

Innovative Game-Based Learning in Islamic Education for Quality Education (SDG-4)

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Abstract

Although Game-Based Learning (GBL) has considerable potential to support quality education, research on its implementation in Islamic primary education remains limited. This study aims to analyze the relationship between GBL and students' understanding of *Fiqh*, particularly the topic of fasting (*Sawm*), in relation to the achievement of SDG 4. Using a quantitative design, the study involved 65 students selected through purposive sampling. Data were collected through questionnaires and comprehension tests and analyzed using descriptive statistics, Pearson correlation, and regression analysis. The findings reveal a strong positive relationship between student engagement and comprehension ($r = 0.825$, $p < 0.001$), indicating that higher engagement significantly improves learning outcomes and supports constructivist learning theory. The study concludes that GBL plays an important role in enhancing both the cognitive and affective dimensions of learning in Islamic education. These findings contribute theoretically to the development of digital pedagogy in Islamic education and offer practical implications for educators seeking to adopt interactive learning strategies that support SDG 4. The study also highlights opportunities for future research involving broader Islamic subjects, diverse educational contexts, and mixed-method approaches.

Keywords: Game-Based Learning; Islamic Primary Education; *Fiqh* Comprehension; Student Engagement; SDG 4

INTRODUCTION

The rapid advancement of digital technology has transformed educational practices across various levels of learning. Educational institutions are increasingly encouraged to integrate technology-based instructional strategies that promote student engagement, participation, and meaningful learning experiences. Within the framework of Education 4.0, digital learning environments are expected to support students' critical thinking, collaboration, and interactive learning processes (Bonfield et al., 2020; Castro et al., 2024). This development is also broadly aligned with the objectives of Sustainable Development Goal 4 (SDG-4), which emphasizes inclusive and quality education through innovative educational practices (Abazov, 2021; Alcántara-Rubio et al., 2022). Consequently, the integration of digital pedagogy has become increasingly relevant in contemporary educational settings.

In the context of Islamic education, Madrasah Ibtidaiyah plays a significant role in developing students' religious understanding, moral values, and daily worship practices. One important subject taught at this level is Fiqh, which introduces students to practical Islamic teachings related to worship and social life (Badar Ar, 2025; Sabrina et al., 2025). Among the core topics in Fiqh, fasting (*Sawm*) is considered essential because it involves both conceptual understanding and practical religious application. However, learning activities in Fiqh classes are still frequently dominated by teacher-centered instruction and memorization-oriented approaches, which may limit students' active participation during the learning process. Such conditions potentially reduce students' engagement and make abstract religious concepts more difficult to understand, particularly for primary school learners.

To address these challenges, educational researchers have increasingly explored interactive learning strategies that encourage active student involvement. One approach that has gained considerable attention is Game-Based Learning (GBL), which integrates game elements into instructional activities to create more engaging learning environments. Previous studies have reported that GBL may support student engagement, motivation, participation, and knowledge retention in various educational contexts (Eltahir et al., 2021; Zhao et al., 2022). Digital platforms such as Kahoot have also been widely used to facilitate interactive quizzes and classroom participation through gamified learning experiences (Jauhari, 2020; Tóth et al., 2019). In addition, several studies suggest that game-based

instructional approaches are associated with positive cognitive and affective learning experiences among students.

Despite the growing body of literature on GBL, studies focusing specifically on Islamic primary education remain relatively limited. Existing research has predominantly examined GBL implementation in general education (Yaman et al., 2025), language learning (Ayu et al., 2026), science education (Haryandi et al., 2025), or higher education contexts (Ariffin & Sulaiman, 2013), while empirical investigations in Madrasah Ibtidaiyah settings are still underrepresented. Furthermore, only a limited number of studies have explored the relationship between student engagement in Kahoot-based learning and students' comprehension of Fiqh subjects, particularly the topic of *Sawm*. Previous research has generally discussed the benefits of digital learning tools in broad educational contexts without specifically examining their application within Islamic elementary education or their relevance to religious learning processes. Therefore, there remains a need for empirical research that examines how GBL is associated with students' engagement and comprehension in Fiqh learning within Madrasah Ibtidaiyah contexts.

