

## **Bibliometric Analysis: Utilization of *Kahoot!* Application as an Evaluation Tool to Increase Students' Learning Motivation**

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**Abstract:** *This study demonstrates that the use of Kahoot! Application as an evaluation tool has a significant impact on enhancing students' learning motivation. Unlike conventional paper-based assessment systems that tend to be monotonous, Kahoot! Offers an interactive and enjoyable approach that fosters greater student engagement. This research aims to analyze how Kahoot! can improve learning motivation and identify usage trends over the past five years (2020–2025). This study employs bibliometric analysis to systematically examine 200 accredited scientific publications published between 2020 and 2025, utilizing the Publish or Perish software. Furthermore, VOSviewer is used to visualize the networks and relationships among keywords. The findings indicate that Kahoot! contributes significantly to increasing learning motivation through its role as an interactive, engaging, and innovative evaluation medium. The growing use of Kahoot! over the past five years reflects a rising interest among researchers in its potential to support more engaging and effective learning processes.*

**Keywords:** *evaluation media, Kahoot! learning motivation*

### **INTRODUCTION**

Technological advancements nowadays have rapidly transformed various sectors, including education. Teachers are now expected to be more creative throughout the learning process, not just during content delivery, but also in evaluation. According to Anitah (2009) in Mansur & Utama (2019), the emergence of technology has brought significant changes in education, shifting the focus toward students rather than being teacher-centered. Developments in science and technology (IPTEK) have raised public awareness of the importance of mastering technology, especially in education. With technology, the learning system has evolved into a more innovative and interactive approach (A. N. Hakim & Yulia, 2024). Educators are no longer just the main sources of information but also facilitators who guide students in developing critical and creative thinking skills. Technology allows the implementation of more varied teaching methods.



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According to Nabila et al., (2021), as cited by (Anggreani & Satrio, 2022), teachers are responsible for designing learning programs that actively involve students, one example of which is the use of various tools and learning media that encourage students to learn (Rezeki & Susanti, 2023) The use of various learning tools and media that encourage students to learn is one example of how technology can be applied in education. Sadiman (2014), in (Salim et al., 2020) states that the essence of the teaching and learning process lies in its nature as a complex communication process. In other words, knowledge is transmitted from the message source—the teacher—to the message recipients—the students—through a specific channel or medium called learning media. As an approach, media serves as an effective means for teachers to assess and adapt to the diverse needs of their students. It not only aids in delivering content more comprehensively but also creates room for a more dynamic and interactive learning approach.

In this evolving educational landscape, teachers are expected to not only be skilled in delivering information but also smart in selecting and utilizing learning media. Education today is not solely about content delivery, but about how teachers can influence students to adapt to their environment to achieve educational goals—the outcomes attained after the learning process (Qomario et al., 2022). Therefore, selecting appropriate technological applications is a crucial part of creating a dynamic, innovative, and relevant learning environment. Although there is a wide variety of learning apps available, many teachers and students still lack understanding of how to effectively use them (Habibah et al., 2020). In fact, various learning applications can simplify teaching and serve as evaluation tools to assess students' understanding more interactively and effectively.

Quiz-based game evaluation media is one type of evaluation media that is engaging and enjoyable for students (Kusnadi & Azzahra, 2024). Its uniqueness lies in its ability to incorporate evaluation without the students realizing it, making the learning experience more natural and less burdensome. Besides providing enjoyment, this evaluation media is also reliable for objectively measuring learning outcomes and allows teachers to give feedback quickly and efficiently (Ndiung & Jediut, 2020). As an innovative evaluation tool, game-based quizzes not only provide a holistic picture of students' understanding but also stimulate healthy competition in learning (Pakudu, 2024). With all these advantages, quiz-based evaluation media offers a positive contribution to learning experiences across education levels.

