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Literature Review: The Effectiveness of Kahoot! in Enhancing Student Participation and Learning Outcomes in Higher Education

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Abstract

The rapid advancement of digital technology has fundamentally transformed teaching and learning practices in higher education. Lecturers are increasingly expected to adopt innovative and interactive instructional media to sustain student engagement throughout every class session. Kahoot!, a game-based learning platform, has emerged as one of the most widely used tools across educational levels, including universities. This article systematically examines the effectiveness of Kahoot! in enhancing student participation and learning outcomes through a narrative-analytical literature review approach. More than 20 articles from reputable national and international journals published between 2020 and 2025 were analyzed to synthesize key research findings. Results consistently indicate that Kahoot! significantly enhances learning motivation, active engagement, concentration, classroom interaction, and academic achievement. The platform also fosters an enjoyable learning atmosphere and has been shown to reduce evaluation-related anxiety among students. However, certain challenges including limited internet access, time pressure during quizzes, and excessively intense competition require careful attention to minimize potential adverse effects. Overall, Kahoot! proves to be an effective gamification-based instructional medium that meaningfully supports active learning in higher education.

Keywords: Kahoot!, gamification, student participation, learning outcomes, interactive learning.

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INTRODUCTION

Higher education is undergoing a profound transformation. Teaching and learning are no longer solely dependent on the traditional lecture method. Today's students have grown up immersed in technology, accustomed to fast-paced, visual, and interactive digital stimulation. This reality has pushed educators to seek new approaches that can keep students focused, engaged, and motivated throughout their academic journey.

One approach that has gained considerable attention over the past decade is gamification, the application of game-like elements to educational contexts. Gamification does not mean turning learning into mere play. Rather, it leverages game mechanics such as points, leaderboards, challenges, and instant feedback to drive engagement and learning enthusiasm. It is within this framework that Kahoot! has found its place as one of the most popular gamification platforms in educational settings worldwide.

Kahoot! is an online quiz-based platform that allows educators to create interactive questions that students can answer in real time using their smartphones or laptops. Each Kahoot! session incorporates healthy competition, background music that builds energy, and immediate feedback after every question. This combination creates a learning experience that is not only informative but genuinely enjoyable.

Numerous studies have explored the impact of Kahoot! across various educational levels and disciplines. (Wang & Tahir, 2020) were among the first to conduct a comprehensive literature review on the effects of Kahoot!, concluding that the platform is consistently associated with improvements in student motivation and engagement. Their findings have since been reinforced by a growing body of research conducted across different countries and academic contexts.

That said, not every experience with Kahoot! has been entirely smooth. Some studies report practical challenges that need to be anticipated, ranging from internet connectivity issues to the psychological pressure that can emerge from overly competitive dynamics. It is therefore important to take a comprehensive and balanced look at Kahoot!'s effectiveness through a systematic literature review.

This article aims to thoroughly examine the effectiveness of Kahoot! in enhancing student participation and learning outcomes based on findings from recent studies published over the last five years. By synthesizing more than 20 articles from reputable academic journals, this article aspires to provide a solid foundation for educators who wish to integrate Kahoot! meaningfully into their teaching practice.

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RESEARCH METHOD

This study employs a narrative-analytical literature review method. This approach was chosen because the primary objective of the research is to gather, compare, and synthesize findings from existing studies rather than to collect new field data. Literature review is widely recognized as an appropriate method for constructing a comprehensive picture of a topic based on published scientific evidence (Wang & Tahir, 2020).

1. Literature Sources

The articles reviewed in this study were sourced from reputable national and international journals, including those indexed in Scopus, Web of Science, and SINTA. Literature searches were conducted using databases such as Google Scholar, Scopus, and ERIC, using keywords including Kahoot!, game-based learning, gamification in higher education, student engagement, and learning outcomes.

2. Inclusion and Exclusion Criteria

Articles included in this review met the following criteria: (a) published between 2020 and 2025; (b) focused on the use of Kahoot! in formal educational settings, particularly higher education; (c) available in full text and accessible; and (d) published in peer-reviewed journals. Articles that were opinion-based without empirical data, or that addressed other gamification platforms without a specific focus on Kahoot!, were excluded from the analysis.

3. Analysis Procedure

The analysis was carried out systematically through four main steps: (1) article identification through database searches, (2) selection of articles based on inclusion and exclusion criteria, (3) extraction of key data and information from each article, and (4) synthesis of findings across studies. More than 20 articles were used as primary references, encompassing research from a variety of countries and academic disciplines.

RESULTS AND DISCUSSION

1. Understanding Kahoot! as a Learning Platform

Kahoot! is a game-based learning platform launched in 2013 that is now used by hundreds of millions of people worldwide. The platform enables educators to design interactive quizzes, surveys, and discussions that participants can engage with simultaneously using their own devices. Each Kahoot! session combines elements of competition, real-time scoring, background music, and instant feedback, making the assessment process far more dynamic and alive (Wang & Tahir, 2020).

