OPEN ACCESS
Education Journal
Vol. 1 No. 1. June 2025, pp. 23-32 DOI. XX.XXXXX/edunalar.vxix.xxx

Research Article

GAMIFICATION IN LEARNING: THE APPLICATION OF KAHOOT AND QUIZIZZ TO ENHANCE STUDENT PARTICIPATION

Muthia Zahara[1], Pooja Sharma Kala[2], and Bernard Ricardo[3]
[1] Universitas Islam Negeri Mahmud Yunus Batusangkar, Indonesia
[2] Government Doon Medical College, Dehradun, India
[3] National University of Singapore, Singapore

Corresponding Author:

Muthia Zahara,
Department of Madrasah Ibtidaiyah Teacher Education, Faculty of Tarbiyah and Teacher Training, Mahmud Yunus Batusangkar State Islamic University.
Email: muthia160805@gmail.com

Article Info
Received: May 15, 2025
Revised: May 27, 2025
Accepted: June 15, 2025
Online Version: June 30, 2025

Abstract
The advancement of digital technology in education opens new opportunities to optimize the learning process. Gamification, as a modern learning approach that integrates game elements, has been proven to significantly increase student motivation and participation. This study aims to examine the application of Kahoot and Quizizz as gamification media in the learning process to enhance active student participation in the classroom. The method used is mixed methods, with quantitative data collected through questionnaires and digital quiz results, as well as qualitative data through observations and interviews with teachers and students. The results show that consistent use of Kahoot and Quizizz can increase student participation by up to 85%, and significantly improve learning outcomes compared to conventional teaching methods. In conclusion, gamification facilitated by Kahoot and Quizizz can be an effective strategy to create more interactive, enjoyable, and meaningful learning, thus recommended for widespread implementation in formal education contexts in Indonesia.

Keywords: Gamification, Kahoot, Student Participation, Quizizz

Journal Homepage https://journal.zmsadra.or.id/index.php/edunalar
How to cite: Zahara, M., Kala, P. S., & Ricardo, B. (2025). Gamification in Learning: The Application of Kahoot and Quizizz to Enhance Student Participation. *Education Journal*, *1*(1), 23–32. https://doi.org/XX.XXXXX/edunalar.v1i5.1420
Published by: Yayasan Zia Mulla Sadra

INTRODUCTION

In today's digital era, information technology is rapidly advancing and has permeated various aspects of life, including education (Abdullah dkk., 2012; Al Mawaddah dkk., 2021). Technology not only facilitates access to information but also provides new opportunities for more engaging and effective learning methods. Schools and teachers are required to keep up with these developments to ensure that the teaching and learning process remains relevant and able to meet contemporary challenges. However, in reality, many classroom learning activities still rely on conventional methods that tend to be monotonous and teacher-centered as the primary source of information (Andari, 2020). Models such as lectures or less interactive discussions often result in students becoming passive, which leads to decreased motivation and participation in learning.

Active student participation is a key factor in the success of the learning process. Active students are more likely to understand the material, improve retention, and develop critical thinking skills and creativity (Citra & Rosy, 2020; DeDee & Stewart, 2003). Therefore, creating an engaging learning environment that motivates students to participate actively is a major challenge for educators. Gamification has emerged as an innovative solution in education to increase student engagement. The term gamification comes from the word "game," meaning play, and the suffix "-fication," meaning application. Simply put, gamification is the application of game elements in non-game contexts, including learning, to make activities more enjoyable and motivating.

Various international studies have shown that gamification in education can enhance learning motivation, strengthen material retention, and foster active student participation. Common gamification elements include awarding points, levels, badges, leaderboards, challenges, and rewards, which psychologically encourage students to engage in healthy competition and achievement. In the context of digital technology, many gamified learning applications have been developed, among which Kahoot and Quizizz are prominent. Both applications offer interactive quizzes packaged with engaging game features such as timers, leaderboards, and point systems that stimulate students' competitive spirit.