In classroom learning practices, conventional evaluation methods such as paper-based written tests are still the predominant choice. However, this approach is often perceived as tedious due to its monotonous, passive, and non-interactive nature. Such evaluations typically focus solely on assessing students' cognitive abilities, without taking into account affective aspects like learning motivation or emotional engagement. As a result, many students become disinterested in participating in evaluations, which leads to decreased motivation and reduced active participation during the learning process.

Learning motivation itself is a crucial component in supporting educational success. When motivation declines, students tend to lose enthusiasm, struggle to maintain focus, and quickly become bored with the material being presented. This presents a significant challenge for teachers to create a learning environment that is both enjoyable and meaningful. Teachers are expected not only to deliver content effectively but also to design evaluation methods that capture students' attention, boost enthusiasm, and encourage active involvement. Unfortunately, many teachers face difficulties in developing evaluation tools that are not only accurate but also engaging and enjoyable.

As a solution to these challenges, there is a growing need for alternative evaluation media that are more innovative and aligned with the characteristics of today's digital generation. One such tool that effectively addresses these needs is *Kahoot!* According to Sartika & Octafianti (2019), *Kahoot!* is an excellent evaluation tool because it makes learning more engaging, less monotonous, and enhances student activity and creativity. *Kahoot!* presents questions in a game-show format (Alfansyur & Mariyani, 2019), and questions can include images or videos for clarity, with these features, *Kahoot!* functions not only as an evaluation tool but also as an innovative and effective learning medium (Khomsah & Imron, 2020). Its accessibility via both app and web platforms makes it flexible for use in various settings, including in-class and remote learning (Adwiyah & Wulandari, 2024) additionally, its ease of use makes it advantageous as an evaluation medium.

As an evaluation medium, *Kahoot!* not only provides a fun learning experience but also increases students' motivation to participate in the learning process, as motivation creates certain conditions that make students willing and eager to engage in activities and strive to maximize their learning efforts according to their own desires (Fikrianto & Susanto, 2023). Research by (Rusliana & Sufyadi, 2024) shows that using *Kahoot!* in learning evaluations encourages students to be more active, thanks to its real-time scoring system and competitive features. Game elements such as scores, rankings, and time limits on answering questions motivate students to respond quickly and accurately. In addition, the instant feedback provided by the application helps students quickly understand their mistakes, enabling them to learn from those errors and improve their understanding of the material (Bunyamin et al., 2020). In this way, *Kahoot!* can be an effective evaluation medium to boost students' enthusiasm and involvement in the learning process.

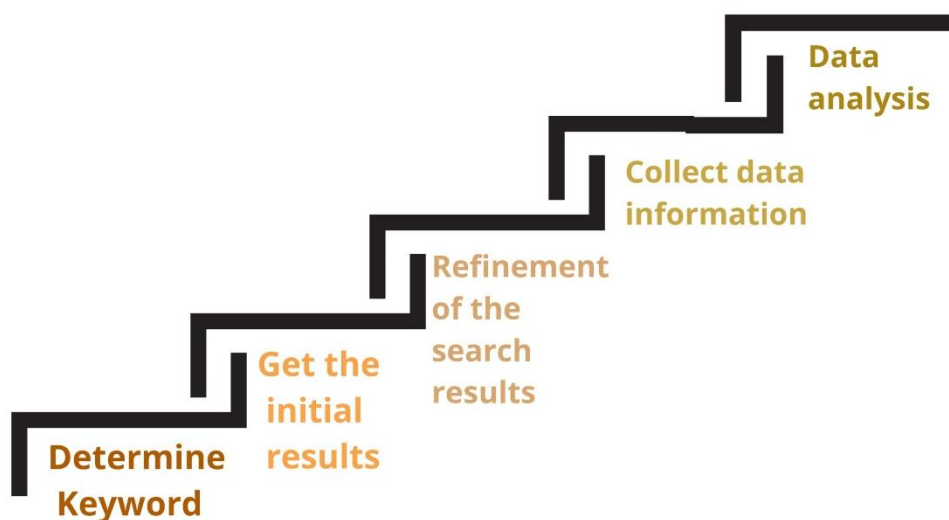
Therefore, based on this background, the author is interested in conducting research related to the use of the *Kahoot!* application as an evaluation tool to improve students' learning motivation. This study aims to analyze the use of *Kahoot!* as an evaluation medium to enhance student motivation by referencing previous research as a foundation. Through this study, it is expected to understand how *Kahoot!* helps increase students' motivation to learn and serve as a reference for choosing more engaging and effective evaluation methods.

