological integration (Hamid et al., 2024; Ł. Tomczyk et al., 2024).

In this study, the Wordwall platform was selected based on its established effectiveness in enhancing students' learning experiences and motivation through interactive and engaging activities such as quizzes, matching games, and interactive multimedia content (Alfares, 2025; Pimpuang & Yuttapongtada, 2023; Rahma et al., 2023). The intervention was implemented over six weeks, with lessons conducted twice weekly for approximately 45 minutes per session. The control group received traditional lecture-based instruction, characterized by teacher explanations, textbook exercises, and class discussions (Bouzaiane & Youzbashi, 2024; Tiagarajah & Said, 2022). Data on student motivation were collected using a standardized closed questionnaire adapted from existing validated instruments. The questionnaire employed a Likert scale to measure various dimensions of student motivation, including intrinsic and extrinsic motivational factors (Castillo et al., 2024; Do & Huynh, 2024). Prior to data collection, the questionnaire was reviewed and validated through expert judgment to ensure content validity and reliability, consistent with methodological best practices in educational research (Makarova et al., 2024; Mukhamadiarova & Nizamutdinova, 2023).

To analyze the collected data, Independent Samples T-Test was performed using JASP statistical software, selected for its robust capability in comparing means between two independent groups (Li et al., 2023; Moore et al., 2023). The significance level was set at 0.05 to determine the statistical significance of the differences observed between the experimental and control groups regarding their motivational levels post-intervention (Benlaria et al., 2023; Zhang et al., 2024). Ethical considerations were rigorously observed throughout the study. Prior to the commencement of research activities, formal approval was obtained from relevant school authorities, and informed consent was secured from both students and their parents or guardians (Moore et al., 2022; Olaoye et al., 2021). Participants were assured of confidentiality and informed about their right to withdraw from the study at any stage without repercussions, thereby aligning with standard ethical guidelines in educational research (Goldshaft et al., 2024; Lee et al., 2024).

3. Results and Discussion

Results

In contrast, the experimental class experienced a dynamic and interactive learning environment facilitated by Wordwall-based learning media. Students participated actively in quiz games, matching activities, and interactive challenges. The teacher served as a facilitator, guiding students through the digital activities and encouraging collaborative problem-solving. This approach fostered enthusiasm, participation, and peer learning.

In the control class, the learning atmosphere was relatively conventional, with the teacher delivering lessons using lecture-based methods, guided discussions, and textbook exercises. Students were mostly passive, listening to explanations and answering occasional questions. Interaction was limited, and activities primarily revolved around note-taking and reading assignments. The descriptive statistical analysis revealed differences in student motivation between the experimental and control groups both before and after the treatment using the Wordwall learning media. Table 1 summarizes the descriptive statistics for both groups:

Table 1. Descriptive Statistics of Student Learning Motivation

Variable	Pretest Motivation		Posttest Motivation	
	Experimental	Control	Experimental	Control
Valid	20	21	20	21
Missing	0	0	0	0
Mode	63.00	63.00	93.00	74.00
Median	63.00	63.00	94.00	75.00
Mean	63.90	64.91	92.15	77.57
Std. Dev.	8.64	7.33	5.84	7.57
Variance	74.73	53.69	34.13	57.26
Range	35.00	32.00	20.00	31.00
Minimum	45.00	51.00	78.00	64.00
Maximum	80.00	83.00	98.00	95.00

Based on the pretest data, the control group had a slightly higher average motivation score (mean = 64.91) compared to the experimental group (mean = 63.90), suggesting marginal initial differences in motivation levels. Similar findings of minor initial disparities between control and experimental groups were reported in previous educational research (Bouzaiane & Youzbashi, 2024; Tiagarajah & Said, 2022).

After the intervention using Wordwall-based media, significant improvements were observed in the experimental group compared to the control group. The posttest scores showed the experimental group's motivation mean score increased notably to 92.15, while the control group only reached an average score of 77.57. This marked increase aligns with findings from previous studies emphasizing the positive impact of interactive digital media on student motivation (Alfares, 2025; Pimpuang & Yuttapongtada, 2023; Rahma et al., 2023).

