

THE UTILIZATION OF LEARNING TECHNOLOGY TO IMPROVE LEARNING OUTCOMES IN ISLAMIC EDUCATION FOR STUDENTS IN THE DIGITAL AGE

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Abstract: The planned and systematic use of information and communication technology devices, media, and resources is essential to support effective learning in the era of globalization. The challenges of teaching Islamic Education at Yasmida Ambarawa Senior High School have prompted the need for technology-based innovation. This study aims to analyze the use of learning technology, particularly the interactive digital media Kahoot, in improving Islamic education learning outcomes. The research method employed a qualitative approach through observation, interviews with teachers and the school principal, and documentation of student learning outcomes. The results indicate that the integration of Kahoot in learning creates a more engaging, interactive, and motivating learning environment, encouraging students to participate actively. Improvements were observed in the cognitive, affective, and psychomotor aspects of the students. Additionally, Kahoot's real-time feedback feature accelerates evaluation and improvement of students' understanding. The implications of this study emphasize the importance of enhancing teachers' competencies in educational technology, developing diverse digital media, and providing technological facilities in schools. The integration of educational technology has proven to be an effective strategy for improving the quality and outcomes of Islamic education in the present era.

Keywords: Learning Media, Learning Outcomes, Islamic Education

Abstrak: Pemanfaatan perangkat, media, dan sumber teknologi informasi dan komunikasi yang terencana dan sistematis menjadi kebutuhan penting untuk mendukung efektivitas pembelajaran di era globalisasi. Tantangan pembelajaran Pendidikan Agama Islam di SMA Yasmida Ambarawa mendorong perlunya inovasi berbasis teknologi. Penelitian ini bertujuan menganalisis pemanfaatan teknologi pembelajaran, khususnya media digital interaktif Kahoot, dalam meningkatkan hasil belajar Pendidikan Agama Islam. Metode penelitian menggunakan pendekatan kualitatif melalui observasi, wawancara dengan guru dan kepala sekolah, serta dokumentasi hasil belajar siswa. Hasil penelitian menunjukkan bahwa integrasi Kahoot dalam pembelajaran menciptakan suasana belajar yang lebih menarik, interaktif, dan memotivasi siswa untuk berpartisipasi aktif. Peningkatan terlihat pada aspek kognitif, afektif, dan psikomotorik peserta didik. Selain itu, fitur umpan balik real-time dari Kahoot mempercepat evaluasi dan perbaikan pemahaman siswa. Implikasi penelitian ini menekankan pentingnya peningkatan kompetensi guru dalam teknologi pembelajaran, pengembangan media digital yang variatif, dan penyediaan fasilitas teknologi di sekolah. Integrasi teknologi pembelajaran terbukti menjadi strategi efektif untuk meningkatkan kualitas dan hasil belajar Pendidikan Agama Islam di masa kini.

Kata Kunci: Media Pembelajaran, Hasil Belajar, Pendidikan Agama Islam

INTRODUCTION

Education is an essential part of human life that cannot be separated from the process of growth and development. Education functions as a conscious process to develop individual potential optimally, both in cognitive, affective, and psychomotor aspects (Tilaar, 2000). Not only oriented toward knowledge transfer, education also shapes character, personality, and skills that are in line with the needs of society, nation, and state. This is in line with Law Number 20 of 2003 on the National Education System, which states that education aims to develop students' abilities to become people who are faithful, pious, have noble character, are healthy, knowledgeable, skilled, creative, and independent.

In the context of formal education in Indonesia, Islamic Education plays a strategic role as a means of character and moral development for students. Islamic Education is not only focused on teaching religious knowledge but also nurturing spiritual and social attitudes in accordance with Islamic values. Solichin et al., (2023) explain that Islamic Education serves to shape the personality of Muslims and instill noble moral values that can be practiced in daily life. However, Islamic Education currently faces significant challenges due to the rapid development of Science and Technology, particularly digital technology. The 4th Industrial Revolution has transformed human interaction patterns, including in education, where digital technology enables the rapid dissemination

of information without spatial or temporal boundaries, leading to shifts in teaching methods and media (Pratiwi & Sukartono, 2023).