From a theoretical perspective, this study is informed by constructivist learning theory, which emphasizes that learners actively construct knowledge through interaction (Chand, 2024), participation (Nurhuda et al., 2023a), and learning experiences (Romdhon et al., 2024). In game-based learning environments, students are encouraged to participate actively, respond to immediate feedback, and interact continuously with instructional content. Such learning processes are considered relevant for primary school students, whose cognitive development benefits from concrete (Kastiniwati & Ferdiansyah, 2024) and interactive learning experiences (Abilova et al., 2025). In the context of Islamic education, interactive learning activities may also support students' understanding of religious concepts by encouraging active engagement rather than passive memorization (Firmansyah et al., 2024; Marta & Lawal, 2026). Accordingly, constructivist principles provide an appropriate framework for understanding the potential relationship between game-based engagement and students' comprehension in Fiqh learning.

Based on these considerations, this study aims to examine the relationship between students' engagement in Kahoot-based Game-Based Learning and their comprehension of fasting (*Sawm*) material in Fiqh learning at Madrasah Ibtidaiyah. Using a quantitative correlational design, the study investigates whether higher levels of engagement are

associated with higher levels of comprehension among students. The study is expected to contribute empirically to the discussion of digital learning practices in Islamic primary education, particularly within the context of Fiqh instruction. In addition, the findings may provide practical insights for educators seeking to integrate interactive learning strategies that are potentially aligned with broader educational quality objectives reflected in SDG-4.

METHODS

This study employed a quantitative approach to examine the relationship between students' engagement in Kahoot-based Learning and their comprehension of fasting (Sawm) material in Fiqh learning at Madrasah Ibtidaiyah. Quantitative methods are widely used in educational research to identify measurable patterns, relationships, and predictive associations among variables through systematic statistical analysis (Sugiyono, 2021). The following section describes the research design, participants, instruments, data collection procedures, ethical considerations, and data analysis techniques used in this study.

Research Design

This study adopted a quantitative correlational research design. Correlational research is appropriate when the purpose of a study is to examine the degree and direction of association between variables without manipulating experimental conditions (Nurhayati et al., 2025; Pratama et al., 2023; Suvorov & Li, 2026). In this study, the independent variable was students' engagement in Kahoot-based GBL, while the dependent variable was students' comprehension of fasting (Sawm) material in Fiqh learning.

The correlational design was selected because the study aimed to investigate whether higher levels of engagement were associated with higher levels of comprehension among students (Mauidlloh et al., 2024). The study did not employ control and experimental groups, nor did it seek to establish causal relationships. Instead, the research focused on identifying statistical associations and predictive relationships between students' learning experiences and comprehension outcomes. Through this approach, the study provides empirical evidence regarding the potential relationship between interactive digital learning activities and students' understanding in Islamic primary education contexts.

Population and Sample

The population of this study consisted of students enrolled at Madrasah Ibtidaiyah Al-Munawwariyyah. A purposive sampling technique was employed to select fifth-grade students as research participants because the topic of fasting (Sawm) is formally introduced within the fifth-grade Fiqh curriculum. Campbell et al. (2020) and Tajik et al. (2024) says that purposive sampling is appropriate when researchers intentionally select participants who possess characteristics relevant to the objectives of the study.

The final sample consisted of 65 students comprising 34 male students (52.3%) and 31 female students (47.7%). Most participants were 11 years old (60.0%), while the remaining students were 10 years old (27.7%) and 12 years old (12.3%). In terms of educational background, 63.1% of participants came from traditional Islamic educational environments, while 36.9% came from mixed educational backgrounds. Additionally, 41.5% of students reported prior exposure to educational games, whereas 58.5% had no previous experience using digital educational games.

Fifth-grade students were considered suitable participants because children at this developmental stage are generally capable of engaging with interactive digital learning activities and responding to structured questionnaire instruments (Zafeer et al., 2025). Moreover, the selected participants had relatively similar curricular exposure to Fiqh instruction, which helped maintain consistency in the learning context.

Research Instruments

Data were collected using two primary instruments: (1) a student engagement questionnaire and (2) a Fiqh comprehension test.

The student engagement questionnaire was developed to measure students' experiences during Kahoot-based GBL activities. The instrument consisted of 15 Likert-scale items using a five-point scale ranging from 1 ("strongly disagree") to 5 ("strongly agree"). The questionnaire measured four indicators of engagement: enjoyment, motivation, concentration, and active participation. Sample items included statements such as "I enjoyed learning Fiqh through Kahoot" and "The Kahoot activity helped me stay focused during the lesson."