## METHOD

This study employs a bibliometric analysis method, described descriptively, to map scientific knowledge regarding the use of the *Kahoot!* application as an evaluation tool to enhance students' learning motivation. This bibliometric analysis enables a quantitative assessment of scientific outputs to address the research questions by examining the development of related studies and literature. (L. Hakim, 2020) (Widiyanto, 2023). Data processing is based on the analysis of articles published in journals indexed on Google Scholar (Akil Husaeni & Nandiyanto, 2022). Google Scholar is chosen as the data source because it is a widely accessible open-source database. The application Publish or Perish (PoP) is used to search for relevant publications. In line with Patricia's (2021) research in (Sidabutar et al., 2022) the publication search and data processing from Google Scholar using Publish or Perish (PoP) follows the bibliometric method and is further explained based on prior research.

Additionally, this research applies bibliometric methods with the help of VOSviewer software to analyze the relationships among publications and research trends and visualize keyword networks, author collaboration, and article citations (Kirby, 2023). VOSviewer is used to map and identify research patterns related to the use of *Kahoot!* in education to improve learning motivation, thereby offering a comprehensive overview of developments in this field. Through the visual analysis generated by VOSviewer, this research reveals the connections between studies and identifies the most discussed topics in the related literature.

Based on previous research (Shahmani & Prasetyo, 2023); (Setyaningsih et al., 2018); (Hossain et al., 2020); (Candrawati et al., 2025); (Satria, 2023), there are five steps in conducting bibliometric analysis, namely.



Source: Data Compiled By The Researchers, 2025  
Figure 1. Bibliometric Analysis Workflow

### **1. Determine Keyword**

In February 2025, the researchers searched for reference materials using the keywords “*Kahoot!*”, “Evaluation Media” and “Learning Motivation”. Google Scholar, a well-known database offering access to a wide range of articles, books, and scholarly works, was used. PoP was chosen due to its ability to effectively track article information.

### **2. Get the Initial Results**

The search was focused on publications from 2020 to 2025. Using Google Scholar, 200 articles were collected, and the results were saved in.ris format (Research Information Systems Citation File) through PoP.

### **3. Refinement of the Search Results**

The articles were then organized according to publication format, particularly focusing on journal articles. These filtered data were saved in.ris format.

### **4. Collect Data Information**

The filtered data was analyzed using VOSviewer to map bibliometric relationships between concepts. VOSviewer provides three main types of visualizations: network, overlay, and density. According to (van Eck & Waltman, 2010) dalam (Fathurrahman & Fitrah, 2023), this program allows for effective data analysis and produces insightful results with appealing visuals.

### **5. Data Analysis**

The visualizations generated by VOSviewer were analyzed using bibliometric analysis through a descriptive quantitative approach to identify patterns of concept relationships and trending topics related to the use of *Kahoot!* This method involved interpreting network, overlay, and density visualizations to understand how learning motivation is associated with interactive applications like *Kahoot!* and how this topic has developed over time.

