THE EFFECTIVENESS OF TECHNOLOGY-BASED ISLAMIC RELIGIOUS EDUCATION LEARNING MEDIA IN IMPROVING MOTIVATION AND LEARNING OUTCOMES OF ELEMENTARY SCHOOL STUDENTS

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ABSTRACT

This study aimed to analyze the effectiveness of technology-based Islamic Religious Education learning media in improving student motivation and learning outcomes at the elementary school. This study used a qualitative approach with a literature review. Data collection was carried out by reviewing articles related to technology-based Islamic Religious Education learning media in elementary schools published in the period 2020–2025. The analysis was carried out by reviewing 14 previous research results that discussed the use of various digital media. The results showed that the use of technology-based Islamic Religious Education learning media proved effective in increasing student interest, motivation, involvement, conceptual understanding, and learning outcomes. In addition, technology media was also able to strengthen religious values and provide a more contextual and enjoyable learning experience. However, the implementation of technology media still faced a number of challenges, such as limited teacher competence in using technology, limited infrastructure, dependence on internet access, and the need for content curation that was in accordance with Islamic teachings. Therefore, it was essential to offer training support, provide necessary facilities and infrastructure, and implement school policies that facilitated the optimal integration of technology media in Islamic Religious Education, particularly at the elementary school.
Keywords: *effectiveness, technology-based media, Islamic Religious Education.*

ABSTRAK

Penelitian ini bertujuan untuk menganalisis efektivitas media pembelajaran Pendidikan Agama Islam berbasis teknologi dalam meningkatkan motivasi dan hasil belajar siswa di sekolah dasar. Penelitian ini menggunakan pendekatan kualitatif dengan tinjauan pustaka. Pengumpulan data dilakukan dengan mengkaji artikel-artikel terkait media pembelajaran Pendidikan Agama Islam berbasis teknologi di sekolah dasar yang terbit pada periode 2020–2025. Analisis dilakukan dengan mengkaji 14 hasil penelitian terdahulu yang membahas pemanfaatan berbagai media digital. Hasil penelitian menunjukkan bahwa pemanfaatan media pembelajaran Pendidikan Agama Islam berbasis teknologi terbukti efektif dalam meningkatkan minat, motivasi, keterlibatan, pemahaman konseptual, dan hasil belajar siswa. Selain itu, media teknologi juga mampu memperkuat nilai-nilai keagamaan dan memberikan pengalaman belajar yang lebih kontekstual dan menyenangkan. Namun, implementasi media teknologi masih menghadapi sejumlah tantangan, seperti keterbatasan kompetensi guru dalam memanfaatkan teknologi, keterbatasan infrastruktur, ketergantungan pada akses internet, dan perlunya kurasi konten yang sesuai dengan ajaran Islam. Oleh karena itu, penting untuk memberikan dukungan pelatihan, menyediakan sarana dan prasarana yang diperlukan, serta menerapkan kebijakan sekolah yang memfasilitasi integrasi media teknologi secara optimal dalam Pendidikan Agama Islam, khususnya di sekolah dasar.
Kata kunci: efektivitas, media berbasis digital, pendidikan agama Islam.

1. Introduction

The rapid development of information and communication technology has become an important part of modern society, including in Indonesia (Kholifah, 2022; Nuryadin, 2017). This progress has not only changed the way individuals communicate and interact globally but has also had a significant impact on the world of education (Hajri, 2023). The widespread distribution of internet access has opened up opportunities for educators and students to obtain information and knowledge more quickly, efficiently, and flexibly, without being limited by space and time (Saerang et al., 2023). In the context of education, information and communication technology (ICT) makes a huge contribution to improving the quality of learning. The use of technology allows the creation of a more dynamic, enjoyable, and non-monotonous learning atmosphere and is able to foster student enthusiasm (Nuryana, 2019). The existence of interactive digital media also supports variations in the presentation of teaching materials and broadens students' horizons while providing space for educators to apply more innovative and participatory learning strategies.