Islamic Education teachers are now faced with the need to integrate technology so that learning materials can be effectively and relevantly delivered to the digital native generation. Constructivism theory emphasizes the importance of active student involvement in building knowledge through interaction with the learning environment (Topçiu & Myftiu, 2015). Digital technology, when used appropriately, can enrich learning experiences and enhance student motivation. However, low digital literacy can lead to the use of technology that is not aligned with learning objectives (Gultom et al., 2025).

Although the technology is available, research shows that many Islamic Education teachers have not optimally utilized it due to limited technical skills and supporting facilities (Risnawati et al., 2024). This situation is also evident at SMA Yasmida Ambarawa, where the majority of students have digital devices, yet the learning outcomes in Islamic Education show that 62.07% of students have not met the Minimum Competency Criteria in Islamic Education. This data indicates a gap between the potential for digital technology utilization and the expected learning outcomes.

One potential innovation to address this gap is the use of Kahoot, a game-based learning platform. Kahoot allows teachers

to create interactive quizzes that students can access via their devices, creating a competitive, enjoyable, and participatory learning environment. Nasution (2023) states that Kahoot can enhance students' motivation, engagement, and understanding of the learning material. In the context of Islamic Education, Kahoot is relevant for accommodating the learning style of the digital generation while strengthening mastery of the material through interactive repetition.

The results of the researcher's preliminary research show that 92% of students at Yasmida Ambarawa High School have personal devices, and 78% of them use the internet as an additional learning resource. School facilities such as Wi-Fi and projectors are available, although they have not been fully utilized in Islamic Education. This condition opens up great opportunities to integrate Kahoot into the teaching and learning process to improve learning outcomes.

This study aims to analyze the use of Kahoot-based learning technology in the to improve Islamic Education learning outcomes at SMA Yasmida Ambarawa, identify supporting and inhibiting factors in its implementation, and evaluate its effectiveness compared to conventional learning methods in increasing student engagement and understanding.

The uniqueness of this study lies in its focus on combining the application of Kahoot in Islamic Education with consideration of religious, spiritual, and moral values, which have not always been

the focus of previous studies. Previous studies have extensively discussed the use of Kahoot in general subjects such as mathematics and language (Perdana et al., 2020; Sulistiyawati et al., 2021), while its application in Islamic Education has rarely been studied in depth. This study also integrates constructivism and behaviorism theories as an analytical framework, providing a more comprehensive theoretical perspective.

The contributions of this study are expected to cover three aspects. First, from a theoretical perspective, the results of this study can enrich the literature on innovation in digital technology-based learning media for Islamic Education using a game-based learning approach. Second, from a practical perspective, the findings of this study can serve as guidelines for Islamic Education teachers in optimizing technology to improve student learning outcomes. Third, from a policy perspective, the results of this research can serve as a reference for schools and education authorities in developing teacher training programs related to the effective use of learning technology that aligns with Islamic values.

Thus, this study not only addresses the practical need to improve Islamic Education learning outcomes at SMA Yasmida Ambarawa but also provides a scientific foundation that can be adapted by other schools with similar characteristics. The rapid advancement of technology demands innovative learning methods that can balance digital progress with the

strengthening of religious values. Through the implementation of Kahoot as a learning medium, it is hoped that an interactive, enjoyable, and meaningful learning process will be created, ultimately fostering a generation that excels in knowledge, skills, faith, and character.

METHOD

This study employs a field research design with a descriptive qualitative approach. Field research was chosen because the researcher aims to obtain data directly from primary sources at the research site to gain a deep understanding of the phenomenon being studied. The descriptive qualitative approach was chosen because this study focuses on the description and in-depth analysis of the utilization of Kahoot-based learning technology in improving the learning outcomes of Islamic Education at SMA Yasmida Ambarawa. This approach allows the researcher to capture the meaning, perceptions, and experiences of the research subjects naturally according to the conditions in the field.