## **RESULTS AND DISCUSSION**

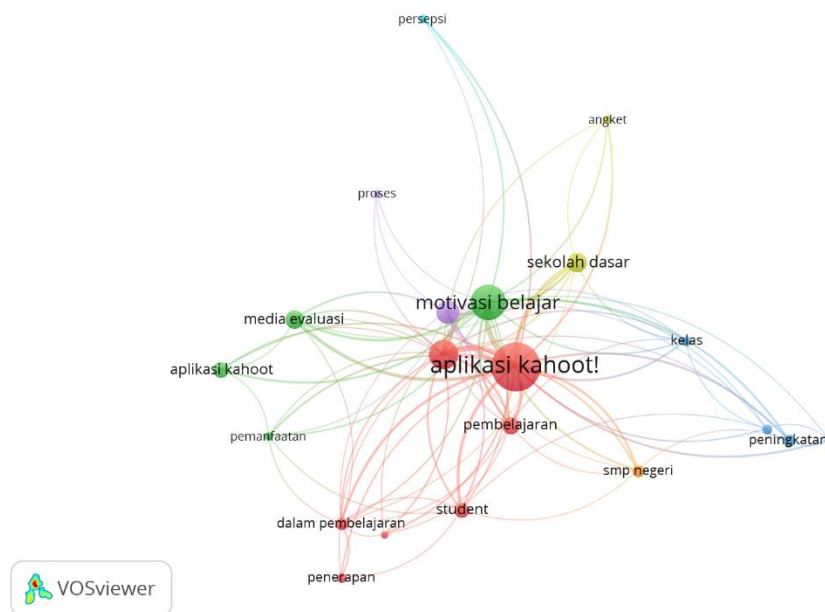
Based on data processing using VOSviewer, a total of 996 keywords were obtained. Of these, 21 keywords met the minimum occurrence threshold. After mapping and further analysis, the keywords were grouped into seven clusters that illustrate the interconnections between research topics. Each cluster contains related keywords based on frequency of occurrence and correlation. The details of the cluster analysis are presented in Table 1.

**Table 1.** Keywords Representing Each Cluster

Cluster 1	<i>Kahoot!</i> application, in learning, development, medium, learning, implementation, student
Cluster 2	Effectiveness, class, improvement, public senior high school
Cluster 3	<i>Kahoot!</i> application, learning motivation, utilization
Cluster 4	Evaluation Media, perception
Cluster 5	Questionnaire, elementary school
Cluster 6	Game, Process
Cluster 7	Public junior high school

Source: VOSviewer 2025

VOSviewer provides various forms of visualization to map bibliometric analysis, including network visualizations that show the relationships between keywords and published articles (Hamidah et al., 2020). Each cluster is marked with a different color, making it easier for users to identify thematic groupings or interconnected topics, as well as to understand relationship patterns, development, and data density in a specific field of research (Ji et al., 2023). The visualized data analysis below, created using VOSviewer, helps users comprehend the interconnection patterns between keywords and related articles.



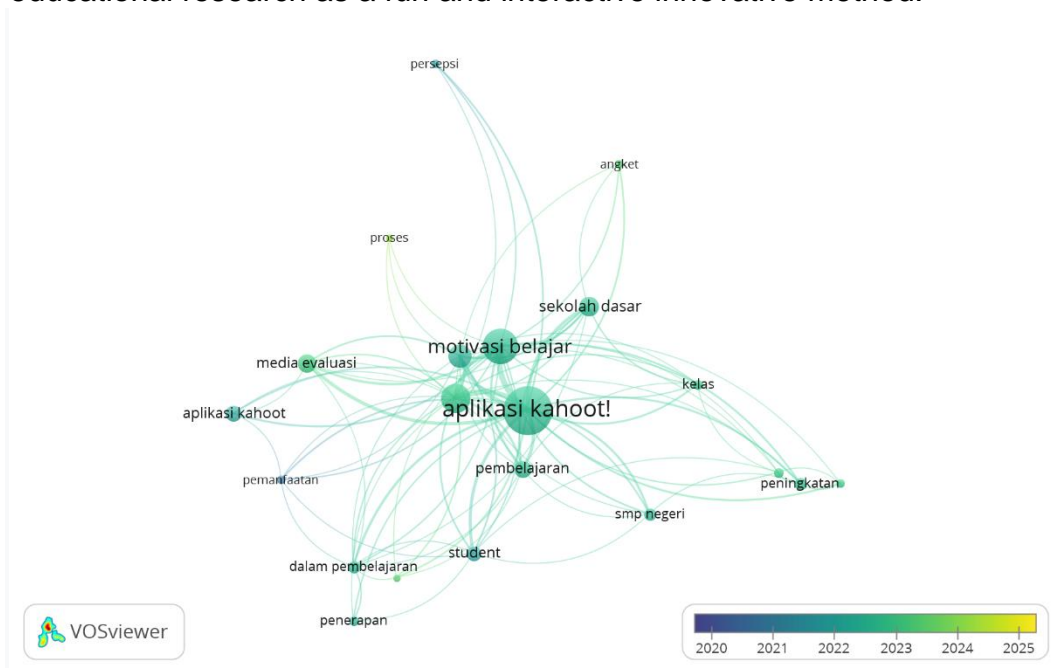
Source: VOSviewer (2025)