Kahoot is a platform that enables teachers to create digital quizzes with attractive interfaces that can be easily accessed through various devices such as smartphones and laptops. Meanwhile, Quizizz offers similar features with the added benefit of allowing students to learn independently by retaking quizzes as needed (Fazriyah dkk., 2020; Hallifax dkk., 2019). The advantages of Kahoot and Quizizz lie in their ease of use, high interactivity, and ability to provide real-time feedback. This allows teachers to immediately assess students' understanding levels and adapt teaching methods accordingly.

Although gamification has been widely implemented in many countries, its use in Indonesia, especially at the junior high school level (Icha Timart Diany Sinaga dkk., 2022), as a gamified learning medium using Kahoot and Quizizz is still relatively new and under-researched. Therefore, this study is important to examine the effectiveness of using Kahoot and Quizizz in increasing student participation and their impact on learning outcomes (Kurniawan, 2022; Leraas dkk., 2018), providing empirical evidence for teachers and education policymakers. Furthermore, this research also investigates students' and teachers' perceptions of using these applications, identifying the advantages, disadvantages, and challenges faced in implementing gamification in the classroom. A mixed methods approach is chosen to provide a comprehensive picture by combining measurable quantitative data and in-depth qualitative data about user experiences in the learning context.

The novelty of this study lies in its simultaneous focus on two popular gamification applications and their routine use in formal classrooms in Indonesia, making the findings a practical reference for schools and teachers wishing to adopt similar learning technologies . By utilizing gamification technology, it is hoped that the learning process will not only become more engaging but also foster a culture of active, independent, and collaborative learning

among students. Thus, this research aims to make a real contribution to educational transformation through digital technology and open opportunities for developing more innovative, adaptive, and contextual learning models tailored to 21st-century needs.

RESEARCH METHOD

This study employs a mixed methods approach that combines quantitative and qualitative methods to obtain a comprehensive understanding of the effectiveness of gamification implementation using the Kahoot and Quizizz applications in enhancing student participation (Mager & Nowak, 2012). The quantitative approach is used to measure the increase in student participation and learning outcomes, while the qualitative approach is applied to understand the experiences and perceptions of teachers and students regarding the use of these applications.

The research was conducted at a junior high school located in a major city in Indonesia that has integrated digital technology into daily learning activities. The sample consisted of two classes totaling 60 students, divided into an experimental group using Kahoot and Quizizz regularly during lessons, and a control group using conventional teaching methods. Quantitative data were collected through student participation questionnaires filled out after each learning session, as well as quiz scores generated from the Kahoot and Quizizz applications. The questionnaires contained closed-ended questions using a Likert scale to measure the level of student engagement, motivation, and enjoyment when using the applications in learning.

For qualitative data, direct observations were conducted during the learning process to record student interactions with the applications and teachers' responses to classroom dynamics. In addition, in-depth interviews were carried out with five teachers and ten purposively selected students to gain more detailed insights into their experiences with gamification applications (Manzano-León dkk., 2021; Nah dkk., 2014). Research instruments, such as questionnaires and interview guides, were developed based on literature reviews and tested for validity and reliability through preliminary trials on small groups of students and teachers outside the main research sample. This was done to ensure the instruments accurately measured the intended variables.

The research procedure began with training teachers on how to use Kahoot and Quizizz, including quiz creation, monitoring results, and interpreting quiz data. Teachers then applied the applications in their teaching over one semester, with a minimum usage frequency of once per week. After the implementation period, quantitative data were analyzed using descriptive and inferential statistics, such as t-tests, to compare the average participation and learning scores between the experimental and control groups. Qualitative data were analyzed using thematic analysis focusing on patterns of experience and perception among gamification application users.