The research location was determined at SMA Yasmida Ambarawa, Pringsewu Regency, Lampung. The selection of this location was based on several reasons. First, SMA Yasmida Ambarawa has begun to integrate learning technology, including the use of digital devices and the internet, but its utilization in Islamic Education learning is still not optimal. Second, preliminary research results showed that 62.07% of students had

not met the minimum passing criteria for Islamic Education, necessitating a study to find more effective learning solutions. Third, the availability of facilities such as school Wi-Fi networks, projectors, and personal devices owned by the majority of students presents a significant opportunity for the implementation of technology-based learning media such as Kahoot.

Research informants were selected purposively, based on their knowledge, experience, and direct involvement in the Islamic Education learning process at the school. The main informants included Islamic Education teachers at SMA Yasmida Ambarawa, the school principal, and students from various grade levels. Additionally, administrative staff responsible for providing technological facilities also served as supporting informants to obtain a more comprehensive understanding of the available facilities and infrastructure.

Data collection was conducted using three main techniques. First, in-depth interviews were used to obtain detailed information about teachers' experiences, views, and strategies in using Kahoot as a learning medium for Islamic Education. Interviews were also conducted with the principal and relevant staff to determine managerial and technical support for the use of learning technology. Second, participatory observation was conducted to directly observe the Islamic Education learning process using Kahoot, including interactions between teachers and students, student responses to the learning media,

and the learning atmosphere created. Third, documentation was used to collect supporting data in the form of syllabi, lesson plans, photos of learning activities, and student learning outcomes before and after using Kahoot.

Data analysis in this study followed the interactive model developed by Miles, Huberman, and Saldaña (2014), which includes three main steps. First, data reduction, which is the process of selecting, focusing, and simplifying raw data obtained from the field to make it relevant to the research focus. Second, data display, which is organizing data into descriptive narratives, matrices, or tables to facilitate the extraction of meaning. Third, conclusion drawing and verification, which involves formulating research findings based on patterns, relationships, or trends emerging from the data, which are then verified by comparing the results of interviews, observations, and documentation to ensure the validity of the findings.

Through a combination of descriptive qualitative approaches, purposive informant selection, and the use of various data collection techniques, this study is expected to provide a comprehensive overview of the use of Kahoot as a learning technology in improving Islamic Education learning outcomes at SMA Yasmida Ambarawa.

RESULTS AND DISCUSSION

This study aims to describe the utilization of digital media, particularly the Kahoot application, in Islamic Education

learning, as well as its influence on students' motivation and learning outcomes in the digital era. The discussion of the research results will be examined based on three sub-foci, namely:

Utilization of Learning Technology

The utilization of learning technology is a systematic and planned process of using various tools, media, and information and communication technology devices in learning activities. Learning technology includes hardware such as computers, projectors, and mobile devices, as well as software in the form of digital learning applications, online learning platforms, interactive videos, and other multimedia learning resources (Fidesrinur, 2011).

According to Heinich, Molenda, Russell, and Smaldino, learning technology is various sources and tools used to assist the learning process, including the use of print, audio, visual, and digital technologies that support the delivery of material and learning interactions (Marianti, 2023; Yerusalem et al., 2015).

The use of learning technology aims to improve the effectiveness and efficiency of the learning process by creating a more engaging, interactive, and contextual learning environment. Technology enables teachers to deliver material in a varied and innovative manner, facilitate two-way communication between teachers and students, and provide quick and accurate feedback.