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In the context of higher education, Kahoot! is commonly used for a variety of purposes: as a warm-up activity at the start of class, a review tool before examinations, a formative instrument to check comprehension, or even as part of summative assessment. This flexibility makes Kahoot! relevant across diverse academic disciplines, from engineering and health sciences to language studies, economics, and management (Navarro-castillo et al., 2025; Poblaciones, 2021).

2. Kahoot! and the Enhancement of Learning Motivation

One of the most consistent findings across the literature is Kahoot!'s capacity to boost student learning motivation. (Alsswey et al., 2024) found that using Kahoot! had a positive effect on students' motivation, engagement, and overall learning experience, largely because the platform transforms what is typically a high-anxiety evaluation moment into something that feels more like play.

(Salsabila & Apoko, 2024), in their study of English language learning at the secondary school level, found that students who completed evaluations using Kahoot! showed significantly higher motivation compared to those using conventional methods. Similar findings were reported by (Devitriana, 2025), who found that Kahoot! not only improved vocabulary mastery but also enhanced students' overall motivation toward learning English.

The psychological mechanism behind this motivational boost can be explained through Self-Determination Theory (SDT). Kahoot! fulfills three core needs of intrinsic motivation: competence (through immediate answer feedback), autonomy (students can compete at their own pace and strategy), and relatedness (through competition with classmates). Together, these elements build a learning climate that encourages students to engage more enthusiastically (Alsswey et al., 2024).

3. Kahoot! and Active Student Participation

Active student participation in the learning process is a crucial prerequisite for meaningful learning to occur. Unfortunately, conventional teaching methods often struggle to sustain student attention and engagement, especially in large classes. Kahoot! has emerged as a proven and effective solution to this persistent challenge.

Research by (Atmasani et al., 2025), conducted in a higher education setting, demonstrated that using Kahoot! significantly increased student participation compared to conventional instruction. Students became more proactive in asking questions, more responsive to instructors' prompts, and more enthusiastic about contributing to class discussions. (Sundari;

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& Prasetiya, 2024) reported similar findings in an English language learning context, where Kahoot! successfully encouraged typically passive learners to take an active role in the learning process.

(Chernov, Klas, & Furman Shaharabani, 2021), who studied Kahoot! use in engineering courses, found that regular Kahoot! sessions helped build a habit of readiness among students. Those who knew a Kahoot! quiz was coming at the end of a session tended to pay closer attention throughout the class. This suggests that Kahoot! not only increases participation during the quiz itself but also promotes sustained attention and engagement across the entire learning session.

Furthermore, (Hapsari et al., 2021) found that Kahoot! was effective in improving engineering students' English language skills in a distance learning context. This indicates that Kahoot!'s effectiveness in driving participation is not limited to face-to-face instruction — it extends equally well to online environments, where maintaining student engagement is often considerably more difficult.

4. The Effect of Kahoot! on Learning Outcomes

Beyond motivation and participation, the more fundamental question is whether Kahoot! actually produces measurable improvements in learning outcomes. A number of studies offer a convincing answer.

(Wang & Tahir, 2020), in their landmark literature review on the topic, concluded that the use of Kahoot! is consistently associated with improved academic performance. The immediate feedback provided after each question allows students to quickly identify their mistakes and correct their understanding — a mechanism that is critically important to the learning process.

(Voudoukis, 2022), who investigated Kahoot! use in a telecommunications course within an electrical and electronic engineering program, found a positive correlation between students' Kahoot! scores and their final examination grades. Students who participated actively and consistently in Kahoot! sessions tended to perform better on exams. This finding is reinforced by (Liang, 2023), who studied engineering university courses and found that Kahoot! contributed significantly to the reinforcement of students' conceptual understanding.

In the health sciences, (Deniz et al., 2025) examined the effects of gamification on dentistry students and found that gamification applications, including Kahoot!, had a positive impact on academic achievement. This demonstrates that the benefits of Kahoot! are not confined to a single discipline but span across diverse fields of study.

(Alawadhi & Abu-ayyash, 2021), in their study involving EFL (English as a Foreign Language)

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students in the United Arab Emirates, found that positive student perceptions of Kahoot! correlated with increased confidence in English language use, which ultimately contributed to improved learning outcomes. (Artika et al., 2024) found similar results in a chemistry learning context, where Kahoot! effectively improved students' understanding of colloid material — a topic typically regarded as abstract and difficult.

5. Kahoot! Across Diverse Academic Disciplines

One of Kahoot!'s most frequently cited strengths in the literature is its cross-disciplinary flexibility. (Navarro-castillo et al., 2025) examined Kahoot! use among engineering students in economics and management courses — subjects often perceived as less relevant to their field of study. The results showed that Kahoot! successfully improved student engagement and comprehension of material that had previously attracted little interest.

(Rotondo & S, 2024) reported positive experiences using Kahoot! in control theory courses, a field known for being particularly abstract and demanding. Kahoot! sessions proved helpful in enabling students to recall and understand complex technical concepts in a more enjoyable way. (Khalid et al., 2025) also found that Kahoot! was effective within a social constructivist framework in engineering education, allowing students to learn collaboratively and mutually reinforce their understanding.

