

EXPLORING THE IMPACT OF KAHOOT ON STUDENTS' INTRINSIC AND EXTRINSIC IN ENGLISH LANGUAGE LEARNING: A WITHIN-SUBJECT STUDY OF EIGHTH-GRADE STUDENTS

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ABSTRACT

This study aims to examine the role of Kahoot in enhancing students' motivation in English learning. This study employed a within-subject design and involving 16 eighth-grade students from SMP Muhammadiyah 1 Samarinda, who experience both conventional instruction and Kahoot-based instruction. This instrument used in this research was test and questionnaire to collect the data. The results showed a significant increase in student motivation following the use of Kahoot, with higher post-test scores and more consistent performance. Notably, students with lower initial motivation exhibited the greatest improvement, indicating Kahoot's potential to support less motivated learners. Overall, the study found that Kahoot fosters a more interactive, enjoyable, and engaging

learning environment, thereby enhancing students' motivation and learning outcomes in English language education.

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INTRODUCTION

Motivation is a crucial element in the language learning process, significantly influencing student engagement and academic achievement (Gardner et al., 1985). Motivation is a crucial element in the language learning process, significantly influencing student engagement and academic achievement (Gardner et al., 1985). Yet, recent findings such as those of (Manda, 2023) reveal that existing studies remain focused on traditional classroom settings, leaving limited understanding of how intrinsic and extrinsic motivation function within digital or game-based EFL environments. This gap highlights the need for further research examining how gamified platforms shape different types of motivation in language learning contexts. It is generally categorized into intrinsic motivation driven by internal interest and enjoyment (Ryan & Deci, 2000a) and extrinsic

motivation, which is shaped by external rewards such as praise or grades. A balanced combination of both types is essential for learning success (Shaheen et al., 2013). According to (Suprijono, 2009), motivation provides learning spirit, direction, and behavioral consistency, while (W.S, 2003) emphasizes that motivated behavior is vigorous, focused, and sustained.

Intrinsic motivation includes the desire to learn, aspirations, and personal goals, while extrinsic motivation involves external factors such as rewards, classroom environment, and engaging teaching methods. Given its importance, this study focuses on how innovative teaching strategies particularly those involving educational media can enhance both intrinsic and extrinsic motivation in students.

One effective way to enhance student motivation and reduce boredom is by applying engaging and interactive teaching strategies. Interactive materials encourage active participation and lead to more effective learning. As information technology advances, integrating digital tools into education becomes increasingly essential. Game-based learning methods, such as Kahoot, meet the needs of modern learners and support the goals of the Industrial Revolution 4.0 (Melani, 2018). Kahoot, in particular, leverages interactivity, competition, and real-time feedback to boost student motivation and classroom engagement (Johnson et al., 2016).

Kahoot is a game-based learning platform recognized for enhancing student engagement and motivation through its interactive and gamified features. While previous studies have highlighted the advantages of Kahoot in increasing classroom engagement and creating enjoyable learning experiences (Fuster-Guilló et al., 2019; Johnson et al., 2016; Wichadee & Pattanapichet, 2014), several limitations have also been documented. These include technical problems, difficulties in designing effective quiz content, and concerns about whether high scores accurately represent students' actual comprehension (Chotimah & Rafi, 2018; Putri, 2019). However, despite these findings, existing research has not yet provided a comprehensive examination of how Kahoot influences both intrinsic and extrinsic motivation across different learner profiles, particularly in EFL contexts. This indicates a clear research gap that warrants further investigation. These concerns highlight the need to consider contextual and learner-specific factors in its application. In English language learning, particularly vocabulary acquisition, Kahoot transforms lessons into engaging experiences that aid retention (Glover, Glover, 2013). It also serves multiple functions assessment, homework, and reinforcement while promoting active participation through competition. Given the role of motivation in academic success, integrating

Kahoot into English instruction can foster positive learning experiences and improve student outcomes.

Intrinsic motivation refers to engaging in activities for the inherent satisfaction and enjoyment they provide, rather than for external rewards (Dunn & Zimmer, 2020). It stems from curiosity, challenge, or personal interest, and can occur naturally even without reinforcement (White, 1959). According (Atalıç et al., 2016) two-factor theory supports this by highlighting personal achievement, recognition, and the task itself as key to intrinsic satisfaction. In education, intrinsic motivation encourages sustained engagement and deeper learning. However, in structured academic settings, extrinsic motivation driven by rewards such as grades, praise, or recognition also plays a major role. (Atalıç et al., 2016) associate it with hygiene factors like institutional policies, interpersonal relations, and job security. While extrinsic rewards can boost participation, overreliance may hinder internal learning drive. Therefore, balancing intrinsic and extrinsic motivation is crucial to fostering an effective and enduring learning environment.

