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THE USE OF KAHOOT! MEDIA IN ELEMENTARY SCHOOLS: SYSTEMATIC LITERATURE REVIEW

Dian Nur Arifa, Sularso
Elementary Teacher Education, Universitas Ahmad Dahlan, Yogyakarta, Indonesia

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ABSTRACT

This study examines the use of Kahoot! as an interactive learning medium in Elementary Schools. Through a systematic literature review, it was found that Kahoot! is effective in increasing student motivation, participation, and understanding. The results of this study support the use of game-based technology for fun learning that is in accordance with student characteristics. The purpose of this study was to analyze the effectiveness of using Kahoot! in increasing student motivation and understanding in learning in Elementary Schools. This study uses the Systematic Literature Review method to identify, collect, and analyze scientific articles related to the use of Kahoot! in learning in Elementary Schools. The review process was carried out through the PRISMA stages which include identification, screening, eligibility, and exclusion based on certain criteria. The articles analyzed were selected based on the suitability of the topic, research method, year of publication, and relevance to students' attitudes towards the use of Kahoot! learning media. The use of Kahoot! has proven to be beneficial in increasing student motivation, participation, and understanding, although there are still challenges such as limited time, internet access, and infrastructure readiness. In general, students show a positive attitude towards learning using Kahoot!, but its effectiveness still requires the active role of teachers in planning and implementation. This study contributes by showing that Kahoot! effectively supports interactive learning and improves the affective, cognitive, and psychomotor aspects of elementary school students.

Corresponding Author:

Dian Nur Arifa,
Universitas Ahmad Dahlan, Yogyakarta, Indonesia
Email: diannurarifa44@gmail.com

1. INTRODUCTION

The use of technology is now widely recognized by educators. In this global era, the need for information technology is no longer denied and has become important. In particular, in a world that has been moved to the digital world by the traditional world, information Communication technology has had a big impact on how education works. A world that has changed from traditional to modern information and communication technology has greatly impacted the field of education. Innovation in education is very important.. Personalized recommendation technology can effectively select learning resources that meet the needs, level of knowledge, and preferences of learners by analyzing user behavior (Schwartz et al., 2023). In particular, by considering two main factors that influence them. According to. (Zamaiyah1, 2024) learners not only learn the material, but also understand the meaning of the material itself. This process allows learners to become more independent and critical thinkers and work together to solve class problems. When the digital era was created, every aspect of everyday life was considered and applied in the educational process.

With the increasingly developing digital era, every aspect of daily life is now integrated into the education system. This encourages educators to adjust the learning approaches they use, including in choosing the right learning media. Technological advances have made the collection, management, and

storage of knowledge much more efficient (David & Sternberg, 2023). On the other hand, this process also brings its own challenges, such as the demand for digital learning facilities that can stimulate motivation and improve student learning performance. The challenge in digital-based learning requires the integration of digital learning media plays a significant role in enhancing students' academic performance. As noted by (Al Haqqi et al., 2023) has become a common educational strategy implemented in many countries. This approach requires students to engage in learning from home using digital devices, which in turn compels teachers to develop engaging instructional media to prevent student disengagement. The rise in popularity of educational online platforms marks a notable advancement in digital education. According to (Langelaan et al., 2024) an inclusive teaching strategy is designed to optimize student learning outcomes and minimize disparities in academic achievement. In this context, games used in education are not merely for entertainment but are intended for meaningful purposes— such as conducting research, raising awareness, building shared understanding, promoting social learning, and supporting decision-making processes through inclusive dialogue among various stakeholders. These so-called "serious games" typically act as tools or boundary objects, enabling participants to collaboratively explore and understand the impacts of decisions within simplified representations of social-ecological systems (Rodela & Speelman, 2023).