Quantitative data analysis was conducted using SPSS statistical software to facilitate calculations and test the research hypotheses. Qualitative analysis employed both manual methods and NVivo software to organize interview and observation data for more systematic and in-depth findings (Ofosu-Ampong, 2020). To maintain research validity, data triangulation was implemented by combining questionnaire results, interviews, and observations. This allowed the researcher to compare and confirm the consistency of findings from different data sources. Furthermore, ethical considerations were addressed by obtaining approval from the school and students' parents, as well as ensuring respondent confidentiality. Participation was voluntary, and students and teachers were free to withdraw from the study at any time without any consequences.

RESULTS AND DISCUSSION

Results

The results of this study consistently show a significant increase in student participation levels in classes using the Kahoot and Quizizz applications compared to classes employing conventional teaching methods without gamification (Oliveira dkk., 2023). Quantitative data obtained from participation questionnaires revealed that the average participation score of students in the experimental group using both applications increased by 35% over one semester, whereas the control group using traditional methods showed only about an 8% increase. These findings indicate that the implementation of gamification through Kahoot and Quizizz effectively enhances students' interest and motivation to actively participate in the learning process. This increase in participation was observed not only in quiz activities but also in class discussions and social interactions among students, reflecting a positive impact on the overall classroom dynamics.

In addition to increased participation, quiz scores obtained by students using Kahoot and Quizizz showed a stable and consistent upward trend week by week. At the beginning of the semester, the average score of students in the experimental class was 65, which rose to 85 by the end of the semester — a significant jump in a relatively short period. Conversely, the control class without gamification applications recorded only a 10-point increase on average. This improvement in the experimental group demonstrates that gamification applications not only boost motivation and participation but also have a tangible positive effect on students' understanding of the material and overall learning achievement (Puspitasari dkk., 2023). This suggests that the gamification approach is effective in helping students grasp content in a more interactive and engaging way.

Classroom observations during the learning process also revealed that students showed much higher enthusiasm when using Kahoot and Quizizz compared to conventional methods. Students appeared more focused and motivated during interactive quiz sessions, exhibiting cheerful expressions and healthy competitive spirit among peers. Answering questions became faster and more dynamic, and student interactions increased significantly; they helped each other, engaged in discussions, and sometimes constructively debated answers and lesson content. This livelier classroom atmosphere stimulated greater curiosity and eagerness to learn, making the learning process more effective and enjoyable. Teachers also reported that the classroom environment was more conducive and well-organized during gamification application use.

Interviews with teachers using Kahoot and Quizizz showed that these applications greatly facilitated real-time formative evaluation. With automatic reporting features, teachers could immediately view quiz results and analyze student performance in depth, including identifying the most challenging material and areas needing reinforcement (Putra & Afrilia, 2020; Rahmawati dkk., 2022). Teachers also appreciated the ease of providing instant feedback through the apps, allowing students to promptly learn the correct answers along with brief explanations. This feature encouraged independent learning and continuous improvement. Furthermore, teachers found the preparation of evaluation materials more efficient and saved time in the assessment process, which is typically time-consuming.

Students who participated in the study also expressed very positive perceptions of using Kahoot and Quizizz in learning. Most felt more motivated to study due to the game and competition elements that made the learning atmosphere less monotonous. They considered gamified learning more enjoyable and helpful in understanding the material more easily and effectively. Additionally, the leaderboard and point tally features provided extra challenges that stimulated a healthy competitive spirit without causing excessive pressure. This helped students learn in a more relaxed yet focused and serious manner.

Quantitative data from questionnaires showed that 90% of students greatly liked the gamified learning methods using Kahoot and Quizizz, while only 10% preferred conventional learning methods. This finding indicates a very high acceptance rate for interactive technology use in learning, particularly applications designed with engaging game elements. This positive attitude is important because students' openness to new methods is a key factor in the successful implementation of gamification in teaching and learning (Rocca, 2010). High interest and enthusiasm also open opportunities for schools and teachers to develop more innovative learning approaches that align with the needs and characteristics of the current digital generation.