The second instrument was a Fiqh comprehension test consisting of 20 multiple-choice questions related to fasting (Sawm). The test assessed students' understanding of

several topics, including the definition of fasting, requirements and obligations of fasting, acts that invalidate fasting, and the moral values associated with fasting practices. Each correct answer received one point, while incorrect answers received zero points. The total score ranged from 0 to 20 and was later converted into a scale of 0–100 for statistical analysis.

To ensure content validity, both instruments were reviewed by two experts in Islamic education and educational assessment. Revisions were made based on their feedback regarding item clarity, relevance, and age appropriateness. Construct validity was examined through pilot testing involving students outside the main sample. The reliability analysis of the engagement questionnaire produced a Cronbach's Alpha coefficient of 0.884, indicating high internal consistency and acceptable reliability for educational research instruments.

Data Collection Procedures

The data collection process was conducted during regular Fiqh classroom sessions in the second semester of the academic year. Before the implementation of the study, the teacher introduced the learning objectives related to fasting (Sawm) and explained the procedures for participating in Kahoot-based learning activities.

The learning session began with a short explanation of the Fiqh material delivered by the teacher for approximately 20 minutes. Afterward, students participated in a Kahoot-based quiz activity consisting of interactive multiple-choice questions related to the lesson content. The Kahoot session lasted approximately 25 minutes and was conducted collectively using a projector and students' mobile devices under teacher supervision. During the activity, students responded to questions individually while receiving immediate feedback and score rankings through the Kahoot platform.

Following the Kahoot activity, students completed the engagement questionnaire and the Fiqh comprehension test. Both instruments were administered immediately after the learning session to ensure that students' responses reflected their recent learning experiences and comprehension of the material. This procedure helped reduce recall bias and maintain the ecological validity of the classroom setting.

Data Analysis Techniques

Several statistical analyses were conducted to address the objectives of the study. Descriptive statistics, including mean, standard deviation, minimum score, and maximum score, were used to summarize students' engagement and comprehension scores. Instrument

reliability was examined using Cronbach's Alpha coefficient to determine the internal consistency of the engagement questionnaire. The results indicated that the questionnaire achieved a reliability coefficient of 0.884, which exceeded the minimum acceptable threshold for educational research instruments and indicated high internal consistency (Khanal & Chhetri, 2024).

Before conducting inferential analysis, normality testing was performed using the Kolmogorov–Smirnov and Shapiro–Wilk tests. The results indicated that the data were not normally distributed ($p < 0.05$). Therefore, non-parametric statistical analysis was employed to examine the relationship between variables.

Ethical Considerations

Because the study involved elementary school students, several ethical procedures were implemented to protect participants' rights and well-being. Permission to conduct the research was obtained from the school administration and classroom teachers prior to data collection (Saar et al., 2021). Parents or guardians were informed about the purpose and procedures of the study, and participation was conducted voluntarily.

Students were informed that their responses would remain confidential and would be used only for academic research purposes. To maintain anonymity, no personally identifiable information was included in the data analysis or reporting process. Students were also informed that they could withdraw from participation at any stage without academic consequences. These procedures were implemented to ensure ethical compliance in educational research involving child participants.

RESULTS

This section presents the findings of the study concerning students' engagement in Kahoot-based Game-Based Learning (GBL) and their comprehension of fasting (Sawm) material in Fiqh learning at Madrasah Ibtidaiyah Al-Munawwariyyah. The results are organized into descriptive statistical findings, instrument reliability analysis, normality testing, and correlation analysis between students' engagement and assessment scores. The presentation of the findings is supported by empirical statistical evidence obtained through IBM SPSS Statistics version 26.

Descriptive Statistics of Students' Engagement and Assessment Scores

Descriptive statistical analysis was conducted to provide an overview of students' engagement scores (E_S) and assessment scores (A_S) after participating in Kahoot-based learning activities. The results include the minimum score, maximum score, mean, and standard deviation of each variable.