**Figure 2.** Network Visualization of Keywords “*Kahoot!*”, “Evaluation Media” and “Learning Motivation”

Figure 2 shows that the VOSviewer analysis indicates a strong relationship between the use of *Kahoot!* in learning and aspects such as game-based learning, evaluation media, and students’ perceptions. This confirms that *Kahoot!* is often used as an interactive evaluation tool that enhances student engagement and learning motivation. Additionally, keywords such as elementary school, class, and public junior high school show that *Kahoot!* is applied across various education levels, supporting the

finding that the application is flexible and effective as an evaluation tool at different learning stages. In line with research by In line with research by (Alfansyur & Mariyani, 2019), which demonstrated that *Kahoot!* can improve student motivation and conceptual understanding, its use as an interactive evaluation medium not only makes assessments more engaging but also helps students become more actively involved in the learning process and improve their learning outcomes.

The cluster analysis also reveals a connection between the implementation and utilization of *Kahoot!* in the learning evaluation process. This indicates that research in this field is not only focused on its impact on learning motivation but also on strategies to effectively implement *Kahoot!*'s features to improve conceptual understanding and learning outcomes. Overall, the findings support the idea that using *Kahoot!* as an evaluation medium not only enhances assessment effectiveness but also contributes to increased student motivation. The keyword relationships visualized here strengthen the conclusion that technology-based evaluation—particularly through gamification like *Kahoot!* is gaining increasing attention in educational research as a fun and interactive innovative method.