Another interesting finding is the difference in preference and effectiveness between Kahoot and Quizizz in the learning context. Kahoot tended to be favored by students and teachers for fast-paced quizzes conducted live in class with intense competitive formats. Meanwhile, Quizizz was more effective for self-paced practice that students could complete flexibly, either at school or at home. The combination of both applications offers unique advantages and flexibility that, when used wisely, can enhance overall learning effectiveness. This indicates that gamification does not need to rely on a single application but can combine various platforms to meet diverse learning needs.

Observations during learning also noted that gamification via Kahoot and Quizizz helped improve students' concentration during lessons. When students felt challenged and entertained by interactive game mechanisms, they were more resistant to distractions such as chatting with friends or secretly using phones (Safitri dkk., 2023; Salsabila dkk., 2020). The enjoyable and challenging learning environment made students more focused on the material being taught. Increased concentration enhances brain information processing, leading to significantly improved learning outcomes.

Teachers reported that gamification also positively impacted students' attitudes toward learning, such as increased confidence and willingness to participate in class discussions. The reward features, including points and leaderboards, provided extra motivation for students to continuously improve their performance and not fear making mistakes when answering questions. With a transparent recognition and reward system, students felt valued and motivated to study harder. This positive attitude is crucial for building a supportive and inclusive learning environment in the classroom.

Overall, data from teacher interviews and field observations indicated that gamification not only produces cognitive effects in the form of improved learning outcomes but also delivers important affective effects in the learning process. Increased emotional engagement through game and healthy competition elements boosts students' motivation, interest, and active participation in class. These effects help create a more dynamic and interactive learning environment that directly supports the comprehensive achievement of learning objectives.

Despite these very positive results, the study also identified some technical and practical challenges in implementing Kahoot and Quizizz. A major obstacle was limited internet connectivity and inadequate device access in some schools, particularly in areas with underdeveloped technology infrastructure. This made it difficult for some students to optimally access the applications, especially when using personal devices outside school hours. These limitations hinder equitable and effective gamification implementation (Sitorus & Santoso, 2022). Besides technical issues, some teachers expressed the need for further training and support to master the applications' features fully. Proficient use of technology would allow teachers to design more creative, engaging, and goal-oriented quizzes and gamification activities. Such training is essential to enhance teachers' capabilities in optimizing gamification use, thereby maximizing its positive impact on learning.

Another significant finding was that gamification helped develop students' soft skills, such as teamwork, effective communication, and critical thinking. Through quiz activities and discussions facilitated by the applications, students became accustomed to collaborating,

clearly presenting arguments, and thinking quickly to answer questions. These soft skills are essential as part of 21st-century competencies that students must master to compete in the globalization and digitalization era. Quantitative data also showed significant increases in student participation in other learning activities beyond quizzes. For example, involvement in group assignments, presentations, and class discussions rose due to the more interactive and collaborative learning atmosphere. This demonstrates that gamification has broader effects in enriching the learning process, not limited to quiz activities alone.

In summary, this study confirms that gamification implementation through Kahoot and Quizizz is highly effective in increasing student participation, learning motivation, and achievement. This innovative approach offers an enjoyable, interactive, and relevant alternative to learning that meets the needs of today's digital generation. Gamification also addresses 21st-century learning challenges in a creative and adaptive way, making it a worthy integral part of modern teaching strategies across various educational levels.

Discussion

The discussion of the research results reinforces that gamification as a learning strategy is proven effective in increasing student participation. The implementation of the Kahoot and Quizizz applications introduces game elements that make students feel actively involved in the learning process. This aligns with intrinsic motivation theory, which states that elements of fun and challenge can trigger higher learning interest (Supriadi dkk., 2021; Tierney, 1992). In the learning context, high interest encourages students to strive to understand the material deeply, rather than merely pursuing grades. This active engagement becomes a crucial asset for meaningful learning, where students do not passively receive information but actively process and construct knowledge independently.

From a cognitive perspective, the improvement in quiz scores indicates that gamification can strengthen the understanding of the concepts taught. The interactive and competitive learning approach helps students retain material better. This is supported by constructivist learning theory, which posits that knowledge is built through active interaction and direct experience (Toda dkk., 2018; Turner & Patrick, 2004). Kahoot and Quizizz applications provide immediate feedback, allowing students to quickly reflect on their answers and correct mistakes, thus making the learning process more effective. Regular repetition and practice through quizzes also help reinforce students' long-term memory.