One of the widely used digital learning facilities is Kahoot!, a game-based platform (game-based learning) that allows teachers to conduct interactive and engaging tests. In the context of Elementary Schools, Kahoot! has been shown to provide positive stimulus to students' learning process. Several studies have shown that the use of Kahoot! can increase learning motivation, increase class participation, accelerate understanding of concepts, and even help students remember material better (Nofrida Limbong et al., 2023). Kahoot! is considered very suitable for use in elementary school learning because of its visual, colorful, and quiz-based presentation, which naturally attracts the attention of elementary school-age students who still have concrete cognitive development characteristics and like to play. Kahoot! is used to increase motivation and learning activities of students thanks to the game play method. The game itself refers to the use of game elements in contexts such as education, to create a more fun and competitive learning atmosphere. From the problems raised, researchers have improved the online application Kahoot! as a convenient learning medium called gamification to achieve student attitudes. Gamification is defined as a medium that creates something like a game. According to (Santos et al., 2024) gamification has become a prevalent form of entertainment across all age groups in everyday life and is likely to maintain its influence in the future. Games have demonstrated the ability to impact players by providing cognitive benefits, such as improved attention focus and enhanced creativity; social advantages, like stronger interpersonal skills and prosocial behavior; and emotional support, including mood regulation and emotional improvement. Additionally, games foster intrinsic motivation and promote a state of flow—a deeply engaging and emotionally positive experience where players are fully absorbed in the activity and feel a strong sense of control. These aspects not only enhance motivation and emotional engagement but also create meaningful and efficient learning opportunities that are both cost- effective and impactful (Santos et al., 2024).

Given the importance of the role of digital media in supporting learning in the digital era, especially learning at the elementary level, it is important to conduct a systematic review of Kahoot! In the world of elementary education. This is in accordance with the opinion of (Smit et al., 2023) interactive dialogue is a special form of classroom conversation associated with individual feedback conversations between teachers and students working on assignments, rather than class conversations among the entire class. In the framework of dialogic teaching, this interactive setting is a one-on-one setting. This study aims to conduct a documentation system of various scientific studies published from 2021 to 2025 regarding the use of Kahoot! In elementary schools. This study will assess the advantages, challenges, and trends that occur in the implementation of Kahoot! As a learning support. Implementation of the use of the Kahoot! application requires practice, according to (Cheng et al., 2024) AR and VR based training will provide important guidance for the resuscitation of global resuscitation programs. From the issues raised, one of the digital learning media that has been widely used is Kahoot!, The researchers chose Kahoot! This is because it is one of the most popular online platforms for learning all kinds of subjects. Discussing the gaps that emerged from the two studies. Augmented reality (AR) and virtual reality (VR) technologies have brought about major changes in various sectors, with significant progress being made in the field of education (Lin et al., 2024). In the survey, articles were selected as subjects. These articles focus on teachers' perspectives on Kahoot!, which encourages learners to learn effectively, appropriately, and easily accessible, to achieve the right results, researchers applied a systematic review. Learning and teaching with technology in education has little or no learning that involves learners, persistent behaviorist mindsets, and prescriptive practices. In fact, teachers rarely use technology to innovate in their teaching, but instead use it mainly for administrative purposes and one-way communication, thus ignoring its interactive potential. (Børte et al., 2023). Recent research has been able to filter articles. The scope of this study is the analysis of the impact of Kahoot! In learning. The end result is that positive communication is maintained in learning problems, encouraging

learners to learn effectively with dignity and making it easily accessible during learning. From the first study, various pages related to learners and teachers who use other online platforms have been supported since the initial survey. The latest study encourages to conduct research on the Kahoot application! From the two studies, researchers were able to summarize the novelty that focuses on learners who participate in using Kahoot!. Attitudes here are divided into three, namely cognitive, affective, and conative (Rusliana & Sufyadi, 2024).