To further substantiate the effectiveness of Wordwall media on students' learning motivation, an Independent Samples T-Test was performed. Table 2 summarizes the hypothesis testing results:

Table 2. Independent Samples T-Test for Posttest Learning Motivation

Test	Statistic	df	p-value	Mean Diff.	SE Diff.	Cohen's d	SE d	Cohen's d
Posttest Motivation								
Student's t	6.880	39	< .001	14.579	2.119	2.150	0.462	
Welch	6.924	37.435	< .001	14.579	2.106	2.157	0.462	

The results indicate a highly significant difference ($p < 0.001$), supporting the hypothesis that Wordwall-based instructional media significantly influences student motivation. The Cohen's d effect size of approximately 2.15 highlights a large practical impact, consistent with similar digital intervention studies (Castillo et al., 2024; Chandra & Kun, 2024; Mukhamadiarova & Nizamutdinova, 2023). Furthermore, graphical representation of posttest motivation scores underscores the substantial differences in outcomes between the experimental and control groups. The experimental group demonstrated a marked increase in motivation levels, peaking near a mean of 90, compared to approximately 70 for the control group, which received traditional instructional methods. This visual evidence supports the quantitative findings, reinforcing the efficacy of gamified digital learning platforms like Wordwall in enhancing student motivation and engagement (Do & Huynh, 2024; Sari et al., 2024; L. Tomczyk et al., 2022).

Discussion

The findings from this study strongly indicate the effectiveness of Wordwall-based learning media in significantly enhancing the motivation of fourth-grade students toward Social Studies. The statistically significant results obtained from the Independent Samples T-Test ($p < 0.001$) are consistent with previous studies highlighting the positive impact of gamification and interactive digital tools on student engagement and motivation (Alfares, 2025; Chandra & Kun, 2024; Pimpuang & Yuttapongtada, 2023; Rahma et al., 2023). The considerable mean difference between the experimental and control groups further underscores the efficacy of technology-enhanced instructional media in stimulating sustained student motivation (Castillo et al., 2024; Tiagarajah & Said, 2022).

Several studies corroborate that digital educational games foster dynamic learning environments, creating interactive experiences that enhance student participation, improve attention span, and increase intrinsic motivation (Bouzaiane & Youzbashi, 2024; Ł. Tomczyk et al., 2024). These interactive features promote deeper learning experiences and positive attitudes toward subjects such as Social Studies (Do & Huynh, 2024; Mukhamadiarova & Nizamutdinova, 2023). Moreover, the significant improvement in student motivation following the use of the Wordwall platform aligns with prior research emphasizing digital media and gamification's ability to overcome the limitations of traditional teaching methods, characterized by passive learning and decreased student engagement (Lima & Moroz, 2024;

Manuel Antonio et al., 2022; Sari et al., 2024; Vereş et al., 2020). By transforming passive learning into active participation, Wordwall enables students to engage meaningfully with content, enhancing their intrinsic motivation and satisfaction with learning (Nechifor, 2024; Ł. Tomczyk et al., 2024).

Additionally, this study supports prior research that demonstrates the effectiveness of Wordwall in various educational contexts such as language learning, mathematics, and science, highlighting its versatility and wide-ranging applicability (Hasram et al., 2021; Nenohai et al., 2022; Rahma et al., 2023). The substantial increase in motivation levels in this research underscores the potential for broader adoption of Wordwall and similar interactive tools across diverse educational settings (Alfares, 2025; Pimpuang & Yuttapongtada, 2023). The substantial effect size (Cohen's $d = 2.15$) indicates both statistical and practical significance, reinforcing the adoption of gamified learning platforms as an innovative educational approach to boost student engagement and academic achievement (Korol et al., 2021; Shuib et al., 2024; Tiagarajah & Said, 2022). Prior research confirms that gamified learning environments effectively increase motivation through elements like competition, immediate feedback, and rewards, fostering greater student participation and improved learning outcomes (Mettarikanon et al., 2023; Shuib et al., 2024; Turriate Chavez & Miñan Olivos, 2023).