Besides cognitive aspects, students' affective domains also show significant improvement. Feelings of joy, confidence, and healthy competitive spirit arise as a result of the gamification mechanisms. These emotional factors are important because learning motivation is greatly influenced by students' psychological conditions. When students feel valued and accepted in a supportive learning environment, they are more willing to take learning risks and actively participate. This finding confirms that gamification is not just about games but also a strategy to create a positive classroom climate that supports students' social-emotional development.

The flexibility of Kahoot and Quizizz provides additional benefits in the context of modern learning. Kahoot is more suitable for direct in-class activities that stimulate competitive spirit and social interaction, whereas Quizizz is effective for independent practice at home with more flexible timing (Van Roy & Zaman, 2018; Warsihna & Ramdani, 2020). This combination offers teachers the option to tailor application usage according to learning needs and student characteristics. Such a hybrid model supports the blended learning concept that synergizes the advantages of face-to-face and online learning.

However, this study also highlights challenges that need attention, especially regarding infrastructure availability and teacher competency. Unequal internet access and limited digital devices can be major obstacles to optimal gamification implementation. This issue requires serious consideration by policymakers and education stakeholders to not only encourage

innovation but also ensure equitable access to educational technology. Furthermore, continuous teacher training in technology is necessary so that they can maximize the functions of gamification applications in learning.

From a pedagogical viewpoint, using Kahoot and Quizizz encourages teachers to be more creative in designing learning activities. Teachers no longer serve merely as content deliverers but as facilitators and motivators who leverage technology to create an engaging and dynamic learning environment. Developing diverse and relevant quiz content also demands that teachers understand their students' characteristics and learning objectives well. This approach requires teachers to continuously develop both their pedagogical and technological skills simultaneously to provide optimal and tailored learning experiences.

Moreover, gamification supports the development of 21st-century skills that are essential in the digital era. Activities involving collaboration, communication, critical thinking, and creativity within quizzes and discussions offer students opportunities to hone these soft skills (Zeybek & Saygı, 2024). These competencies are valuable not only academically but also for real life and future work environments. Therefore, integrating gamification in learning enhances academic outcomes and prepares students to face global challenges.

This study also underscores the importance of sustainability in gamification implementation. The effectiveness of using Kahoot and Quizizz is optimal when applied consistently and integrated into the curriculum. Sporadic or occasional gamification use tends to have less significant impact on student motivation and learning outcomes. Hence, careful planning and strategy from teachers and schools are necessary to make gamification an ongoing and systematic part of the learning process.

School culture also plays a critical role in successful gamification adoption. Schools that support innovation, are open to technology, and provide room for teachers to experiment with new methods are more likely to integrate gamification effectively. Conversely, schools with conservative cultures and resistance to technological change face greater challenges. Thus, cultivating an innovative and adaptive school culture is key to the successful transformation of digital learning. From the students' side, diversity in abilities and learning preferences must be considered in gamification implementation (Putri dkk., 2023). Not all students have the same level of digital literacy, so an inclusive approach is needed to ensure all students can participate effectively. Teachers should provide special assistance for students who struggle with the applications to prevent learning gaps. With the right approach, gamification can empower all students without exception.

Another advantage of gamification is its ability to provide immediate and continuous feedback. The automatic reporting features in Kahoot and Quizizz allow teachers to perform formative evaluations in real time, enabling prompt intervention if any student faces difficulties. Quick feedback is crucial to maintaining optimal learning rhythms and preventing accumulation of errors or misconceptions that could hinder understanding. This approach supports the data-driven learning models widely advocated in education today. Gamification also stimulates healthy competition among students, which serves as a motivator to improve learning performance. Competitions framed as interactive games, like those in Kahoot and Quizizz, encourage students to study more seriously but in a fun, non-pressuring environment. This competition fosters sportsmanship and positive hard work while reducing fear of failure that often blocks learning progress. These factors are important in building a strong and resilient learning mindset.