In the era of globalization and the digital revolution, the use of educational technology has become crucial to ensure that the educational process can adapt to the evolving times and the increasingly dynamic needs of learners. According to Bates, learning technology can expand access to education, enrich learning experiences, and improve the quality of learning through personalization and active student involvement. The use of learning technology is the process of using various devices, applications, and digital resources in a planned and structured manner in learning activities to support the achievement of educational goals. Learning technology is not limited to electronic devices but also includes digital methods, systems, and strategies that facilitate interaction between teachers, students, and instructional materials (Anas, 2023; Paulana & Kanus, 2025).

According to the Association for Educational Communications and Technology, educational technology is the ethical study and practice of facilitating learning and improving performance through the creation, use, and management of processes and resources. In the context of 21st-century learning, the use of technology enables the learning process to be more interactive, personalized, and flexible. Digital learning media such as Kahoot, Google Classroom, instructional videos, and other e-learning platforms provide a more engaging and participatory learning experience compared to conventional methods.

The findings of the research through observation, interviews, and documentation produced the following results:

The use of learning technology in Islamic Education subjects has shown positive and significant developments in improving the quality of the teaching and learning process. The use of digital media such as the Kahoot application has become one of the main innovations implemented by Islamic Education teachers to create interactive, enjoyable, and effective learning. Classroom observations show that teachers routinely use Kahoot as a tool to present interactive quizzes that not only test students' understanding but also motivate them to participate more actively. The learning atmosphere becomes more lively with healthy competition among students through a real-time points system and leaderboard.

Interviews with the principal and curriculum coordinator confirm that most teachers at SMA Yasmida, including Islamic Education teachers, already have basic skills in operating various digital media such as Kahoot, Google Classroom, and other learning applications. However, some teachers still require further training to optimize the use of technology. The school actively provides training and guidance to ensure that all teachers can effectively utilize technology in the learning process. Teachers' creativity in integrating technology with Islamic Education materials is also very evident. Islamic Education teachers at SMA Yasmida are able to package materials such as the pillars of

faith, morals, and Islamic history into relevant and challenging digital quizzes. In addition to Kahoot, they also utilize educational videos, Quizizz, and other digital platforms to enrich the methods of delivering Islamic Education material so that students can more easily understand and remember important concepts. This is acknowledged by students who feel that learning has become more interesting and less boring, thereby increasing their motivation and engagement.

Based on documentation in the form of learning recordings and student assessment data, there has been an improvement in learning outcomes after the implementation of digital media. Students are able to answer questions more quickly and accurately, and are more active in class discussions. Immediate feedback from Kahoot also helps students identify their mistakes and correct them promptly, thereby deepening their understanding of the material.

Evaluations conducted through classroom supervision and subject teacher discussion forums indicate that the use of digital-based learning media at SMA Yasmida is quite high, especially in Islamic Education. Teachers and students have responded positively to this learning method, although there is still room for improvement in teachers' technical skills to ensure more optimal and sustainable use of technology.

Overall, the use of learning technology at SMA Yasmida Ambarawa, particularly digital media such as Kahoot,

has had a positive impact on the Islamic Education learning process, including increased motivation, engagement, understanding of the material, and overall student learning outcomes.

Based on theoretical studies and field findings, it can be concluded that the use of learning technology, particularly interactive digital media such as Kahoot, has proven effective in improving the quality of the Islamic Education learning process. Kahoot, as a game-based learning platform, has significantly increased student motivation, active engagement, and understanding of the material. With the support of quick direct feedback and healthy competition among students, the use of this technology transforms the learning atmosphere into a more interesting, interactive, and enjoyable one. Additionally, the proper integration of technology, pedagogy, and content by teachers is also a crucial factor in the successful implementation of educational technology. Therefore, the optimal utilization of educational technology is highly recommended to enhance learning outcomes and the quality of education in the current digital era.