The use of information technology in learning is in line with the direction of national policy, as stated in Permendikbud Number 103 of 2014, which emphasizes the importance of 21st-century learning that is centered on students (student-centered learning). However, the reality in the field shows that many learning processes are still dominated by a teacher-centered approach (teacher-centered learning), which has an impact on low active student participation, boredom in participating in learning, and weak understanding of concepts (Asrori & Suparman, 2019). This condition is exacerbated by the use of teaching materials and learning models that are less varied and do not suit the needs of students (Azizah & Alberida, 2021).

In the context of Islamic Religious Education learning, the application of information and communication technology has great potential to increase the effectiveness of learning. Islamic Religious Education learning, as a subject that aims to shape the character and spirituality of students from an early age, ideally is delivered with interesting and relevant methods (Salsabila et al., 2023). Unfortunately, the Islamic Religious Education learning process in elementary schools is still mostly carried out conventionally and one-way, so that students tend to be passive, less enthusiastic, and have difficulty understanding the material. This can be seen from the results of learning evaluations, which show that only a small number of students (24%) are able to answer questions correctly, meanwhile, 76% of other students were not able to answer the questions correctly (not yet reaching the KKM) (Rosihin, 2021). Thus, one relevant approach is the use of technology-based learning media that can bridge conceptual understanding, especially in Islamic Religious Education subjects, which are often considered boring by elementary school students (Umami et, 2025). Educational technology was created to solve student learning problems by facilitating and providing alternatives and new innovations in the world of education so that it can make it easier to achieve educational goals (Salsabila et al., 2023). Media-assisted learning will help

students develop thinking skills and increase student activity in the learning and teaching process (Mulyati, 2023). Optimizing the use of learning media is done by understanding the characteristics of the media and learning needs so that educators need to innovate when faced with limited facilities or other technical obstacles (Budiyono, 2020). Educators can maximize everything that can be utilized to deliver learning information, including the use of the environment, so that something real can be presented in an applicable manner.

Various previous studies have examined the use of technology media in Islamic Religious Education learning. Starting from the use of Android-based interactive media, learning videos, and e-learning platforms such as Google Classroom to digital evaluation applications such as Kahoot and Quizizz (Faradila et al., 2025; Fitri et al., 2024; Herlina et al., 2024; Lisaniyah & Salamah, 2020; Nusaibah & Bustam, 2023; Umami et al., 2025). The results of these studies generally show that technology media can increase learning motivation, understanding of material, and student participation in Islamic Religious Education learning. However, no comprehensive research has been conducted that analyzes the effectiveness of technology media as a digital innovation in Islamic Religious Education learning within elementary and Islamic elementary schools. This study aims to analyze the use of technology media in Islamic Religious Education learning by examining the effectiveness and challenges of its implementation based on the results of research that has been conducted in the period 2020–2025.

2. Methods

This study used a qualitative approach based on a literature review, also known as a literature study. A literature study is a research method that uses various written sources as its main data sources. In practice, this research was conducted by collecting, examining, and analyzing references relevant to the topic under study. Literature study is a systematic process that aims to identify, evaluate, and synthesize studies related to the research topic (Machi & McEvoy, 2012; Triandini et al., 2019). The first phase consists of formulating research questions (RQ) that are relevant to the selected topic. In this study, the research questions (RQ) are (1) How effective is the use of technological media in Islamic religious education (PAI) at the elementary school level? and (2) What are the challenges that arise in the implementation of technological media in Islamic religious education (PAI) at the elementary school level? The second phase is the search process, which aims to find relevant data to answer the research questions. The researchers collected journal articles through the Publish or Perish database using the keywords "technological media in Islamic religious education."The third phase consists of applying inclusion and exclusion criteria, which aims to determine whether the data obtained is suitable for use in this study. Articles are considered suitable if they meet the criteria set beforehand.