Several studies have confirmed Kahoot's effectiveness in enhancing student motivation and engagement; however, limitations persist. ((Nisa Omar, 2017) focused on a single course, while (Putri, 2019) noted technical challenges related to usage duration, content creation, and feedback. (Chotimah & Rafi, 2018) argued that high scores on Kahoot may not reflect actual understanding, and (Hidayad et al., 2023) highlighted limited instructional variety. (Kamal Hossain & Abdullah Al Younus, 2024) pointed out constraints in sample size, location, and teacher involvement. Additionally, prior research rarely explores how learner characteristics such as age, skill level, or prior knowledge impact Kahoot's effectiveness, nor does it sufficiently address technical issues like device access or connectivity. Thus, although Kahoot shows strong potential, further investigation is needed to optimize its use, particularly in fostering intrinsic and extrinsic motivation. This study addresses that gap by examining Kahoot's effectiveness in English learning while considering contextual and individual learner factors.

Therefore, based on the aforementioned background, this study aims to investigate how the use of Kahoot as a game-based learning platform can influence students' motivation in learning English. Specifically, the research seeks to explore the extent to which Kahoot affects students' intrinsic motivation, such as interest and enjoyment in learning, and extrinsic motivation, such as their drive to achieve good grades and receive external rewards. By addressing these aspects, the study is expected to provide valuable insights into the role of digital gamification in enhancing motivation among junior high school students.

The main objective of this study is to investigate the effectiveness of Kahoot as a game-based learning platform in enhancing students' motivation in learning English. This research specifically aims to explore the impact of Kahoot on both intrinsic and extrinsic motivation, as well as its overall effectiveness in improving learning outcomes in an English as a Foreign Language (EFL) context.

RESEARCH METHOD

Research Design

In order to find out how well Kahoot worked to increase students' intrinsic and extrinsic motivation for learning English, the researcher used a within-subject design technique. When examining the effects of multiple treatments, a within-subjects design was avoided if the researcher was interested in how the treatments might affect performance in the absence of practice (either as a main effect of successive tests or as an interaction of successive tests with treatments). To better understand the characteristics of this design, it is important to note that the within-subjects design, or repeated measures design, involved exposing all participants to every treatment, allowing direct comparisons within the same individuals and reducing variability (Ryan & Deci, 2000b). Simply Psychology noted that this method was useful for tracking changes over time but required managing order and carryover effects. (Charness et al., 2021)highlighted that although this design enhanced efficiency and statistical power, it demanded careful control to avoid bias. Given these considerations, undesirable practice effects were mitigated by counterbalancing the order of treatments or were prevented by offering sufficient practice before the treatments were started.

Lastly, in learning experiments, the practice effect was frequently intended to be the direct subject of investigation. A within-subjects design was often considered suitable in this situation, but only if performance data could be gathered without affecting the acquisition procedure. This design was selected because it minimized inter-individual variability and focused on changes in individual responses to two distinct treatment conditions, allowing each subject to serve as their own control (G & T.D, 2004). Each student experienced two stages of treatment: the first involved conventional English teaching techniques, and the second used the Kahoot platform. Motivation levels were measured at the end of each phase to allow comparison before and after the intervention. Through this design, the researcher aimed to gain a deeper understanding of the relative impacts of the two learning approaches, focusing on individual-level changes and

assessing Kahoot's potential effectiveness in enhancing students' motivation for learning English.

Population and Sample

The population of this study comprised eighth-grade students enrolled in a private junior high school during the 2023/2024 academic year. This population was chosen because it was considered relevant to the purpose of the study, which is to examine the effectiveness of using Kahoot in increasing motivation to learn English. From this population, the researcher took a sample of 16 students from one class chosen purposively. The selection of this number was based on practical and statistical considerations statistically, the within-subject design allows for the use of a small sample as each student serves as their own control, thus increasing the power of the analysis and reducing data variability. Practically, this number allows for efficient measurement and did not disrupt the teaching and learning process. According to (Latif, 2006), the population is defined as all objects that have certain characteristics that the researcher determines to study, so that students in class VIII met the criteria as the population in this study, and the 16 students selected representing the population.