Table 1 shows that the mean engagement score (E_S) was 65.65 with a standard deviation of 2.944, indicating that most students demonstrated relatively high engagement during the Kahoot-based learning activities. Meanwhile, the mean assessment score (A_S) was 19.03 with a standard deviation of 0.684, suggesting that students generally achieved high comprehension scores on fasting (*Sawm*) material.

Table 1. Descriptive Statistics of Engagement and Assessment Scores

Variable	N	Minimum	Maximum	Mean	Std. Deviation
E_S (Engagement Score)	65	59	72	65.65	2.944
A_S (Assessment Score)	65	18	20	19.03	0.684

The descriptive findings indicate that students not only demonstrated positive engagement toward Kahoot-based learning activities but also achieved relatively high levels of comprehension regarding Fiqh fasting material. These findings suggest that interactive digital learning activities may support students' participation and learning outcomes in Islamic primary education contexts.

Reliability Analysis of the Engagement Questionnaire

Reliability analysis was conducted to evaluate the internal consistency of the engagement questionnaire. Cronbach's Alpha analysis was employed to determine whether the questionnaire items consistently measured students' engagement during Kahoot-based learning activities.

The initial questionnaire consisted of 15 items. However, two items were excluded during the reliability testing process because they showed weak item-total correlations. After the revision process, the final instrument consisted of 13 items and achieved a Cronbach's Alpha coefficient of 0.884.

Table 2. Reliability Statistics of the Engagement Questionnaire

Variable	Cronbach's Alpha	Number of Items
Engagement Questionnaire	0.884	13

The reliability coefficient exceeded the commonly accepted threshold of 0.70, indicating that the engagement questionnaire possessed high internal consistency and was appropriate for use in this study. This result demonstrates that the instrument reliably measured students' engagement during Kahoot-based learning activities.

Normality Testing

Normality testing was conducted before inferential statistical analysis to examine whether the data distribution met the assumptions of parametric testing. The Kolmogorov–Smirnov and Shapiro–Wilk tests were employed to analyze the normality of engagement scores (E_S) and assessment scores (A_S).

The results presented in Table 3 indicate that both variables produced significance values below 0.05. Therefore, the data were considered not normally distributed.

Table 3. Tests of Normality

Variable	Kolmogorov–Smirnov Sig.	Shapiro–Wilk Sig.	Interpretation
E_S	< 0.001	< 0.001	Not Normal
A_S	< 0.001	< 0.001	Not Normal

Because the normality assumption was not fulfilled, non-parametric statistical analysis using Spearman's rank-order correlation was selected to examine the relationship between students' engagement and assessment scores.

Correlation Between Engagement and Assessment Scores

Spearman's rank-order correlation analysis was conducted to determine the strength and direction of the relationship between students' engagement in Kahoot-based learning activities and their comprehension of fasting (*Samm*) material.

The results demonstrated a strong positive correlation between engagement scores (E_S) and assessment scores (A_S), with a correlation coefficient of 0.883 and a significance value below 0.001. This finding indicates that higher levels of student engagement were associated with higher comprehension scores in Fiqh learning.

Table 4. Spearman Correlation Between Engagement and Assessment Scores

Variable	Correlation Coefficient (ρ)	Sig. (2-tailed)	Interpretation
E_S and A_S	0.883	< 0.001	Strong Positive Correlation

The correlation coefficient can be interpreted using the following mathematical representation:

$$\rho = 0.883$$

The value of $\rho=0.883$ indicates a very strong positive relationship between the two variables. This means that students who demonstrated higher engagement during Kahoot-based learning activities tended to achieve better comprehension scores on fasting (*Sawm*) material.

Overall, the findings indicate that Kahoot-based Game-Based Learning contributed positively to students' engagement and comprehension in Fiqh learning. Students who demonstrated higher engagement during the learning activities tended to achieve better assessment outcomes on fasting (*Sawm*) material. These results suggest that interactive digital learning environments have the potential to support more effective and engaging learning experiences in Madrasah Ibtidaiyah contexts.

To better understand the implementation of Kahoot-based learning, Figure 1 presents an illustration of the Kahoot platform used during the Fiqh learning session. Kahoot was selected because its interactive features are capable of increasing students' motivation and participation during classroom activities.