Table 1. Inclusion and Exclusion Criteria

Inclusion Criteria	Exclusi Criteria

International or national articles indexed in Sinta that discuss the use of technology media in Islamic Religious Education (IRE) learning at the Elementary School/Islamic Elementary School level.	International or national articles indexed in Sinta that discuss the use of technology media in Islamic Religious Education (IRE) learning at the Elementary School/Islamic Elementary School level.
Articles published between 2020–2025.	Articles published before 2020.
Articles retrieved from Sinta and Scopus databases.	Articles retrieved from Sinta and Scopus databases.
Articles written in Indonesian or English.	Articles written in Indonesian or English.

Source: (Umami et al., 2025)

The fourth stage involves assessing the quality of the data. At this point, the collected articles are evaluated based on the established inclusion criteria to determine their eligibility. The fifth stage is data analysis, where the selected data are examined and interpreted in line with the formulated research questions (RQ). The final stage concerns any deviations from the research protocol.

3. Result And Discussion

3.1 Result

Based on an analysis of several articles, 14 articles were identified that aligned with the keywords used. The following presents the research data extracted from these articles concerning the use of technology media in Islamic Religious Education (PAI) in elementary schools and Islamic elementary schools during the period from 2020 to 2025.

The effectiveness of the implementation of technology media in Islamic Religious Education (PAI) learning in elementary schools/Islamic elementary schools

Below we present data on the results of the article analysis conducted from 2020 to 2025.

Table 2. Results of the article analysis conducted from 2020 to 2025.

No.	Authors, Year	Research Results
1.	(Faradila et al., 2025)	The use of animated video media can be an effective alternative in learning Aqidah Akhlak to improve students' interest and learning outcomes.
2.	(Herlina et al., 2024)	Various forms of digital media, such as audio-visual media, e-learning (WhatsApp, Google Classroom, Zoom), storytelling, animation, YouTube, and the Shofun application, can increase students' motivation, creativity, and understanding of Islamic Religious Education material.
3.	(Julizar & Bahri, 2024)	Audiovisual video media from the YouTube channel can improve Islamic Religious Education learning outcomes on the subject of faith in the Angels of Allah SWT at SD

No.	Authors, Year	Research Results
		Negeri 004 Sei Sialang; this can be seen from the increase in each cycle.
4.	(Arjunnajata et al., 2024)	Environmental-based Islamic Religious Education learning with the integration of technology and social media has a positive impact on the religious and environmental character of students at SDN 1 Mlaran.
5.	(Fitri et al., 2024)	Interactive multimedia-based learning media, namely the Smart App Creator, can increase students' interest in learning Fardhu Prayer at Madrasah Ibtidaiyah because it provides meaningful experiences through attractive displays and game-based activities.
6.	(Wahyuni & Sutiah, 2024)	The use of technology-based media and teaching materials can increase student involvement, deepen understanding of concepts, encourage critical thinking, and improve academic achievement.
7.	(Mamang et al., 2024)	The use of this learning medium shows that it can increase student learning motivation, which is very helpful for educators to achieve the learning objectives that have been set. The use of learning media can also have a big influence on improving student learning outcomes in Islamic Religious Education learning in schools and madrasas.
8.	(Nusaibah & Bustam, 2023)	Types of applications that can help educators in supporting Islamic Religious Education learning include Canva, Toontastic, Lectora, KineMaster, Powtoon, Prezi, Wondershare Filmora, and Sigil applications. These applications can be used by educators in creating Islamic Religious Education learning media.
9.	(Salsabil et al., 2022)	Animated video-based learning by the Zepetto application is able to attract students' interest so that they are more enthusiastic when learning is carried out, and students do not feel monotonous because learning is presented in audio-visual form.
10.	(Sudarmilah et al., 2022)	The Marbel application is very helpful for students in improving the quality of piety, helping to make it easier to understand Islamic Religious Education subject material about piety, and equipping students in operating the application.
11.	(Nurjanah et al., 2022)...	The ProProfs Brain Games website media can improve measuring students' understanding abilities in Islamic