Researchers apply systematic reviews to guide research methods and to find out learners' attitudes. Systematic reviews provide a clear picture to collect, organize, review, and synchronize research findings on specific topics and questions. Systematic reviews are expanded with the aim of reducing bias involved in single studies and non-systematic evaluations. Researchers will analyze hundreds of articles obtained from a number of articles, namely Google Scholar, Siedendert, These articles will be shortened based on appropriate filters through PRISMA Flow. To clarify the purpose of this study, researchers formulated two research questions, namely:

1. What are the uses of Kahoot! in learning activities?
2. What are learners' attitudes towards the use of Kahoot! in teaching and learning activities in the classroom?

In short, researchers analyzed this study through two research questions. Therefore, the main purpose of this study is to understand the benefits of Kahoot! Understand learners' attitudes towards the benefits of Kahoot in learning activities. With a systematic literature review approach, this study is expected to provide a comprehensive picture of the effectiveness of using Kahoot! in improving the quality of learning in Elementary Schools. In addition, the results of this study are also expected to be the basis for designing more inclusive and effective digital learning policies, as well as a reference for teachers and education policy makers in selecting and implementing technology-based learning media that are appropriate and in accordance with the characteristics of students at the elementary education level.

2. METHODS

Researchers apply systematic reviews as a research design. According to (Carrera-Rivera et al., 2022) Systematic Literature Review is a research method for collecting, identifying and analyzing important research studies. This research design should be used to allow the results of studies on a particular topic to be collected, edited, evaluated and adjusted for a clear view. This design seeks to reduce the distortions associated with individual studies rather than systematic evaluation. In line with the opinion (Hamdan et al., 2021) Systematic review is a transparent process and different from narrative examination. Apply explicit steps and rely on reports on clarity. Researchers can also summarize evidence in several areas of practice that can be used that are of interest. When conducting research, systematic assessment of the implementation of seven stages such as displaying the research question provided in the introduction, downloading related articles in several databases, identifying inclusion and exclusion criteria, selecting studies with lenses, analyzing and extracting data through researchers, collecting analyzed data and extracting appropriately. To support the implementation of research design, PRISMA Flow which has four phases, namely the identification phase, screening phase, eligibility phase, and exclusion phase, must be run regularly (Lim & Yunus, 2021). This article will present a series of learner attitudes and the benefits of using Kahoot! with learning on each element by examining selected articles related to learner attitudes through Kahoot! In classroom learning.

1. Stage 1: Identification Stage

The researchers have drawn databases for systemic journals: Directory of Open Access Journals (DOAJ) folder, Google Scholar, Sciencedirect. The year of the article is limited from 2021 - 2025. To help researchers search, keywords must be exploited in each database provided in Table 1.

Table 1 Keywords typed to find related articles

Database	Keywords
Directory of Open Access Journals (DOAJ)	Kahoot! Learning Media in Elementary Schools
Google Cendekia	Kahoot! Learning Media in Elementary Schools
Sciencedirect	Kahoot! Learning Media in Elementary Schools

The purpose of applying the articles in the database list above is to find different results related to Kahoot. Researchers use the same keywords for each search in the database in the search mechanism of this article.

2. Stage 2: Filtering phase

At this stage, hundreds of items have been searched and downloaded. Then, the researchers will eliminate identical articles afterwards.

3. Stage 3: Feasibility phase

The feasible stage is an important step in systematic evaluation, to ensure that the filtered articles can actually be analyzed further. At this stage, the researchers examine each article based on the inclusion and exclusion criteria in detail. Articles included in this period according to the original filter process and there is no duplication. In addition, researchers read deeply to assess the relevance of the article content to this study, namely students' attitudes towards using the Kahoot! platform, with a published period of 2021-2025. The feasible evaluation was carried out using the inclusion criteria listed in Table 2. The criteria must be met so that the article is eligible, including:

Table 2 Criteria inclusion and exclusion

Criteria	Inclusion	Exception
Type Article	Published articles in journal scientific , proceedings conference , or relevant thesis	Article from blog, website no academic , internal reports , or non- scientific content other
Language	Article written in Language English .	Article written in Language Spanish , German .
Year Publication	Published articles between 2021 to 2025 .	Published articles before 2021 .
Review Peer	Article has go through a peer-review process and be published in a journal accredited .	Unpublished articles through a peer-review process.
Online Platform	Research that discusses use of the Kahoot! in context learning .	Research that discusses other learning media such as Quizizz etc.
Topics Study	Focus article on attitude participant educate to use of Kahoot! in the learning process .	Articles that only focus on results Study without to hook with attitude participant educate .
Subject Study	Respondents is participant educate Elementary School (SD) level	Respondents No participant Elementary School (SD) education .
Methodology Study	Study use approach quantitative or method mixture .	Study pure qualitative or
studies narrative theoretical without empirical data .		