The Effectiveness of Kahoot in Islamic Education

The effectiveness of Kahoot in learning refers to the extent to which this technology-based interactive learning media is able to achieve learning objectives optimally through increased motivation, engagement, understanding,

and learning outcomes of students (Andari, 2020). Kahoot is a digital learning platform that adopts the concept of *game-based learning*, where game elements such as challenges, scores, and healthy competition are used to trigger intrinsic motivation and encourage active student participation. In line with the findings of Nursafitri et al., (2023), game-based learning can enhance students' cognitive engagement by providing a learning experience that is both enjoyable and meaningful.

From a behaviorist perspective, Kahoot provides *immediate feedback* that serves as *positive reinforcement*. Quick confirmation of answers helps students repeat correct learning behaviors while effectively correcting mistakes. Meanwhile, within the constructivist framework, Kahoot facilitates active learning through social interaction, collaboration, and discussion, aligning with Vygotsky's Social Learning Theory which emphasizes the role of interaction in knowledge formation. Kahoot is also relevant to Cognitive Load Theory because it presents material in a concise and interactive format, thereby reducing excessive cognitive load and facilitating *retrieval practice* that strengthens material retention. From the perspective of Self-Determination Theory (Reeve, 2012), the use of Kahoot meets students' psychological needs for competence, autonomy, and social connectedness, which in turn enhances learning motivation.

Field findings through observation, interviews, and documentation at SMA Yasmida Ambarawa indicate that the implementation of Kahoot in Islamic Education learning has a significant impact on improving motivation, engagement, and understanding of the material. Teachers reported that the classroom atmosphere became more lively and competitive; students who were previously passive began to actively participate; and there was an increase in students' self-confidence because they could see the results immediately without the pressure of conventional exams. The school also confirmed that Kahoot created a learning atmosphere that encouraged two-way interaction between teachers and students.

In addition to increasing engagement, Kahoot contributed positively to material comprehension. Immediate feedback on answers enabled students to identify mistakes quickly and improve their understanding. Teachers stated that the *real-time scoring* and *leaderboard* features motivate students to study harder to achieve better scores. This effectiveness is reinforced by the appropriate integration of technology in accordance with the *Technological Pedagogical Content Knowledge* framework, ensuring that the use of Kahoot is not merely entertaining but aimed at achieving learning competencies.

The analysis of these findings indicates that Kahoot is not only an efficient formative assessment tool but

also a constructive learning tool that combines cognitive, affective, and social aspects. The implementation of Kahoot at SMA Yasmida Ambarawa has successfully created interactive, enjoyable, and competitive learning experiences while improving overall learning outcomes. Therefore, Kahoot has great potential for broader adoption in the context of Islamic Education, especially when supported by well-developed pedagogical strategies and technology integration aligned with learning objectives.

Learning Outcomes in Islamic Education

Islamic Education learning outcomes represent the competencies achieved by students after undergoing a learning process focused on Islamic teachings. These achievements are not limited to theoretical knowledge but also include the internalization of moral and spiritual values and the ability to apply Islamic teachings in daily life (Rahman, 2023; Solichin et al., 2023). Within the framework of the revised Bloom's Taxonomy by Anderson and Krathwohl, the learning outcomes of Islamic Religious Education can be mapped into three main domains: cognitive, affective, and psychomotor (Anas, 2023).

In the cognitive domain, student success is measured by their ability to understand, remember, analyze, and apply Islamic concepts such as the pillars of faith, the pillars of Islam, fiqh law, the history of the Prophet, and principles of morality (Yenuri, 2021). The affective

domain reflects the extent to which students internalize the values of faith, piety, and noble morals, which are reflected in their attitudes, behavior, and sense of moral responsibility (Said & Zubair, 2024). Meanwhile, the psychomotor domain relates to students' skills in performing worship, practicing Islamic teachings, and displaying Islamic behavior in social interactions (Solichin et al., 2023).

In line with the Ministry of Education and Culture's perspective, the outcomes of Islamic Education are not solely measured through exam scores but through the integration of thinking skills, understanding of values, and practical skills (Abdul Rahman et al., 2021). Therefore, the criteria for the success of Islamic Education learning in secondary schools include understanding the material, increased spiritual motivation, character formation, and the ability to consistently implement Islamic teachings in social life (Neliwati et al., 2024).