No.	Authors, Year	Research Results
		Religious Education learning in grade V of elementary school.
12.	(Afifah et al., 2022)	The benefits of educational props ULTAFI (Snakes and Ladders of Fiqh) is that it can standardise the subject matter delivered, the teaching and learning process becomes more interesting and clear, the teaching and learning process becomes more interactive and efficient in time and energy, it can improve the quality of student learning outcomes, it can foster positive attitudes of students towards the material and learning process, and it can foster learning motivation in students.
13.	(Sinulingga, 2022)	The Islamic cartoon media that has been watched by elementary school students in each episode always teaches religious values that are based on Islamic teachings, and this is also what makes Islamic cartoons a reference for teachers to always develop learning media, because the knowledge and science in this cartoon series has represented a picture of their daily activities, which, of course, are carried out in accordance with Islamic teachings.
14.	(Lisaniyah & Salamah, 2020)	With Kahoot and Socrative media, it is hoped that it can encourage students to be more enthusiastic and happy to learn Arabic.

Based on Table 1, the use of technology media in Islamic Religious Education (PAI) learning in elementary schools/Islamic elementary schools shows significant effectiveness in various aspects of the process and student learning outcomes. The results of the studies that have been analysed show that technology media is able to answer the challenges of conventional learning, which is often considered monotonous, less interactive, and difficult to motivate students.

Several studies (Faradila et al., 2025; Fitri et al., 2024; Salsabil et al., 2022) state that the use of animated videos, interactive applications such as Zepetto and Smart Apps Creator, and educational props such as ULTAFI can attract students' attention. Interesting visualizations and game-based presentations can create a fun learning atmosphere and motivate students to be actively involved. Audiovisual media such as YouTube videos (Julizar & Bahri, 2024), the Marbel application (Sudarmilah et al., 2022), and interactive websites such as ProProfs (Nurjanah et al., 2022) directly contribute to improving students' conceptual understanding and learning outcomes. The presentation of material in a contextual and audio-visual manner makes it easier for students to capture and remember abstract Islamic Religious Education material.

The use of application-based technology (Herlina et al., 2024; Nusaibah & Bustam, 2023) enables interactive learning, such as online discussions, digital quizzes (Kahoot and Socrative), and social media-based storytelling. This active involvement not only improves students' understanding but also builds self-confidence and critical thinking skills (Wahyuni & Sutiah, 2024).

Technology is not only used to deliver cognitive material but also to shape students' attitudes and characters. Technology-integrated environment-based learning Arjunnajata et al., (2024) and Islamic cartoon content Sinulingga, (2022) have been proven to be able to instill religious values such as piety, social concern, and noble morals in a way that is more contextual and relevant to students' lives.

In addition to having an impact on students, the use of technological media also makes it easier for teachers to compile and deliver materials more effectively (Afifah et al., 2022; Nusaibah & Bustam, 2023). Digital media allows teachers to create uniform, efficient, and interesting materials without having to spend a lot of energy manually.

Based on various research results, it can be concluded that technological media is effective in improving the quality of Islamic Religious Education learning in elementary schools/Islamic elementary schools. This effectiveness is shown through increased motivation, understanding, learning outcomes, active student involvement, and the formation of religious values. The media used varies from videos and interactive applications to educational games, which are able to answer the needs of more modern, contextual learning and are in accordance with the characteristics of 21st-century students.

The challenges of implementing technology media in Islamic Religious Education (PAI) learning in elementary schools/Islamic elementary schools

Although various studies have shown the effectiveness of technology media in PAI learning in elementary schools/Islamic elementary schools, its implementation in the field is inseparable from various technical, pedagogical, and cultural challenges. These challenges need to be considered so that the use of technology media can run optimally and sustainably.