Beyond engineering(Lashari & Fiayaz, 2024) studied Kahoot! use among students from various programs and found that the platform simultaneously boosted motivation, engagement, enjoyment of learning, and academic outcomes. (Tlili & Chikhi, 2025) even explored Kahoot! in the context of Islamic content learning and found positive impacts on both student understanding and engagement.

6. Student Perceptions of Kahoot!

Beyond quantitative data, the effectiveness of Kahoot! is also reflected in students' subjective perceptions and experiences. (Poblaciones, 2021) examined students' perceptions of Kahoot! as a review tool in higher education and found that the majority of students regarded it as enjoyable, effective, and helpful in preparing for exams.

(Alawadhi & Abu-ayyash, 2021), in their mixed-method study, found that students generally held positive perceptions toward Kahoot!, although a small number felt uncomfortable with the time pressure imposed by the quiz format. This finding underscores the importance of accounting for the diversity of student responses when implementing Kahoot!, particularly for

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those who experience high levels of evaluation anxiety.

(Astuti et al., 2024), in a teacher training context, found that Kahoot! is not only effective for students but also delivers positive outcomes for educators in improving their professionalism and ICT media competency. This suggests that the educational value of Kahoot! extends well beyond student learning alone.

7. Challenges and Limitations in Implementing Kahoot!

Despite the significant benefits identified across the literature, using Kahoot! is not without its challenges. Several recurring obstacles need serious attention to ensure that Kahoot! implementation runs optimally.

First, limited internet infrastructure is the most frequently reported barrier, particularly in regions where connectivity is uneven. Without a stable connection, Kahoot! sessions can be disrupted and may cause frustration among students rather than enthusiasm (Atmasani et al., 2025).

Second, the time pressure of answering quiz questions can be a source of stress for some students — particularly those who naturally require more time to think before responding (Alawadhi & Abu-ayyash, 2021)

Third, a highly competitive environment can motivate some students while inducing anxiety or diminished self-confidence in others, especially those who consistently find themselves near the bottom of the leaderboard. (Alsswey et al., 2024) caution that the competitive elements of Kahoot! must be managed thoughtfully by instructors to avoid counterproductive outcomes. Fourth, reliance on digital devices means that students without access to a functioning smartphone or laptop may be unable to participate on equal footing.

There is also concern that poorly designed Kahoot! sessions for instance, those featuring questions that are too easy or disconnected from core learning objectives may undermine the platform's academic value and reduce it to mere entertainment. The quality of quiz design is therefore a critical determinant of Kahoot!'s overall effectiveness (Rotondo & S, 2024).

8. Best Practices for Implementing Kahoot! Effectively

Based on the findings synthesized above, several practical recommendations can be offered to educators who wish to integrate Kahoot! effectively into their teaching.

First, use Kahoot! in a planned and structured manner. Integrate Kahoot! sessions as a meaningful part of the lesson plan rather than treating them as a last-minute add-on. Instructors

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may use it at the beginning of class as a discussion starter, midway through to check comprehension, or at the end as a review activity (Pertegal-Felices et al., 2020).

Second, ensure that the questions are relevant, cognitively challenging, and aligned with learning objectives. Kahoot! is most effective not when used purely to test rote memorization, but when it prompts students to think critically and apply concepts in meaningful ways (Navarro-castillo et al., 2025).

Third, manage the competitive dimension wisely. Instructors may opt for Kahoot!'s team mode, which fosters collaboration rather than excessive individual competition. This way, students who are less confident academically can still contribute meaningfully and feel valued within their team (Chernov, Klas, & Shaharabani, 2021).

Fourth, provide alternatives for students with limited access to devices or internet connectivity. For example, by allowing pair-sharing or providing access to laboratory computers. Inclusivity in technology-enhanced learning is a responsibility that should never be overlooked (Atmasani et al., 2025).

CONCLUSION

This literature review affirms that Kahoot! is far more than a fleeting trend in educational technology. Based on a synthesis of more than 20 studies conducted across various countries, educational levels, and academic disciplines, Kahoot! has proven to be an effective learning tool for enhancing student motivation, active participation, and learning outcomes in higher education.

The success of Kahoot! lies in its ability to transform learning and evaluation experiences, which are often monotonous or anxiety-inducing into something interactive, healthily competitive, and genuinely enjoyable. The immediate feedback mechanism built into the platform also supports meaningful formative learning, allowing students to promptly recognize their errors and deepen their understanding.

Nevertheless, the effectiveness of Kahoot! is highly dependent on how it is designed and implemented. Educators must ensure that quiz content is relevant and purposeful, that competition is managed at a constructive level, and that equitable technological access is available to all students. With the right approach, Kahoot! can serve as a leading instrument in supporting the transformation of higher education in the digital era.

Looking ahead, further research on Kahoot! is needed, particularly studies that focus on its long-term effects on knowledge retention, its application in hybrid learning environments, and

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its adaptability for students with special learning needs. By continuing to explore and optimize its potential, Kahoot! can contribute increasingly to the quality of higher education — both in Indonesia and on the global stage.

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