Figure 1. Kahoot Interface example during Fiqh Learning Session

As shown in Figure 1, the interactive display created a visually engaging learning environment that encouraged students to participate in classroom activities actively. Through game-based quizzes, students were able to combine elements of enjoyment and learning simultaneously. The use of Kahoot helped maintain students' attention, increased classroom

participation, and created a more dynamic learning atmosphere during the study of fasting (Sawm) material.

To visualize the statistical relationship between engagement and assessment scores, Figure 2 presents a scatter plot illustrating the correlation between the two variables.

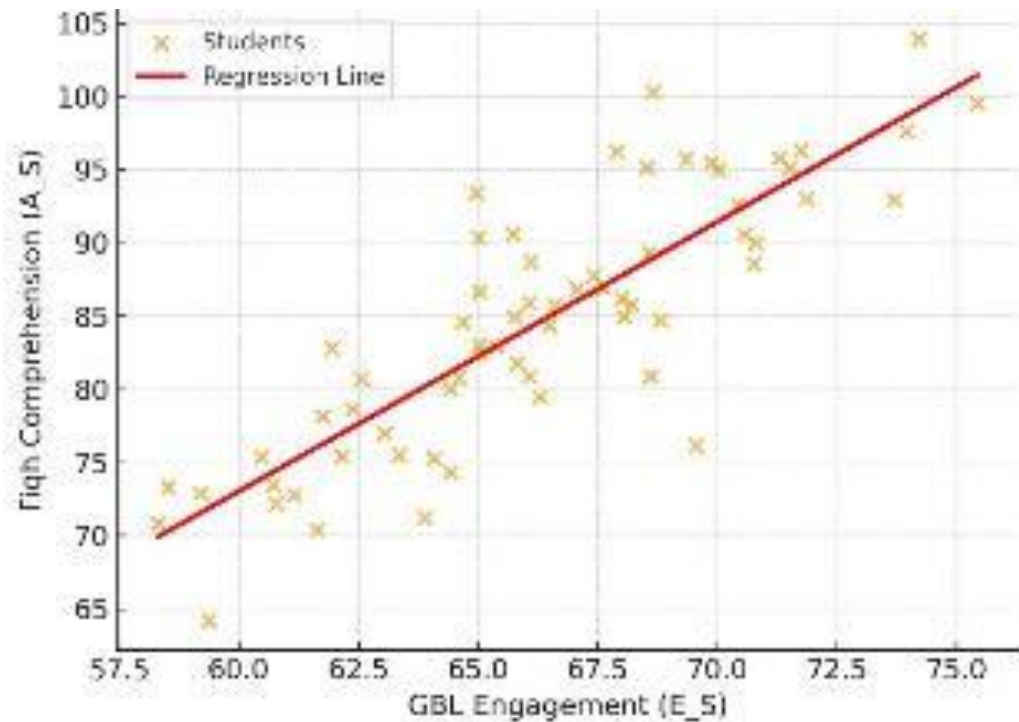


Figure 2. Scatter Plot of Engagement Scores and Assessment Scores

Figure 2 demonstrates a clear upward trend between engagement scores and assessment scores. Students who demonstrated higher levels of engagement during Kahoot-based learning activities generally achieved better comprehension outcomes in Fiqh learning. The distribution of the data points supports the findings of the Spearman correlation analysis, indicating a strong positive relationship between the two variables.

DISCUSSION

Student Engagement in Kahoot-Based Game-Based Learning

Student engagement has become one of the most important indicators of learning success in contemporary digital educational environments. Previous studies have shown that interactive learning technologies can increase student participation, motivation, attention, and classroom involvement (Getenet & Tualaulelei, 2023; Guaña-Moya et al., 2024). In

Islamic elementary education, engagement is particularly important because Fiqh learning often involves abstract religious concepts that require meaningful and student-centered instructional approaches. The findings of this study indicate that students demonstrated relatively high engagement during the Kahoot-based Game-Based Learning (GBL) activity on the topic of Sawm. Descriptive statistics revealed a high mean engagement score (E_S) ($M = 65.65$, $SD = 2.944$), indicating that students generally responded positively to the learning activity. During the Kahoot session, students appeared enthusiastic, actively answered quiz questions, and remained attentive throughout the lesson. These findings support previous research arguing that game-based learning environments create more dynamic and participatory classrooms compared to conventional lecture-based instruction (Ashfaq, 2025; Thi, 2025). Therefore, the findings suggest that Kahoot-based GBL is positively associated with higher student engagement in Fiqh learning.