Instruments and Questionnaire

The questionnaire used as the main tool in collecting data in this study because it was considered effective in a quantitative approach. (Sugiyono, 1967) states that this technique makes it easy to collect large amounts of information through written questions that are answered directly by respondents. (Arikunto, 2010) adds that questionnaires function to explore individual knowledge and experience, while according to (Husein, 2025), this instrument can reveal personal data, views, and behaviors that cannot be observed directly.

This study adopted a validated questionnaire from (Natalya & Purwanto, 2018), with a high level of accuracy in measuring student learning motivation, consists of 30 items measuring intrinsic motivation, extrinsic motivation, and amotivation. Items are rated on a 5-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree). Previous studies showed that the AMS has strong construct validity (factor loadings > 0.50; RMSEA ≤ .08, CFI ≥ .90) and high reliability ($\alpha = 0.898$ for intrinsic motivation, $\alpha = 0.882$ for extrinsic motivation, $\alpha = 0.874$ for amotivation; subscales 0.746–0.850), making it a reliable and valid instrument for measuring students' motivation in the Indonesian educational context. The instrument contains a Likert scale that includes affective dimensions such as

enjoyment, interest, effort, and subjective value towards English lessons. To identify the type of motivation, the items are specifically designed: intrinsic motivation is reflected by internal drives such as interest in learning, personal satisfaction, and curiosity, while extrinsic motivation is seen from external factors such as the desire for rewards, social recognition, or academic achievement. This questionnaire was administered before and after the Kahoot intervention, to assess changes in student motivation between traditional and interactive game-based teaching methods.

FINDINGS

Upon completion of the study, two types of data were collected pre-test scores and post-test scores. For the pre-test, the researcher gave a motivation test to the students before the treatment was conducted, as an initial benchmark to determine the students' basic motivation level in learning English. Meanwhile, the post-test was given after the students followed the learning using game-based learning media, namely Kahoot. The test was given to the VIII grade students as the research subjects. The instrument used consisted of a learning motivation questionnaire tailored to the indicators of intrinsic and extrinsic motivation, in which a total of 16 students participated in this study.

Normality Test

The normality test determines whether the data collected is normally distributed or not. The IBM SPSS Statistics version 27 program was used to conduct the normality test in this study. Data is considered normally distributed if the significance value exceeds 0.05. The table below presents the results of the normality test:

Table 1. Normality Test Result

Variable	Kolmogorov-Smirnov Statistic	df	Sig.	Shapiro-Wilk Statistic	df	Sig.
Pre_test	0.208	16	0.063	0.906	16	0.099
Post_test	0.178	16	0.187	0.935	16	0.290

a. Lilliefors Significance Correction

Based on the normality test results of the table above using Kolmogorov-Smirnov and Shapiro-Wilk on pre-test and post-test data involving 16 students, the significance value (Sig.) of each is above 0.05. In the Kolmogorov-Smirnov test, the Sig. value of the pre-test was 0.063 and the post-test was 0.187. Meanwhile, in the Shapiro-Wilk test, the Sig. value of the pre-test was 0.099 and the post-test was 0.290. Since all significance values are greater than 0.05, it can be concluded that the pre-test and post-test data are normally distributed. Therefore, the data meets the assumption of normality and further analysis can be carried out using parametric tests.

Table 2. Paired Samples Statistics Result

Pair	Test Type	Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Pre-test	34.94	16	2.620	0.655
	Post-test	41.56	16	2.421	0.605

Based on the results of paired samples statistics, it can be seen that there is an increase in student motivation scores after the application of Kahoot-based learning. In the output of Table 2, a summary of the descriptive statistical results of the two samples studied is shown, namely the pre-test and post-test scores. The average pre-test score was 34.94 with a standard deviation of 2.620, while the average post-test score increased to 41.56 with a standard deviation of 2.421. The Standard Error Mean value for the pre-test was 0.655 and for the post-test was 0.605. Both tests involved the same group of 16 students, which indicates that this research design uses within-subject design.