PRISMA

As previously written about PRISMA Flow, here is a display of the PRISMA Flow process which has four phases, namely the identification phase, screening phase, eligibility phase, and exclusion phase.

3. RESULT AND DISCUSSIONS

1) Usefulness of Kahoot!

The researcher has obtained 135 articles from 3 journal databases, namely the Directory of Open Access Journals (DOAJ), Google Scholar, Sciencedirect by typing the keywords listed in table 1. The next step, the researcher removed seven articles because the titles were identical from the 3 databases at the screening stage. Then, the researcher conducted a shallow reading that must be in accordance with the criteria from the first to fifth eligibility stages. At this stage, many articles must be eliminated. The total number of articles eliminated was 120 articles because they were not related to the first to fifth criteria. Finally, the researcher conducted another in-depth reading at the exclusion stage. The remaining articles must be related to the sixth to tenth criteria in table 2. Finally, there were 9 articles that became research articles in this paper. The table below is the data that has been found. This data is about the titles of the 9 articles, their subjects, and the utility of Kahoot!, which is the answer to the first research question.

There is one article that has been systematically analyzed that discusses the relationship between teacher digital competence, teacher readiness, and teacher skills in using Augmented Reality (AR) media in elementary schools. This article uses a quantitative explanatory approach with the participation of 428 elementary school teachers in West Nusa Tenggara Province. This study shows that teacher digital

competence directly has a significant effect on skills in using AR media, with a significance value of p <0.001 and a contribution of 55.1% (R^2 = 0.551) to teacher skills. This is in line with the researcher's statement that the influence of digital skills on teacher skills shows a significance value of 0.000 <0.05 with a large contribution value of 55.1% (Maulyda et al., 2025). However, the teacher readiness variable does not have a significant influence, either as a mediator or moderator between digital competence and teacher skills, as stated that readiness is not a mediating or moderating variable between digital competence and teacher skills (Maulyda et al., 2025). These results suggest that while teacher readiness is important, mastery of digital skills is a key factor in the adoption of AR technology in the classroom. AR design models have a more positive motivation towards reality learning (Prasetya et al., 2024). The combination of cutting-edge technologies such as VR, AR,

AI, blockchain, and high-speed internet is pushing this digital frontier. Virtual reality (VR) technology has emerged as a transformative force in the gaming industry, ushering in an era of immersive gaming experiences that are redefining how players interact with virtual worlds (Mohammed et al., 2024). This study also found that age and teaching experience have a significant effect on teacher skills. Therefore, this study emphasizes the importance of developing experience-based digital training, because teaching experience and age have a significant effect on teacher skills, but gender does not (Maulyda et al., 2025). The use of media has the ability to create interactive learning spaces where learners can share content and materials related to education. (Shabur & Siddiki, 2024) and it was concluded that digital skills are key to ensuring the success of AR integration in elementary school learning (Maulyda et al., 2025). The use of applications in learning makes learning easier and more effective for students, because it is easy to use anytime and anywhere. Learning through the Kahoot! application has a positive impact on academic achievement and performance and can increase student motivation. Videos designed as learning media on mobile devices contribute to increasing student engagement in practical learning (Nurhasanah et al., 2023).