The engagement observed in this study extended beyond simple classroom participation and reflected behavioral, emotional, and cognitive dimensions of engagement (Hasanov et al., 2021). Students actively interacted with the learning material, demonstrated enthusiasm during quizzes, and maintained focus throughout the activity. Kahoot's features, such as instant feedback, competitive rankings, and real-time interaction, appeared to encourage students to participate more confidently and consistently during the learning process. In addition, most students actively participated regardless of their academic background or previous experience with educational games, indicating that Kahoot-based GBL may support more inclusive classroom participation. These findings align with studies suggesting that gamified learning environments can reduce participation barriers and increase students' willingness to engage in classroom activities (Ukgoda, 2025). Consequently, the integration of Kahoot into Fiqh instruction reflects how digital learning strategies can support more interactive, student-centered, and relevant learning experiences in contemporary Islamic elementary education.

Relationship Between Engagement and Fiqh Comprehension

One of the primary objectives of this study was to examine the relationship between students' engagement and their comprehension of Fiqh material. Previous studies have consistently reported that students who are more actively engaged in learning activities tend to achieve better academic outcomes (Sahito, 2025). The statistical analysis in this study revealed a strong positive relationship between engagement scores (E_S) and assessment

scores (A_S). The Spearman correlation analysis showed a statistically significant correlation coefficient of $r = .883$, $p < .001$, indicating that higher engagement levels were associated with higher levels of comprehension regarding the topic of Sawm in Fiqh learning. These findings suggest that students who actively participated in Kahoot-based learning activities tended to demonstrate better understanding of the learning material.

The regression analysis further strengthened this interpretation by showing that engagement scores significantly predicted assessment scores ($\beta = .859$, $p < .001$). In addition, the coefficient of determination ($R^2 = .738$) indicated that approximately 73.8% of the variance in students' assessment scores was associated with engagement levels. Although the correlational design of this study does not allow causal conclusions, the findings demonstrate that engagement had a substantial predictive association with students' comprehension outcomes within the Kahoot-based learning environment. These results align with constructivist learning perspectives, which emphasize active participation, interaction, and feedback as important elements in knowledge construction (Nurhuda et al., 2023). Through Kahoot-based activities, students were actively involved in answering questions, receiving immediate feedback, and reflecting on their understanding, which may have supported deeper cognitive processing during the learning process.

The scatter plot analysis also visually confirmed the positive relationship between engagement and comprehension. The upward trend observed in the scatter plot demonstrated that students with higher engagement scores generally achieved higher assessment scores. This consistency between statistical and visual evidence strengthens the credibility of the findings and supports the interpretation that engagement and comprehension are closely associated within Kahoot-based learning environments. Furthermore, the findings indicate that interactive digital learning activities may provide opportunities for students to become more cognitively involved during Fiqh instruction. Therefore, the results suggest that Kahoot-based Game-Based Learning may serve as a relevant instructional strategy for supporting meaningful learning experiences in Islamic elementary education contexts.

Kahoot-Based Learning and Constructivist Perspectives

The findings of this study can also be interpreted through the lens of constructivist learning theory. Constructivism argues that students actively construct knowledge through interaction, participation, and meaningful learning experiences rather than passively receiving

information from teachers (Efgivia et al., 2021). In Kahoot-based learning activities, students actively engaged with the instructional material through quizzes, feedback mechanisms, and classroom interaction. This learning process reflects constructivist principles emphasizing active involvement in knowledge construction.

Kahoot-based learning also supports social interaction during classroom instruction. Students participated collectively in quiz activities while observing rankings and responses displayed in real time. This interactive environment may encourage collaborative learning experiences and stimulate students' curiosity and motivation. According to constructivist perspectives, learning becomes more meaningful when students actively interact with both the learning content and the surrounding learning environment (Saarsar, 2018). Therefore, the present findings support the relevance of constructivist principles in digital Islamic education contexts.

Another constructivist element reflected in the findings is the role of immediate feedback. During the Kahoot sessions, students instantly received information regarding correct and incorrect answers. This immediate feedback allowed students to evaluate their understanding and adjust their thinking processes during the lesson. Such feedback mechanisms may help students strengthen conceptual understanding and reduce misconceptions. Consequently, Kahoot-based learning may facilitate more reflective and active learning experiences among elementary school students.