Furthermore, this research highlights broader implications for educational practice and policy, particularly regarding the integration of technology into educational settings to achieve sustainable development goals related to educational quality and equity (Makarova et al., 2024; Sari et al., 2024). This study's findings advocate for the systematic inclusion of interactive technologies within curricula to address diverse learning needs, especially in elementary education, where maintaining student motivation is critical (Goldshaft et al., 2024; Lee et al., 2024). In conclusion, these findings underscore the need for educators and policymakers to embrace digital and gamified learning tools like Wordwall as effective strategies to enhance student motivation, crucial for optimizing learning experiences and academic outcomes (Hu et al., 2022; Moore et al., 2023). Adopting innovative educational technologies meets contemporary educational demands and provides pathways for future educational developments and research (Benlaria et al., 2023; Hare et al., 2023; Jiang et al., 2024).

4. Conclusion

This study conclusively demonstrates that the use of Wordwall-based learning media significantly enhances the motivation of fourth-grade students in Social Studies classes at elementary schools in Gugus II, Biringkanaya District, Makassar City. Empirical evidence from the quasi-experimental approach reveals substantial increases in student motivation, as evidenced by statistically significant results and substantial effect sizes. These findings affirm the effectiveness of integrating gamified digital learning platforms to transform traditional, passive learning environments into interactive and engaging experiences. Educational institutions and policymakers are thus encouraged to systematically adopt and integrate

interactive digital tools such as Wordwall into curricula, thereby promoting enhanced student engagement, motivation, and academic performance. Future research should explore the long-term effects of gamification in education and its application across various academic disciplines and educational levels..

Acknowledgement

The authors would like to express their sincere gratitude to Universitas Muhammadiyah Makassar for the financial support provided for the writing and publication of this article.

References

- Al-Aziz, T. A., Salha, S., & Sarah, A. A. (2025). The Effect of Using Wordwall on Academic Achievement and Motivation Towards Learning Mathematics among Sixth Grade Students in Nablus District. *An-Najah University Journal for Research - B (Humanities)*, 39(1), 43–52. <https://doi.org/10.35552/0247.39.1.2305>
- Alfares, N. S. (2025). Investigating the Efficacy of Wordwall Platform in Enhancing Vocabulary Learning in Saudi EFL Classroom. *International Journal of Game-Based Learning*, 15(1). <https://doi.org/10.4018/IJGBL.367870>
- Benlaria, H., Almawishir, N. F. S., Saadaoui, S., Mohammed, S. M. M., Mohamed Ahmed Abdulrahman, B., & Ahmed ELamin Eltahir, I. (2023). The Moderating Role of Research and Development (R&D) Support in the Relationship between Entrepreneurship and per Capita Output—A Study on the GCC Countries. *Economies*, 11(6). <https://doi.org/10.3390/economies11060162>
- Bournakis, I., & Tsionas, M. (2024). A Non-parametric Estimation of Productivity with Idiosyncratic and Aggregate Shocks: The Role of Research and Development (R&D) and Corporate Tax. *Oxford Bulletin of Economics and Statistics*, 86(3), 641–671. <https://doi.org/10.1111/obes.12594>
- Bouzaiane, B., & Youzbashi, A. (2024). The Role of Digital-Game Based Language Learning in EFL Vocabulary Learning and Retention: A Case Study at a Higher Educational Institute in Oman. *Journal of Language Teaching and Research*, 15(5), 1660–1669. <https://doi.org/10.17507/jltr.1505.27>
- Castillo, C., Fuentesal, E. B., & Szczesniak, A. (2024). Translation vs. Scaffolding for the Writing Practice: Techniques Employed by In-Service EFL Teachers in Primary Education. *Hikma*, 23(2). <https://doi.org/10.21071/hikma.v23i2.16782>
- Chandra, M. R., & Kun, Q. (2024). Utilizing Wordwall Mobile Apps to Improve Mandarin Language Skills. *2024 3rd International Conference on Creative Communication and Innovative Technology, ICCIT 2024*. <https://doi.org/10.1109/ICCIT62134.2024.10701231>
- Do, T. C., & Huynh, N. T. (2024). Students' Perception of Using Wordwall Application to Enhance Vocabulary Memorization. *Proceedings of International Conference on Research in Education and Science*, 10(1),