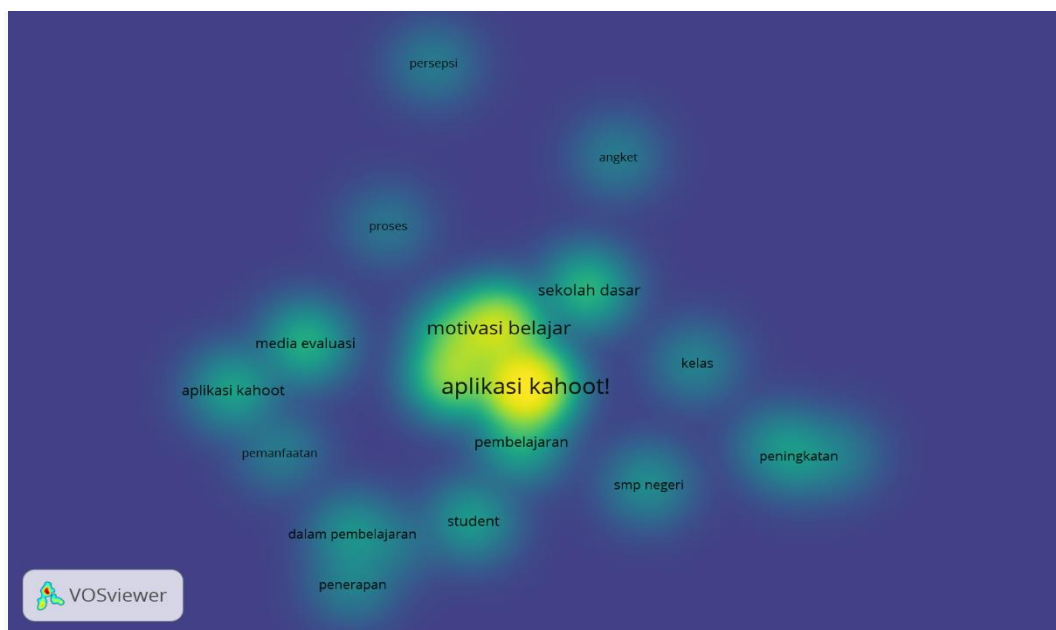


Source: VOSviewer (2025)

Figure 3. Visualization with Keywords “*Kahoot!*”, “Evaluation Media” and “Learning Motivation”

The overlay visualization analysis shows that research trends over the past five years (2020–2025) have focused on using the *Kahoot!* application in education, particularly related to learning motivation and evaluation across various educational levels. The turquoise color on keywords like "learning motivation" and "*Kahoot!* application" indicates that these topics have continued to grow over the last five years, reflecting a rising interest in using *Kahoot!* as an interactive learning tool.

The strong association between keywords like "evaluation," "learning," and "perception" confirms that studies are not only concerned with the effectiveness of *Kahoot!* in improving motivation but also with its application in educational assessment. However, the implementation of gamification strategies in evaluation still presents room for further research, particularly to optimize the use of *Kahoot!*'s features in enhancing conceptual understanding and learning outcomes. Therefore, future studies linking gamification, technology-based evaluation, and increased learning motivation will offer more significant contributions to the development of innovative learning methods.



Source: VOSviewer (2025)

**Figure 4.** Density Visualization with the Keywords “Kahoot!”, “Evaluation Media” and “Learning Motivation”

Some of the most prominent keywords in the figure—such as “Kahoot! application,” “learning motivation,” and “game”—are displayed in bright colors, indicating their dominance in related research. “Kahoot! application” stands out as a central topic, especially for its role as an interactive learning medium that can increase student motivation. The close proximity of the term “learning motivation” to this keyword reinforces the finding that *Kahoot!* is not only used as an evaluation tool but also as a means to encourage student engagement through a game-based approach.

Furthermore, the keyword “game” also appears prominently, showing that the gamification aspect of *Kahoot!* is a central research focus. The game features of the platform are believed to create a dynamic, competitive, and enjoyable learning environment that stimulates student interest. The use of *Kahoot!* for evaluation and improving learning quality is supported by the frequent association of keywords like “evaluation,” “learning,” and “improvement” with various educational levels, including “elementary school” and “public junior high school.”

This visualization reinforces the importance of *Kahoot!* in discussions about digital educational innovation, highlighting the strong connection between the platform, increased learning motivation, and evaluation methods. These findings affirm that *Kahoot!* is a relevant and multifunctional research topic, especially in efforts to create more engaging, effective, and impactful evaluation processes for students.

The literature search related to the topics “*Kahoot!*” and “learning motivation” revealed ten leading authors who are most frequently cited or have the highest number of citations. These top ten authors specifically examine various aspects of using the *Kahoot!* application and explore its impact on enhancing students' learning motivation. Their studies provide significant contributions to understanding how this platform can be effectively utilized in educational contexts.

**Table 2.** Top Ten Authors with The Most Citations

Author	Year	Total Citations	Publication Type
R Andari	2020	155	Article
F Daryanes	2020	139	Article
A Putra	2020	111	Article
AC Bunyamin	2020	92	Article
H Bahar	2020	92	Article
WS Sulistiyawati	2021	88	Article
MS Sakdah	2021	83	Article
E Safitri	2023	78	Article
I Perdana	2020	57	Article
A Ulimaz	2020	56	Article

Source: Data from Publish or Perish (PoP), 2025

In general, a medium or tool is something that can help a person perform a task or achieve goals more efficiently and effectively (Belva Saskia Permana et al., 2024). When teachers plan, utilize, and use learning media, the first step is to select the appropriate media. This selection should align with the subject matter, student characteristics, learning styles, and available school facilities (Salim et al., 2020). One effective learning medium is *Kahoot!* a game-based learning platform initially designed for use in schools and other educational institutions.