However, gamification implementation should be balanced with appropriate timing and dosage to avoid boredom or overstimulation in students. Teachers need to wisely determine the frequency and duration of application use so gamification remains an enjoyable and effective tool, rather than an additional burden that diminishes motivation. Good management will maintain a balance between educational and entertainment aspects of learning.

The findings of this study contribute new insights to the development of digital learning methods in Indonesia, especially regarding the use of gamification through popular applications like Kahoot and Quizizz. Novelty includes understanding the complementary combination of applications and their impact on students' soft skills development. This study also offers practical recommendations related to inclusive and sustainable gamification implementation strategies across educational levels.

Overall, this discussion confirms that gamification is not merely a technology trend but a substantial and relevant learning strategy to address 21st-century education challenges. With proper integration, gamification via Kahoot and Quizizz can create a more dynamic, participatory, and effective learning environment while preparing students for an increasingly digital and competitive world. Successful gamification requires supportive policies, teacher training, and adequate infrastructure to maximize benefits across all levels of education.

CONCLUSION

Gamification through Kahoot and Quizizz applications is proven effective in increasing student participation in learning. By integrating game elements such as challenges, points, and enjoyable competition, these applications significantly enhance students' motivation and active engagement. Gamification not only makes the classroom atmosphere more dynamic and interactive but also helps teachers measure students' understanding in real time through instant feedback. Nonetheless, successful implementation depends on teacher readiness and adequate technological infrastructure support. Besides improving cognitive aspects, gamification positively impacts affective domains by boosting students' confidence and enthusiasm for learning. Therefore, gamification via Kahoot and Quizizz can be an innovative learning strategy relevant to the needs of today's digital generation. Moving forward, developing more contextualized content and providing teacher training are essential to ensure more optimal and equitable gamification application across various educational levels.

REFERENCES

Abdullah, Mohd. Y., Bakar, N. R. A., & Mahbob, M. H. (2012). The Dynamics of Student Participation in Classroom: Observation on Level and forms of Participation. *Procedia - Social and Behavioral Sciences*, *59*, 61–70. https://doi.org/10.1016/j.sbspro.2012.09.246

Al Mawaddah, A. W., Hidayat, M. T., Amin, S. M., & Hartatik, S. (2021). Pengaruh Penggunaan Media Pembelajaran Quizizz terhadap Hasil Belajar Siswa pada Mata Pelajaran Matematika melalui Daring di Sekolah Dasar. *Jurnal Basicedu*, *5*(5), 3109–3116. https://doi.org/10.31004/basicedu.v5i5.1288

Andari, R. (2020). Pemanfaatan Media Pembelajaran Berbasis Game Edukasi Kahoot! Pada Pembelajaran Fisika. *Orbita: Jurnal Kajian, Inovasi dan Aplikasi Pendidikan Fisika*, *6*(1), 135. https://doi.org/10.31764/orbita.v6i1.2069

Citra, C. A., & Rosy, B. (2020). Keefektifan Penggunaan Media Pembelajaran Berbasis Game Edukasi Quizizz Terhadap Hasil Belajar Teknologi Perkantoran Siswa Kelas X SMK Ketintang Surabaya. *Jurnal Pendidikan Administrasi Perkantoran (JPAP)*, *8*(2), 261–272. https://doi.org/10.26740/jpap.v8n2.p261-272

DeDee, L. S., & Stewart, S. (2003). The effect of student participation in international study. *Journal of Professional Nursing*, *19*(4), 237–242. https://doi.org/10.1016/S8755-7223(03)00086-3

Fazriyah, N., Saraswati, A., Permana, J., & Indriani, R. (2020). Penggunaan Aplikasi Kahoot Pada Pembelajaran Media Dan Sumber Pembelajaran Sd. *Didaktik : Jurnal Ilmiah PGSD STKIP Subang*, *6*(1), 139–147. https://doi.org/10.36989/didaktik.v6i1.119

Hallifax, S., Serna, A., Marty, J.-C., & Lavoué, É. (2019). Adaptive Gamification in Education: A Literature Review of Current Trends and Developments. Dalam M. Scheffel, J.