Importantly, the study does not claim that Kahoot directly causes improvements in learning outcomes. Instead, the findings suggest that interactive and participatory learning environments are associated with stronger engagement and higher comprehension levels. Therefore, the contribution of this study to constructivist theory lies primarily in demonstrating how digital gamification may support active participation and interaction within Fiqh learning settings at the Madrasah Ibtidaiyah level.

Alignment with SDG-4 in Islamic Primary Education

The findings of this study also demonstrate potential alignment with the broader objectives of United Nations Sustainable Development Goal 4 (SDG-4), which emphasizes inclusive and quality education for all learners (Lee et al., 2016; Leite, 2022). SDG-4 highlights the importance of improving learning quality through innovative and effective educational practices (Riaz et al., 2024; Rulandari, 2021). In this study, Kahoot-based Game-Based Learning provided an interactive learning environment that encouraged active participation

and student engagement during Fiqh instruction. Although the study does not directly measure SDG indicators, the findings suggest that digital learning innovation may contribute to improving classroom learning experiences within Islamic primary education contexts.

The use of Kahoot in Fiqh learning reflects efforts to integrate educational technology into religious instruction. This integration may help teachers create more engaging and student-centered learning environments. Interactive learning activities can potentially increase students' motivation and participation, which are important components of quality education (Akçay et al., 2024). Therefore, the findings indicate that Kahoot-based learning may support educational practices that are compatible with the principles promoted within SDG-4.

However, the contribution of this study to SDG-4 should be interpreted cautiously. The research was conducted within a single Madrasah Ibtidaiyah and focused specifically on the topic of Sawm in Fiqh learning. Consequently, the findings cannot be generalized broadly to represent educational quality across wider contexts. Rather than demonstrating direct achievement of SDG-4 targets, the study provides contextual empirical evidence showing that interactive digital learning strategies may support student engagement and comprehension in Islamic elementary education. Thus, the relevance to SDG-4 should be viewed as a potential educational alignment rather than a definitive measurement of sustainable development outcomes.

Comparison with Previous Studies

Previous studies have demonstrated that conventional Islamic education methods generally rely on teacher-centered instruction and memorization-oriented learning processes. Research entitled *Metodologi Pengajaran PAI dengan Metode Pembelajaran Konvensional di Madrasah Tsanawiyah Negeri 3 Kabupaten Batang Hari* by Asmadi et al. (2024) explained that conventional approaches position students primarily as passive recipients of information during classroom instruction. In contrast, the present study found that Kahoot-based Game-Based Learning (GBL) created a more interactive and participatory learning environment during Fiqh instruction on the topic of Sawm. Students actively participated in quiz activities, responded to questions in real time, and demonstrated relatively high engagement scores throughout the learning sessions. Therefore, the present findings suggest that Kahoot-based GBL may provide a more student-centered learning atmosphere compared to conventional Islamic instructional approaches.

The findings of this study are also consistent with previous Game-Based Learning research conducted at different educational levels. The study entitled “*Pengaruh Model Pembelajaran Game Based Learning Terhadap Motivasi Belajar Siswa SMP*” by Salsabila et al. (2025) reported that GBL positively influenced junior high school students’ learning motivation and classroom participation. Similarly, the current study found that elementary school students at the Madrasah Ibtidaiyah level showed high engagement during Kahoot-based Fiqh learning activities. However, the present study differs because it specifically examined the statistical relationship between Engagement Scores (E_S) and Assessment Scores (A_S) within Islamic primary education contexts. These findings indicate that interactive game-based learning strategies may also function effectively among younger learners by creating enjoyable and engaging learning experiences.

In addition, the present study supports previous literature examining the use of digital educational media such as Wordwall and Educandy in Islamic education. The study Utilization of Educandy-Based Educational Games in Islamic Education by Dalimunthe & Zahara (2025) emphasized that Educandy supports enjoyable and interactive Islamic learning experiences, while Pemanfaatan Wordwall pada Model Game Based Learning terhadap Digitalisasi Pendidikan Sekolah Dasar highlighted the role of Wordwall in supporting classroom digitalization and student participation. Similar to these studies, the current findings demonstrate that Kahoot-based learning may encourage active participation and sustained classroom engagement. Nevertheless, Kahoot differs through its real-time ranking system and immediate feedback features, which may strengthen classroom interaction and students’ attention during learning activities. Therefore, the present study contributes empirical-contextual evidence regarding the relationship between engagement and comprehension within Kahoot-based Fiqh instruction at the Madrasah Ibtidaiyah level.