-
- 810–820. <https://www.scopus.com/inward/record.uri?eid=2-s2.0-85217681847&partnerID=40&md5=73398f71a53aa5b4945fc77e03555d61>
- Goldshaft, B., Sjølie, E., & Johannesen, M. (2024). Student teachers' research and development (R&D) practice - constraining and supporting practice architectures. *Pedagogy, Culture and Society*, 32(3), 853–873. <https://doi.org/10.1080/14681366.2022.2140698>
- Hamid, N. A., Ghazali, N., Shaffee, N. S., Ibrahim, Z., & Norfadzilah, N. M. (2024). The perception of micro-enterprises on the constraints encountered in research and development (R&D): Evidence from malaysia. *Edelweiss Applied Science and Technology*, 8(5), 195–206. <https://doi.org/10.55214/25768484.v8i5.1681>
- Hare, J., Riggall, G., Bongers, A., Ramesh, K., Kokareva, L., & Chin, B. (2023). Vaccine research and development capacity in Central and West Asia: A path toward sustainable vaccine R&D programs. *Frontiers in Public Health*, 11. <https://doi.org/10.3389/fpubh.2023.1143790>
- Hasram, S., Nasir, M. K. M., Mohamad, M., Daud, M. Y., Rahman, M. J. A., & Mohammad, W. M. R. W. (2021). The effects of wordwall online games (Wow) on english language vocabulary learning among year 5 pupils. *Theory and Practice in Language Studies*, 11(9), 1059–1066. <https://doi.org/10.17507/tpls.1109.11>
- Hu, R., Yu, C., Jin, Y., Pray, C., & Deng, H. (2022). Impact of Government Policies on Research and Development (R&D) Investment, Innovation, and Productivity: Evidence from Pesticide Firms in China. *Agriculture (Switzerland)*, 12(5). <https://doi.org/10.3390/agriculture12050709>
- Jiang, Y., Hossain, M. R., Khan, Z., Chen, J., & Badeeb, R. A. (2024). Revisiting Research and Development Expenditures and Trade Adjusted Emissions: Green Innovation and Renewable Energy R&D Role for Developed Countries. *Journal of the Knowledge Economy*, 15(1), 2156–2191. <https://doi.org/10.1007/s13132-023-01220-0>
- Kääriäinen, J., Valkokari, K., Siira, E., Hemilä, J., & Jurvansuu, M. (2023). Toward A Better Understanding Of Collaborative Research, Development, And Innovation (R&D&I) — Exploring Virtual, Physical, And Cognitive Structures. *International Journal of Innovation*, 11(3). <https://doi.org/10.5585/2023.22836>
- Kocabatmaz, H., & Saraçoğlu, G. K. (2024). The Effect of Educational Digital Games on Academic Success and Attitude in 3rd Grade Mathematics Class. *Participatory Educational Research*, 11(2), 230–244. <https://doi.org/10.17275/per.24.28.11.2>
- Korol, A., Blashkova, O., Kravchenko, V., & Khilya, A. (2021). Web-technologies and multimedia systems in the training of professionals in the education system. *Vide. Tehnologija. Resursi - Environment, Technology, Resources*, 2, 244–248. <https://doi.org/10.17770/etr2021vol2.6570>
- Lee, W. K., Ock, M., Park, J. O., Kim, C., Seo, B. S., Pyo, J., Park, H. J., Kim, U. J., Choi, E. J., Woo, S., & Park, H. (2024). Prioritization of Injury Prevention and Management Programs and Research and Development (R&D) Projects: Survey Using the Delphi Technique and Analytic
-