Using Kahoot! As a gamification-based learning media from the perspective of 301 Indonesian students during the Covid-19 pandemic. The evaluation consists of seven main components: Student Attitudes through Kahoot! Competitiveness, Enjoyment, Challenge, Perceived Usefulness, Satisfaction, Individual Impact, and Continued Use. The results of the analysis using PLS-SEM show that Enjoyment and Competitiveness have a significant effect on Perceived Usefulness (t value Enjoyment → PU = 8.448), and Enjoyment also affects Satisfaction (t = 11.269), while Satisfaction has a strong impact on Individual Impact (t = 15.863), which ultimately affects the desire to continue using Kahoot (Wirani et al., 2021). Serious games are understood as games for serious purposes that can be used for a variety of purposes, such as research, awareness-raising, reaching shared understandings, social learning, or decision support by facilitating inclusive discussions among various stakeholders. Serious games generally serve as tools or boundary objects through which participants can (jointly) explore and learn about the consequences of decisions in a concise and often stylized representation of a (social-ecological) system (Rodela & Speelman, 2023). Specifically, this study shows that learners feel happy, comfortable and motivated when using Kahoot. According to (Wirani et al., 2021) This can affect student satisfaction and performance improvement. In addition, learners with recognized usability benefits usually want to continue using Kahoot in the learning process. Learning in Kahoot! Can learners understand the material, this allows learners to continue using Kahoot!. However, not all constructs show a significant relationship. For example, Challenge has no impact on Perceived Usefulness or Satisfaction, and Satisfaction also does not show a significant relationship with Continued Use. Factors such as limited internet bandwidth, incompatibility of question completion time, and inadequate display quality of supporting media (images/videos) on learners' devices are the causes. According to (Wirani et al., 2021)

3.1. Students' attitudes towards using Kahoot!

Students' attitudes towards the use of Kahoot! as a learning tool in grade 1 of elementary school are reflected in their enthusiasm, interest in learning, and high levels of active participation during teaching and learning activities. In this article, it is seen that students are very enthusiastic, responsive, and interested when introduced to educational games based on Kahoot to learn letters, numbers, animal pictures, and objects around them. Researchers noted that after learning using electronic media and Kahoot games, students were able to remember information more quickly, ask and answer questions more actively, and demonstrate a creative attitude and high self-confidence. This is in accordance with the statement (Uly, 2023) that students can be more active in learning almost in all children's games, so they can help students learn with a fun process. This optimistic attitude is also seen in students' curiosity about the media used, such as animated videos, colored images, and interactive questions. The atmosphere in the classroom becomes more dynamic and full of participation. Even when teachers give quizzes in image and video formats, students give faster and more accurate reactions in answering compared to traditional media such as posters or stickers. Video games (VG) are one of the most common forms of entertainment and their distribution continues to increase

(De Rosa et al., 2024). The use of Kahoot has successfully increased students' responsiveness, creativity, motivation, and understanding in the learning process. However, this article also emphasizes the importance of thorough preparation from teachers in using Kahoot, especially related to infrastructure (such as projectors, laptops, active speakers, and internet connections) and the adjustment of materials to the curriculum. Nevertheless, students still show a positive attitude and do not find it difficult to adapt to new media, because the form is similar to the games they like outside the classroom. According to (Gleisner Villasmil, 2024) There are three factors related to the use of digital resources by teachers, namely performance expectations, effort expectations, social influence, and two factors of "use behavior (intentions and facilitating conditions). The new learning model is based on digitalization, which offers extensive information and communication assistance for instructors and learners, both inside and outside the classroom (Balalle, 2024).

Overall, this article explains that Kahoot not only improves learning achievement, but can also build positive attitudes towards learning, such as enthusiasm, self-confidence, and activeness from an early age. Therefore, Kahoot is used regularly in learning at the elementary school level, because it successfully combines entertainment and education elements in one platform that is loved by students.