In addition, the decrease in the standard deviation value from pre-test to post-test also showed an increase in the consistency of students' performance after the treatment was given. Since the mean value of learning outcomes in the pre-test (34.94) is lower than the post-test (41.56), it can be descriptively concluded that there is a difference in the mean learning outcomes between the two. To ascertain whether the difference is statistically significant, further interpretation of the paired samples t-test results is needed.

Table 3. Paired Samples Correlations Result

Pair	Variables	N	Correlation (r)	Sig. (2-tailed)
Pair 1	Pre-test & Post-test	16	-0.541	0.031

The paired samples correlation analysis shows a correlation coefficient of -0.541 between the pre-test and post-test scores of the 16 students. This value indicates a moderate negative correlation, suggesting that higher scores in the pre-test tend to be associated with lower gains in the post-test, and vice versa. This could imply that students who initially scored lower showed greater improvement after the Kahoot intervention.

Furthermore, the significance value (Sig.) is 0.031, which is less than 0.05, indicating that the correlation is statistically significant. This means there is a meaningful relationship between the students' motivation scores before and after using Kahoot.

Table 4. Paired Samples Test Result

Pair	Mean	Std.	Std.	95% Confidence	T	Df	Sig. (2-
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	Difference	Deviation	Error Mean	Interval of the Difference			tailed)	
				lower	upper			
Pair 1	-6.625	4.425	1.106	-8.893	-4.267	-5.988	15	< ,001

To examine the effect of using Kahoot on students' motivation in learning English, a paired sample t-test was conducted comparing students' pre-test and post-test scores.

The result shows a mean difference of -6.625, indicating that the post-test scores were significantly higher than the pre-test scores. The t-value was -5.988 with degrees of freedom (df) = 15, and the significance value (p-value) was < 0.001. Since the p-value is far below the 0.05, it can be concluded that the difference is statistically significant.

The 95% confidence interval for the mean difference ranged from -8.983 to -4.267, which does not include zero, further confirming the significance of the Findings Based on Motivation Types.

Findings Based on Motivation Types.

To address the first and second research questions, the findings are analyzed by separating intrinsic and extrinsic motivation indicators as measured through the questionnaire.

The results showed that the average score for intrinsic motivation (items related to enjoyment, curiosity, and personal interest in learning English) increased from 17.06 in the pre-test to 20.44 in the post-test. This indicates a mean increase of 3.38 points, suggesting that the Kahoot-based learning approach stimulated greater intrinsic engagement among students. Meanwhile, the average score for extrinsic motivation (items related to gaining rewards, achieving high scores, and receiving recognition) increased from 17.88 in the pre-test to 21.13 in the post-test, reflecting a mean increase of 3.25 points. This implies that students were also more motivated by external factors after the implementation of Kahoot. Both dimensions of motivation demonstrated improvement, as confirmed by the paired sample t-test results which showed a significant difference (p < 0.001) between pre- and post-test scores in both intrinsic and extrinsic subscales.

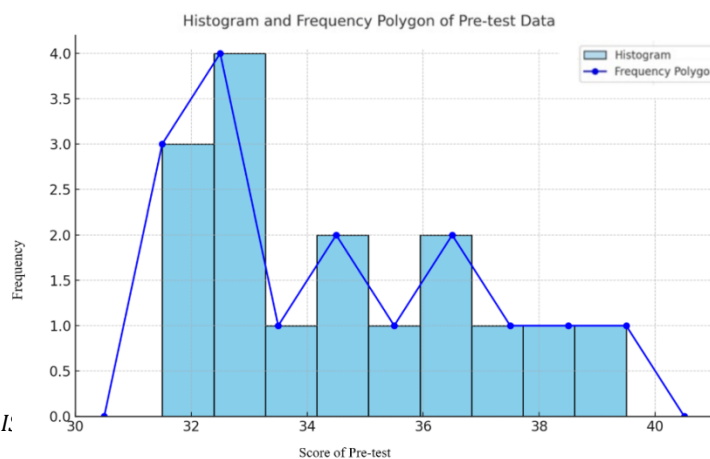


Figure 1. Histogram of Pre-Test

The histogram above shows the frequency distribution of the pre-test scores of the 16 students who participated in this study. The pre-test scores ranged from 32 to 40, with a mean of 34.94 and a standard deviation of 2.62.

The distribution of the data appears to be abnormal and positively skewed, with most students scoring lower than the mean. The highest frequency was in the score range of 32 to 33, which was achieved by 4 students, followed by 3 students in the range of 31 to 32. The higher the score, the fewer the number of students who obtained the score.