-
- Hierarchy Process. *Asia-Pacific Journal of Public Health*, 36(1), 78–86. <https://doi.org/10.1177/10105395231213171>
- Li, J., Zhang, G., Ned, J. P., & Sui, L. (2023). How does digital finance affect green technology innovation in the polluting industry? Based on the serial two-mediator model of financing constraints and research and development (R&D) investments. *Environmental Science and Pollution Research*, 30(29), 74141–74152. <https://doi.org/10.1007/s11356-023-27593-y>
- Lima, T., & Moroz, M. (2024). Teaching How to Study Expository Texts: A Programmed Instruction. *Psicologia: Teoria e Pesquisa*, 40. <https://doi.org/10.1590/0102.3772E40202.EN>
- Makarova, O. V., Khvoshch, R. N., & Boldyreva, Y. V. (2024). Digital Resources As An Effective Means For Developing Communications Skills Of A Future Doctor. *Siberian Journal of Life Sciences and Agriculture*, 16(1), 424–440. <https://doi.org/10.12731/2658-6649-2024-16-1-1070>
- Manuel Antonio, C.-S., Luis Alexander, P.-J., Guillermo Segundo, M.-O., Henry, C.-V., Omar, B.-V., Aurelia, Z.-P., & José Victor, P.-V. (2022). Online onboarding program to strengthen the commitment and retention of employees of a private company in the city of Chimbote. *Proceedings of the LACCEI International Multi-Conference for Engineering, Education and Technology, 2022-Decem*. <https://doi.org/10.18687/LEIRD2022.1.1.149>
- Mettarikanon, D., Tawanwongsri, W., Wanchai, A., & Chookerd, N. (2023). Comparison of the efficacy between game-based learning and pamphlet on enhancing recognition of common cutaneous malignancies in Thai younger adults. *Contemporary Educational Technology*, 15(2). <https://doi.org/10.30935/cedtech/13013>
- Moore, K. A., Leighton, T., Ostrowsky, J. T., Anderson, C. J., Danila, R. N., Ulrich, A. K., Lackritz, E. M., Mehr, A. J., Baric, R. S., Baylor, N. W., Gellin, B. G., Gordon, J. L., Krammer, F., Perlman, S., Rees, H. V., Saville, M., Weller, C. L., & Osterholm, M. T. (2023). A research and development (R&D) roadmap for broadly protective coronavirus vaccines: A pandemic preparedness strategy. *Vaccine*, 41(13), 2101–2112. <https://doi.org/10.1016/j.vaccine.2023.02.032>
- Moore, K. A., Osterholm, M. T., Lackritz, E. M., & Poland, G. A. (2022). A research and development (R&D) roadmap for broadly protective coronavirus vaccines: Setting a path to address coronavirus threats. *Vaccine*, 40(42), 6001–6003. <https://doi.org/10.1016/j.vaccine.2022.08.071>
- Mukhamadiarova, A. F., & Nizamutdinova, E. A. (2023). The application of the CLIL technology in the development of foreign language lexical and grammatical skills of students in digital educational environment. *Perspektivy Nauki i Obrazovania*, 65(5), 346–358. <https://doi.org/10.32744/pse.2023.5.20>
- Nechifor, A. (2024). Gamified Romanian for Specific Purposes: A Journey to Engaged Language Acquisition. *Analele Universitatii Ovidius Constanta, Seria Filologie*, 35(2), 348–371. <https://www.scopus.com/inward/record.uri?eid=2-s2.0-85214458859&partnerID=40&md5=9b6a84041c4ea6032d0fee556d9dd7df>
-