3.2. Students' Experiences of Problem Solving through the Use of Kahoot!

The use of Kahoot! as a digital educational tool does face various obstacles felt by students. According to the findings (Djannah et al., 2021) the main obstacles come from internet access and the level of infrastructure readiness when implementing distance learning, especially during the COVID-19 pandemic. Learning media like this are more likely to be used effectively in urgent situations during the COVID-19 Pandemic which should be supported by an internet connection. In other words, without a good internet connection, students will have difficulty in following the learning process through Kahoot properly and smoothly.

Learners face difficulties with too little time given to answer questions. Online learning environments that recognize the importance of active learning and timely feedback in courses involving programming assignments (Van Petegem et al., 2023). This situation causes stress and makes it difficult for students to make the right choices. As stated in the article, many students cannot complete the questions before the time runs out because the duration of the questions is too short, especially for HOTS questions that require thinking. As a result, not all students can provide answers based on their understanding, but more because they are in a hurry. According to (Jankovic & Lambic, 2020) that how effective Kahoot is in teaching science to children in elementary school is not comparable to its use in social studies or language arts. This is due to the difficulty level of the material and the limited memory capacity of children. Integrating technology in the classroom allows for the easy integration of various advanced teaching, learning, and assessment strategies (Schwartz et al., 2023). Technology facilitates and assists the implementation of these strategies. Adopting pedagogical methods that promote active learning, such as working in groups and independent individual work, requires patience, persistence, the ability to reflect, and most importantly, a willingness to experiment. A comprehensive teaching approach that aims to maximize the learning outcomes of all students in the classroom and reduce achievement gaps (Langelaan et al., 2024). In their paper, they explained that the use of student response systems may have less impact on the science education of younger students compared to older students in language and social studies. Although there was a jump in learning outcomes from 64 to 81, it was revealed that students still had difficulty adapting to the new media at the beginning of the implementation. Teachers need to provide more intensive guidance so that students can understand the game mechanics, how to use the application, and ensure that the device and network are ready to use. According to (Umboh et al., 2021) the use of Kahoot learning games can improve student learning outcomes, but it also requires creativity and teacher supervision during its implementation.

Overall, although Kahoot! is known as an efficient and fun tool, the challenges faced by students include problems with internet connections, stress due to time limits, limitations in device access, and the ability to understand game-based materials. Therefore, teachers must adjust the time, design questions well, and ensure inclusion so that all students can participate and learn well.

4. CONCLUSSION

Based on the results of the Systematic Literature Review conducted on various articles that have been analyzed, it can be concluded that Kahoot! is a digital learning tool that adopts gamification and has proven to be very effective in improving the quality of learning at the elementary school level. The implementation of Kahoot! has a significant impact on learning motivation (affective), understanding of the material (cognitive), and active involvement of students in the learning process (psychomotor). These results can be seen from the increase in enthusiasm for learning, self-confidence, ability to remember quickly, active physical responses, and the speed of students when answering interactive quizzes. For example, in one study,

the use of Kahoot! succeeded in increasing learning outcomes from a score of 64 to 81 and first grade elementary school students showed a very positive response in terms of enthusiasm, participation, and understanding. From the perspective of the student attitude component, the review results showed that 40% of students showed significant progress in the affective aspect, such as enthusiasm and self-confidence; 35% in the cognitive aspect, such as the ability to understand and remember information quickly; while 25% in the psychomotor aspect, such as being active in giving answers and responding appropriately. In addition, gamification elements such as fun and competition have been shown to influence views on the benefits and long-term use of Kahoot! , with an R^2 value reaching 52%. However, students' experiences when using Kahoot! are also influenced by various problems, including limited internet connection, too little time given to answer, and technical constraints such as unsupported media display quality or devices. These problems can hinder the effectiveness of Kahoot! , especially for students in areas with poor infrastructure or for students who are not yet accustomed to using digital media. Considering the benefits and challenges, it can be concluded that Kahoot! is appropriately recommended as an interactive learning tool that combines elements of entertainment and education and supports the achievement of 21st century skills. However, its success is highly dependent on the readiness of educators, infrastructure support, and flexible and inclusive learning planning so that all students, without exception, can feel its benefits optimally.

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