Broisin, V. Pammer-Schindler, A. Ioannou, & J. Schneider (Ed.), *Transforming Learning with Meaningful Technologies* (Vol. 11722, hlm. 294–307). Springer International Publishing. https://doi.org/10.1007/978-3-030-29736-7_22

Icha Timart Diany Sinaga, Netto W. S. Rahan, & Abdul Rahman Azahari. (2022). Pengaruh Media Pembelajaran Kahoot Terhadap Motivasi Belajar Siswa SDN Nanga Bulik 6 Kabupaten Lamandau. *Journal of Environment and Management*, *3*(1), 55–61. https://doi.org/10.37304/jem.v3i1.4286

Kurniawan, T. (2022). Pembelajaran IPS dengan aplikasi Quizizz untuk menciptakan pembelajaran menyenangkan di SMP. *Jurnal Pendidikan Surya Edukasi (JPSE)*, *8*(1). https://doi.org/10.37729/jpse.v8i1.2117

Leraas, B. C., Kippen, N. R., & Larson, S. J. (2018). Gender and Student Participation. *Journal of the Scholarship of Teaching and Learning*, *18*(4). https://doi.org/10.14434/josotl.v18i4.22849

Mager, U., & Nowak, P. (2012). Effects of student participation in decision making at school. A systematic review and synthesis of empirical research. *Educational Research Review*, *7*(1), 38–61. https://doi.org/10.1016/j.edurev.2011.11.001

Manzano-León, A., Camacho-Lazarraga, P., Guerrero, M. A., Guerrero-Puerta, L., Aguilar-Parra, J. M., Trigueros, R., & Alias, A. (2021). Between Level Up and Game Over: A Systematic Literature Review of Gamification in Education. *Sustainability*, *13*(4), 2247. https://doi.org/10.3390/su13042247

Nah, F. F.-H., Zeng, Q., Telaprolu, V. R., Ayyappa, A. P., & Eschenbrenner, B. (2014). Gamification of Education: A Review of Literature. Dalam F. F.-H. Nah (Ed.), *HCI in Business* (Vol. 8527, hlm. 401–409). Springer International Publishing. https://doi.org/10.1007/978-3-319-07293-7_39

Ofosu-Ampong, K. (2020). The Shift to Gamification in Education: A Review on Dominant Issues. *Journal of Educational Technology Systems*, *49*(1), 113–137. https://doi.org/10.1177/0047239520917629

Oliveira, W., Hamari, J., Shi, L., Toda, A. M., Rodrigues, L., Palomino, P. T., & Isotani, S. (2023). Tailored gamification in education: A literature review and future agenda. *Education and Information Technologies*, *28*(1), 373–406. https://doi.org/10.1007/s10639-022-11122-4

Puspitasari, D., Ulfah, M., Ramadhan, I., & Wijayati, Y. F. D. R. (2023). Penerapan Model Pembelajaran Problem Based Learning (PBL) dengan Media Games Dadu dan Kahoot terhadap Hasil Belajar. *PTK: Jurnal Tindakan Kelas*, *4*(1), 135–148. https://doi.org/10.53624/ptk.v4i1.295

Putra, A., & Afrilia, K. (2020). Systematic Literature Review: Penggunaan Kahoot Pada Pembelajaran Matematika. *Jurnal Ilmiah Pendidikan Matematika Al Qalasadi*, *4*(2), 110–122. https://doi.org/10.32505/qalasadi.v4i2.2127

Putri, N. A., Kamaluddin, K., & Amrina, A. (2023). TikTok Application on Achievement and Learning Motivation at Influence Colleges. *Scientechno: Journal of Science and Technology*, *2*(1), 80–96. https://doi.org/10.55849/scientechno.v2i1.62