-
- Nenohai, J. A., Rokhim, D. A., Agustina, N. I., & Munzil, M. (2022). Development of Gamification-Based Wordwall Game Platform on Reaction Rate Materials. *Orbital*, 14(2), 116–122. <https://doi.org/10.17807/orbital.v14i2.16206>
- Olaoye, I. J., Ayinde, O. E., Ajewole, O. O., & Adebisi, L. O. (2021). The role of research and development (R&D) expenditure and governance on economic growth in selected African countries. *African Journal of Science, Technology, Innovation and Development*, 13(6), 663–670. <https://doi.org/10.1080/20421338.2020.1799300>
- Pătru-Stupariu, I., Diana-Corina, P., & Pascu, M. (2021). Does Online Education Ensure Effective Teaching and Evaluation of Geography? A Romanian Perspective of 5th Graders. *Forum Geografic*, 20(2), 253–261. <https://doi.org/10.5775/fg.2021.056.d>
- Pimpuang, K., & Yuttapongtada, M. (2023). Effectiveness of Learning English Words of Sanskrit Origin as Loanwords in Thai through WordWall Gamification. *LEARN Journal: Language Education and Acquisition Research Network*, 16(2), 451–468. <https://www.scopus.com/inward/record.uri?eid=2-s2.0-85169915179&partnerID=40&md5=49f3a2f7f901fe8b581f081ede7034ea>
- Rahma, T. K., Nurcahyo, A., Ishartono, N., Setyaningsih, R., Setyono, I. D., Putra, D. A., & Fitrianna, A. Y. (2023). Using wordwall as a gamification-based mathematics learning material to support students' learning activities. *AIP Conference Proceedings*, 2727. <https://doi.org/10.1063/5.0141610>
- Sari, Y., Marini, A., Rahmawati, Y., Fitriarsi, E., Wardhani, P. A., Safitr, D., Dewiyani, L., & Muda, I. (2024). Emerging Technologies Of Interactive Learning Media With Wordwall For Students' Interest As An Impact On Sdgs. *Journal of Lifestyle and SDG'S Review*, 5(2). <https://doi.org/10.47172/2965-730X.SDGsReview.v5.n02.pe03268>
- Shuib, R., Azid, N., Yahya, F., Man, S. C., Heong, Y. M., Kiong, T. T., & Herawati, H. (2024). Digital game-based learning of domestic safety (esafety) for pre-school. *AIP Conference Proceedings*, 2750(1). <https://doi.org/10.1063/5.0148845>
- Tiagarajah, R., & Said, M. N. H. B. M. (2022). The Effect of Game-Based Application in Improving Students' Engagement towards Learning Malay Language in Primary School. *Proceedings - International Conference on Education and Technology, ICET, 2022-Octob*, 38–42. <https://doi.org/10.1109/ICET56879.2022.9990607>
- Tomczyk, L., Fedeli, L., Wloch, A., Limone, P., Frania, M., Guarini, P., Szyszka, M., Mascia, M. L., & Falkowska, J. (2022). Evaluation of the Quality of the Educational Software From the Perspective of Experiences of Italian and Polish Pre-Service Teachers. *30th International Conference on Computers in Education Conference, ICCE 2022 - Proceedings, 1*, 613–618. <https://www.scopus.com/inward/record.uri?eid=2-s2.0-85151056697&partnerID=40&md5=7dc4f352c280f37be8cf365a484059ba>
- Tomczyk, Ł., Limone, P., & Guarini, P. (2024). Evaluation of modern educational software and basic digital competences among teachers in Italy. *Innovations in Education and Teaching International*, 61(2), 355–369. <https://doi.org/10.1080/14703297.2023.2173632>
-

-
- Turriate Chavez, J. J., & Miñan Olivos, G. S. (2023). Effects of Telepsychology on the Emotional States of University Students. *CICIC 2023 - Decima Tercera Conferencia Iberoamericana de Complejidad, Informatica y Cibernetica En El Contexto de the 14th International Multi-Conference on Complexity, Informatics, and Cybernetics, IMCIC 2023 - Memorias*, 248–253. <https://doi.org/10.54808/CICIC2023.01.248>
- Vereş, S., Magdaş, I., Dulamă, M. E., Ilovan, O.-R., & Toderaş, A. (2020). The Use of Animation Film in Studying Some Natural Phenomena and Forming Representations. *Proceedings of the International Conference on Virtual Learning*, 94–100. <https://www.scopus.com/inward/record.uri?eid=2-s2.0-85168561944&partnerID=40&md5=6730397815be3076e3f3c2acc2a6a9a>
- Yang, D., & Tseng, C.-J. (2024). How does organizational support for creativity affect research and development (R&D) employees' innovative behavior? *Journal of Infrastructure, Policy and Development*, 8(8). <https://doi.org/10.24294/jipd.v8i8.8521>
- Zhang, B., Wang, C., & Ren, X. Z. (2024). Evaluating the research and development (R&D) efficiency of the Chinese construction industry. *Engineering, Construction and Architectural Management*. <https://doi.org/10.1108/ECAM-05-2024-0560>

How to cite this article:

Azmi M, N., Suardi., & Idawati. (2025). The Effect of Wordwall-Based Learning Media on Fourth Grade Students' Motivation in Social Studies Learning at Elementary School. *Journal of Educational Sciences*, 9(5), 3245-3255.