This shows that before the application of Kahoot-based learning media, most students had a level of motivation or understanding that was still in the low to medium category. This information provides an important baseline in comparing the results before and after treatment with Kahoot.

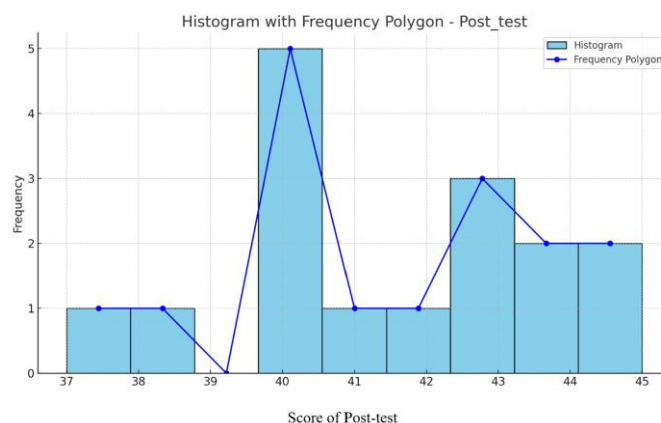


Figure 2. Histogram of Post-Test

The post-test histogram shows the frequency distribution of students' scores after taking part in learning using Kahoot media. Post-test scores ranged from 37 to 45, with a mean of 41.56 and a standard deviation of 2.421, based on data from 16 students.

The data distribution tended to be symmetrical and more concentrated around the mean, compared to the pre-test which was more spread out and skewed towards low scores. The highest frequency was at score 40, which was achieved by 5 students, followed by 3 students in the 43-44 range, and 2 students each in the 44-45 and 42-43 ranges.

When compared to the pre-test histogram, there was a shift in distribution to the right, indicating a general increase in scores. In the pre-test, most students were in the range of 32-34, while in the post-test, most students were above 40. This illustrates that

after Kahoot-based learning was implemented, student motivation and learning outcomes experienced a significant increase.

Thus, this histogram visually supports the previous statistical test results, that the use of Kahoot has a positive impact on students' learning motivation, which is reflected in the increase in post-test scores.

RESULT AND DISCUSSION

This study aimed to examine the effectiveness of using Kahoot as a game-based learning platform to enhance students' intrinsic and extrinsic motivation in learning English. Data were collected from 16 students at SMP Muhammadiyah 1 Samarinda through a motivation questionnaire administered before and after the Kahoot intervention.

Table 5. Paired Samples t-test Comparing Pre-Test and Post-Test Motivation Scores.

Variable	M	SD	n	t	df	p
Pre-test	34.94	2.62	16			
Post-test	41.56	2.42	16	-5.99	15	< .001

Note. Negative *t* value indicates post-test scores were higher than pre-test scores.

The results indicated a significant increase in overall student motivation after the Kahoot intervention. Students' post-test motivation scores ($M = 41.56$, $SD = 2.42$) were significantly higher than their pre-test scores ($M = 34.94$, $SD = 2.62$), $t(15) = -5.99$, $p < .001$, 95% CI [-8.98, -4.27]. This finding suggests that Kahoot had a statistically significant positive effect on students' motivation in learning English.

The decrease in standard deviation from pre-test to post-test also indicates more consistent motivation levels after the intervention. The moderate negative correlation between pre-test and post-test scores ($r = -0.541$, $p = .031$) further suggests that students who initially had lower motivation experienced the greatest improvement after using Kahoot.

Discussion Based on Intrinsic and Extrinsic Motivation

Findings indicate a significant improvement in both intrinsic and extrinsic motivation after the Kahoot intervention. The results echo previous studies showing that gamified learning reliably increases student motivation. Earlier research (Fuster-Guilló et al., 2019; Wichadee & Pattanapichet, 2014) found that Kahoot enhances engagement and learning outcomes. Recent evidence from 2020–2024 strengthens this pattern: (Wang & Tahir, 2020) reported consistent motivational gains across various educational settings,

while (Hidayad et al., 2023) demonstrated that digital quiz platforms significantly boost participation in EFL classrooms. Furthermore, (Kamal Hossain & Abdullah Al Younus, 2024) found that Kahoot promotes sustained engagement and is particularly effective for learners with low initial motivation. Collectively, these recent findings align with the present study, confirming Kahoot's effectiveness as a contemporary motivational tool in language learning. Kahoot satisfies these psychological needs by offering a sense of autonomy through student-paced choices, competence via instant feedback and scores, and relatedness through collaborative participation. The gamified environment fostered a more enjoyable learning experience that encouraged students to engage out of genuine interest, not obligation.