Additionally, Roestiah (2008) in Rafiudin (2023) emphasized that a key aspect in motivating and developing education is implementing the right learning strategy. This strategy includes not only selecting media but also how it is used to create a more engaging and interactive learning experience tailored to student needs (Putra & Afrilia, 2020). *Kahoot!* has evolved into more than just an educational tool; it also serves as a game platform that challenges the brain, helps students understand the material, increases engagement and motivation, and provides effective and reflective feedback (Ismail & Mohammad, 2017).

According to Andari (2020)—the most-cited author—the use of *Kahoot!* can significantly improve student learning outcomes compared to conventional methods. The group using *Kahoot!* showed higher learning achievement due to their more active involvement during the quiz sessions.

Furthermore, the instant feedback provided after the quiz helps students understand and evaluate the material quickly and effectively. Similarly, (Daryanes & Ririen, 2020) added that *Kahoot!*'s main feature is interactive quizzes that can be used both in classroom and online learning. Teachers can display questions on a shared screen, while students answer from their devices within a time limit. Automatic scoring displays create a more-lively classroom atmosphere, boost student attention, and foster healthy competition.

Sulistiyawati et al., (2021) stated that *Kahoot!* as a digital learning platform based on game-based learning, can be optimized to enhance students' motivation and learning independence while simplifying the learning evaluation process. In terms of intellectual development, *Kahoot!* content can be designed to encourage students to understand and explore learning materials more deeply. Moreover, *Kahoot!* is effective not only in classroom settings but also as an independent assignment tool outside of class, offering flexibility in teaching and learning. Fazriyah et al., (2020) support this, noting that *Kahoot!*'s "self-paced challenge" feature allows teachers to assign tasks that students can complete at home via shared links. This supports both formative and summative assessment, ultimately reinforcing the effectiveness and continuity of learning.

In addition, Hadi et al., (2023) noted that *Kahoot!* contributes to creating a more enjoyable learning environment. With its engaging features, the app accommodates various learning styles—visual, auditory, audiovisual, and kinesthetic. Students who are typically passive in conventional learning can become more active participants due to the competitive yet positive atmosphere. According to Hidayat et al., (2023), the gamification in *Kahoot!* not only boosts motivation but also builds students' confidence in answering questions without fear of making mistakes. This is because of *Kahoot!* offers a challenge-based learning experience that excites students to try and learn from their errors. Thus, using *Kahoot!* as an evaluation tool goes beyond measuring comprehension—it also fosters a positive learning attitude, ultimately improving overall student performance.

## CONCLUSION

The *Kahoot!* application has proven to be effective in enhancing students' learning motivation by providing an interactive, enjoyable, and competitive evaluation medium. This is supported by bibliometric analysis of various publications, which consistently link *Kahoot!* to increased student participation, engagement, and enthusiasm in the learning process. The trend of utilizing *Kahoot!* as an evaluation tool in education has shown significant growth over the past five years (2020–2025). Based on bibliometric analysis of 200 articles and 996 keywords, research interest in this topic continues to increase, reflecting a positive reception and the effectiveness of *Kahoot!* in digital learning environments across various educational levels. Therefore, it is recommended that teachers and educators begin to integrate *Kahoot!* optimally into the assessment process.

The interactive features of *Kahoot!* should be maximized to create a more enjoyable and motivating evaluation experience. In addition, training for teachers on the use of digital evaluation media is essential to ensure that *Kahoot!* is implemented effectively and aligns with the characteristics of today's learners. This approach is expected to address the limitations of traditional, paper-based evaluations that are often perceived as monotonous.

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