The outcomes of Islamic Religious Education learning are significantly influenced by the strategies, methods, and learning media employed. Recent research indicates that the use of interactive digital technology such as *Kahoot*, educational videos, and quiz-based applications can enhance conceptual understanding, material retention, and student interest in learning (Andari, 2020; Sulistiyawati et al., 2021; Paulana & Kanus, 2025). These interactive media provide a more engaging learning experience, encourage

active participation, and reduce boredom in the learning process (Perdana et al., 2020).

Operationally, evaluating the outcomes of Islamic Education requires a comprehensive approach. Evaluation instruments should not only consist of written tests but also include attitude observations, interviews, portfolio assessments, and student self-reflection (Anas, 2023; Marianti, 2023). Thus, learning outcomes assessment should reflect the integration of the three domains of learning, not merely formal academic achievements (Nafidah et al., 2025).

Research conducted at SMA Yasmida Ambarawa shows that the integration of *Kahoot* as an interactive digital learning medium has a significant positive impact on the learning outcomes of the Islamic Education subject (Nasution, 2023). Empirical data reveals an increase in the average academic scores of students as well as the percentage of learning completion after the use of *Kahoot* (Risnawati et al., 2024). Furthermore, the interactive quiz mechanism with *real-time feedback* has proven to strengthen students' memory and accelerate the improvement of conceptual understanding, particularly in subjects such as the pillars of faith, the pillars of Islam, and Islamic history (Paulana & Kanus, 2025; Sulistiyawati et al., 2021).

Teachers and school principals reported that the use of *Kahoot* made

students more confident, active, and prepared for evaluations. Students who were previously passive become more engaged, both in answering questions and discussing after the quiz session (Perdana et al., 2020). The healthy competitive factor introduced by *Kahoot* also motivates students to study the material more deeply before the lesson begins (Picauly, 2024).

Thus, the integration of digital technology such as *Kahoot* not only impacts academic performance but also promotes more interactive, enjoyable, and meaningful Islamic Education learning (Gultom et al., 2025; Marianti, 2023). This method has proven effective in addressing cognitive, affective, and psychomotor aspects in an integrated manner (Deesaeh, 2025). Therefore, the utilization of interactive media based on technology is worthy of consideration as a learning strategy for Islamic Education in the digital era to ensure the comprehensive and sustainable achievement of religious education objectives (Arif, 2024; Sukhoiri, 2022).

CONCLUSION

Based on the above discussion, it can be concluded that the utilization of learning technology at SMA Yasmida Ambarawa, particularly through interactive digital media such as *Kahoot*, has been implemented systematically in the Islamic Education learning process. Teachers utilize applications such as *Kahoot*, Google Classroom, and

educational videos to create a more engaging, interactive, and relevant learning environment aligned with technological advancements and the needs of students in the global era. The implementation of Kahoot has proven effective in increasing students' learning motivation by creating a healthy competitive atmosphere through a real-time point system and *leaderboard*. The immediate feedback provided helps students quickly identify and correct their mistakes, thereby deepening their understanding of the material. Positive changes are also evident in students who were initially passive becoming more active participants and more confident in class discussions. There was a significant improvement in Islamic Education learning outcomes after the use of interactive digital learning media. Grade data and learning documentation showed progress in students' cognitive, affective, and psychomotor domains. Kahoot not only encourages academic improvement but also strengthens memory and understanding of important concepts such as the pillars of faith, the pillars of Islam, and the history of the Prophet. Teachers and school principals confirmed that students are more prepared and motivated to face evaluations, and demonstrate consistency in implementing Islamic teachings in their daily lives. Thus, the integration of technology such as Kahoot has proven effective in creating interactive, enjoyable, and meaningful Islamic Education learning experiences,

while also strengthening the achievement of overall educational goals.

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