In response to the second research question, the data also indicated a rise in extrinsic motivation, reflected in students' desire to earn high scores, receive praise, and compete with peers. Kahoot's real-time ranking system, point accumulation, and visual rewards effectively engaged students by providing external incentives. This supports behaviorist theories (Hoyenga, 1984), where external rewards reinforce behavior. These extrinsic drivers played an important role, particularly in stimulating students who are performance-oriented or goal-driven.

The dual improvement in both intrinsic and extrinsic dimensions suggests that Kahoot has a balanced effect, catering to different motivational profiles. Interestingly, students with initially low motivation levels—both intrinsically and extrinsically—tended to benefit more from the intervention. This pattern can be explained through Self-Determination Theory, which suggests that learners with low initial motivation are more sensitive to activities that suddenly enhance their sense of competence, autonomy, and relatedness. Gamified platforms like Kahoot provide immediate feedback, achievable goals, and supportive interaction, making the motivational boost more pronounced for students who previously lacked engagement.

Students with initially low motivation tended to benefit more because the gamified features of Kahoot—such as immediate feedback, clear goals, and quick success experiences—more effectively supported their needs for competence and autonomy (Ryan & Deci, 2000a). Recent studies also showed that low-stakes competition particularly activated motivation among learners who started with lower levels of engagement (Kamal Hossain & Abdullah Al Younus, 2024). This supports the claim that game-based platforms like Kahoot can bridge engagement gaps and promote motivational inclusivity across student groups.

The results echo previous studies by (Fuster-Guilló et al., 2019; Wichadee & Pattanapichet, 2014), and are further supported by more recent findings. For instance, (Wang & Tahir, 2020) demonstrated that Kahoot consistently improved learner motivation across digital learning settings. (Hidayad et al., 2023) found that online game-based assessments heightened students' enthusiasm and sustained attention. These contemporary studies reinforce the present findings and highlight Kahoot's ongoing relevance in enhancing student motivation. However, as noted in earlier research (Chotimah & Rafi, 2018; Putri, 2019), the long-term impact of Kahoot may still depend on external factors such as internet connectivity, device access, and classroom context. Although no significant technical issues were reported in this study, these factors should be carefully considered when replicating the model at a larger scale. In addition, several moderating variables—such as classroom conditions, student age, and technological experience—may influence how effectively learners engage with gamified activities. These moderators could shape students' responsiveness to Kahoot and determine for whom and under what conditions the intervention produces its strongest effects.

CONCLUSION AND SUGGESTION

Conclusion

Based on the results of data analysis and discussion, it can be concluded that the use of Kahoot as a game-based learning media is effective in increasing students' learning motivation in English subject. This improvement includes both aspects of motivation, namely intrinsic motivation - such as students' enjoyment, interest, and curiosity in the learning material - as well as extrinsic motivation, which can be seen from students' desire to achieve high scores, get recognition, and show their best performance in front of teachers and classmates.

Statistical analysis showed a significant difference between the pre-test and post-test results, which was supported by a significance value of <0.001 in the paired sample t-test. These results reinforce the finding that the use of Kahoot is able to create a more fun, interactive and competitive learning atmosphere, which in turn has a positive impact on increasing students' overall learning motivation.

In addition, the results also show that Kahoot plays an important role in leveling the level of motivation among students, especially for students who previously showed low levels of motivation. Thus, Kahoot can be categorized as an inclusive and adaptive learning tool for students' learning needs in the digital era.

Suggestion

Teachers are recommended to integrate Kahoot in a planned and structured way, ensuring that classroom conditions, time management, and students' technological readiness support effective implementation. Providing clear instructions and equal assistance for students with varying levels of digital experience can also enhance learning outcomes.

Future researchers are encouraged to examine how moderating factors such as classroom conditions, age, and technological experience influence the effectiveness of Kahoot. Further studies may also explore its long-term impact or compare Kahoot with other gamified platforms to broaden understanding of its motivational benefits.

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