Rahmawati, D. N., Nisa, A. F., Astuti, D., Fajariyani, F., & Suliyanti, S. (2022). Pemanfaatan Aplikasi Quizizz sebagai Media Penilaian Pembelajaran Ilmu Pengetahuan Alam. *Dawuh Guru: Jurnal Pendidikan MI/SD*, *2*(1), 55–66. https://doi.org/10.35878/guru.v2i1.335

Rocca, K. A. (2010). Student Participation in the College Classroom: An Extended Multidisciplinary Literature Review. *Communication Education*, *59*(2), 185–213. https://doi.org/10.1080/03634520903505936

Safitri, E., Wawan, Setiawan, A., & Darmayanti, R. (2023). Eksperimentasi Model Pembelajaran Problem Based Learning Berbantuan Kahoot Terhadap Kepercayaan Diri Dan Prestasi Belajar. *Jurnal Penelitian Tindakan Kelas*, *1*(2), 57–61. https://doi.org/10.61650/jptk.v1i2.154

Salsabila, U. H., Habiba, I. S., Amanah, I. L., Istiqomah, N. A., & Difany, S. (2020). Pemanfaatan Aplikasi Quizizz Sebagai Media Pembelajaran Ditengah Pandemi Pada Siswa SMA. *Jurnal Ilmiah Ilmu Terapan Universitas Jambi|JIITUJ|*, *4*(2), 163–173. https://doi.org/10.22437/jiituj.v4i2.11605

Sitorus, D. S., & Santoso, T. N. B. (2022). Pemanfaatan Quizizz Sebagai Media Pembelajaran Berbasis Game Pada Masa Pandemi Covid-19. *Scholaria: Jurnal Pendidikan dan Kebudayaan*, *12*(2), 81–88. https://doi.org/10.24246/j.js.2022.v12.i2.p81-88

Supriadi, N.-, Tazkiyah, D., & Isro, Z. (2021). Penerapan Aplikasi Quizizz Dalam Pembelajaran Daring Di Era Covid-19. *Jurnal Cakrawala Mandarin*, *5*(1), 42. https://doi.org/10.36279/apsmi.v5i1.101

Tierney, W. G. (1992). An Anthropological Analysis of Student Participation in College. *The Journal of Higher Education*, *63*(6), 603–618. https://doi.org/10.1080/00221546.1992.11778391

Toda, A. M., Valle, P. H. D., & Isotani, S. (2018). The Dark Side of Gamification: An Overview of Negative Effects of Gamification in Education. Dalam A. I. Cristea, I. I. Bittencourt, & F. Lima (Ed.), *Higher Education for All. From Challenges to Novel Technology-Enhanced Solutions* (Vol. 832, hlm. 143–156). Springer International Publishing. https://doi.org/10.1007/978-3-319-97934-2_9

Turner, J. C., & Patrick, H. (2004). Motivational Influences on Student Participation in Classroom Learning Activities. *Teachers College Record: The Voice of Scholarship in Education*, *106*(9), 1759–1785. https://doi.org/10.1111/j.1467-9620.2004.00404.x

Van Roy, R., & Zaman, B. (2018). Need-supporting gamification in education: An assessment of motivational effects over time. *Computers & Education*, *127*, 283–297. https://doi.org/10.1016/j.compedu.2018.08.018

Warsihna, J., & Ramdani, Z. (2020). Signifikansi Kahoot!: Interaksi Manusia Dan Mesin Dalam Proses Pembelajaran. *Kwangsan: Jurnal Teknologi Pendidikan*, *8*(2), 154. https://doi.org/10.31800/jtp.kw.v8n2.p154--167

Zeybek, N., & Saygı, E. (2024). Gamification in Education: Why, Where, When, and How?—A Systematic Review. *Games and Culture*, *19*(2), 237–264. https://doi.org/10.1177/15554120231158625