Figure 3. Conceptual Framework linking GBL, Engagement, *Fiqh* Comprehension, and SDG-4

This figure illustrates the relationship between GBL (GBL), student engagement, and *Fiqh* comprehension. It highlights how GBL functions as an instructional strategy that actively involves students in the learning process. Through interactive elements, GBL increases students' engagement during learning activities. Higher engagement then contributes to improved comprehension of *Fiqh* concepts. The model also demonstrates the interconnected nature of these variables within the learning process. Overall, this relationship supports the achievement of SDG-4 by promoting quality and effective education in Islamic learning contexts.

Research Limitations

Despite the robust findings, this study has several limitations that should be acknowledged. The sample size was limited to 65 students from a single Madrasah Ibtidaiyah, which may affect the generalizability of the findings to broader educational contexts. The study also focused only on one topic in Islamic jurisprudence (*Fiqh*), namely *Sawm*, which limits the scope of the findings to a specific content area. In addition, because this study employed a correlational design, the findings should not be interpreted as evidence of causal effects or instructional effectiveness. Furthermore, the use of self-report engagement questionnaires may introduce response bias during the data collection process. These limitations should therefore be considered carefully when interpreting the results of the study.

Future research should address these limitations by involving larger and more diverse samples across different regions and educational levels. Studies involving various madrasah contexts may provide more comprehensive insights regarding the implementation of Kahoot-based Game-Based Learning (GBL) in Islamic education. Researchers could also explore other Islamic subjects such as prayer (*Salah*), zakat, *Aqidah Akhlak*, or Qur'anic studies to broaden the scope of investigation. The use of mixed-methods approaches may increase the richness and validity of the findings by combining quantitative and qualitative perspectives. Longitudinal studies could also examine the long-term relationship between student engagement and learning outcomes in digital learning environments. Thus, further research is needed to strengthen and expand the empirical evidence regarding Kahoot-based GBL in Madrasah Ibtidaiyah learning contexts.

CONCLUSION

This study examined the relationship between students' engagement in Kahoot-based Game-Based Learning (GBL) and their comprehension of Fiqh material on the topic of Sawm in Madrasah Ibtidaiyah. The findings revealed relatively high levels of student engagement ($M = 65.65$, $SD = 2.944$) and assessment performance ($M = 19.03$, $SD = 0.684$) during the Kahoot-based learning activity. The statistical analysis demonstrated a strong and statistically significant positive relationship between engagement scores (E_S) and assessment scores (A_S) ($r = .883$, $p < .001$). Furthermore, the regression analysis showed that engagement significantly predicted assessment scores ($\beta = .859$, $p < .001$), while the coefficient of determination ($R^2 = .738$) indicated that approximately 73.8% of the variance in students' assessment scores was associated with engagement levels. These findings suggest that students who demonstrated higher engagement during Kahoot-based learning activities also tended to achieve better comprehension outcomes in Fiqh learning. In addition, the use of interactive and student-centered digital learning approaches reflects the broader educational direction promoted within the SDG-4 framework, particularly in relation to improving the quality and inclusiveness of classroom learning experiences.

Despite these findings, several limitations should be acknowledged. The study involved only 65 students from a single madrasah, which may limit the generalizability of the results to broader educational contexts. In addition, the study focused only on one topic in Fiqh learning, namely Sawm, and relied partly on self-reported engagement data, which may introduce response bias. Because this study employed a correlational design, the findings should not be interpreted as evidence of causal effects or instructional effectiveness. Future research is therefore recommended to involve larger and more diverse samples, include various Islamic education subjects, and apply mixed-methods or longitudinal approaches to obtain deeper insights into students' learning experiences and engagement patterns over time. Overall, this study contributes empirical-contextual evidence regarding the relationship between Kahoot-based GBL, student engagement, and Fiqh comprehension in Madrasah Ibtidaiyah learning environments.

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