Based on research by Nusaibah & Bustam (2023), many teachers still face difficulties in accessing and operating educational technology applications, such as Canva, Powtoon, Kinemaster, and others. Continuous training is needed so that teachers are able to design learning media that are appropriate to student needs and PAI materials. The use of digital media is highly dependent on the availability of infrastructure, such as a stable internet network, devices (laptops, projectors, tablets), and electricity. In several elementary schools/Islamic elementary schools, especially in remote areas, this is a major obstacle in the consistent implementation of technology-based media. Media such as e-learning, YouTube, Zoom, and other online applications Herlina et al., (2024) require good internet connectivity, which not all schools have. Signal interference, quota costs, and limited access cause learning to not run smoothly.

Teachers often face time management challenges when designing interactive media because it requires longer technical preparation than conventional learning. In addition, not

all teachers have the awareness and pedagogical readiness to systematically integrate technology into the lesson plan. Although most students like digital media, some students still need more intensive guidance in using technological devices. There are also those who focus too much on the entertainment aspect, thus reducing concentration on the essence of Islamic Religious Education material. Technological media content, especially that sourced from the internet (such as YouTube or third-party applications), needs to be filtered to suit the values of Islamic teachings and the age characteristics of elementary school students. Teachers have a responsibility to ensure that the content presented is educational, safe, and relevant in terms of faith and morals (Sinulingga, 2022).

In some schools, there are no internal policies that support the massive development of technology-based learning media, both in terms of budget, training programmers, and supervision of integration in the teaching and learning process. The challenges of implementing technological media in Islamic Religious Education learning in elementary schools include technical aspects (access and infrastructure), human resources (teacher competence), student readiness, and institutional regulations. To optimize the use of technology, synergy is needed between teacher training, infrastructure improvement, school policy support, and the preparation of content that is in accordance with Islamic values.

3.2 Discussion

The findings of this research indicated that integrating technology-based media into Islamic Religious Education (IRE) learning at the elementary and Islamic elementary school levels proved effective in enhancing learning quality. Tools such as animated videos, interactive applications, e-learning platforms, and educational games contributed to greater student interest, motivation, understanding, active participation, and improved learning outcomes. Moreover, the application of technology also fostered the development of religious character and enabled teachers to present material in ways that were more engaging, efficient, and contextual.

This effectiveness is closely tied to the objectives of Islamic Religious Education in elementary schools/Madrasah Ibtidaiyah, which extend beyond the transfer of knowledge to include shaping morality and ethics in line with Islamic teachings. PAI instills core values such as honesty, responsibility, and empathy, which are essential for character building (Halimah & Maulidya, 2021). Nevertheless, IRE learning at the SD/MI level often encounters challenges such as monotonous material, limited interactivity, and inadequate teaching resources, all of which may negatively impact students' motivation and comprehension (Nareswari & Hafidz, 2025)

Rogers, as cited in Nareswari & Hafidz (2025), explained that the adoption of technology in IRE learning follows five stages: knowledge, persuasion, decision, implementation, and confirmation. This process is influenced by innovation attributes (relative advantage, compatibility, complexity, trialability, and observability), as well as by the characteristics of teachers, students, and institutions (schools/madrasahs). Supporting this, Mahbuddin, (2020) highlighted that integrating media and technology in IRE aims to

create learning that is innovative, creative, and effective through the use of audio-visual tools, applications, and digital platforms. Importantly, such integration must remain consistent with Islamic educational principles to ensure alignment with religious values.

The results of this study are consistent with earlier findings. Sinaga (2024) showed that interactive videos, learning applications, and online platforms enrich the learning experience and enable teachers to present material in more engaging and interactive ways. Similarly, Ichsan (2024) reported that digital media supports flexible learning tailored to students' pace while offering diverse and appealing content.

However, the use of technology media in IRE is not without obstacles. Fadeli & Hafidz (2024) noted issues such as insufficient infrastructure, limited digital skills among teachers, and resistance to change. Equally important is ensuring that technology-mediated content remains aligned with Islamic values and does not contradict the core principles of religious education.

Technological literacy plays a vital role in optimizing digital media use Ikhsan, (2024) emphasized the necessity of enhancing digital literacy within IRE by employing tools such as PowerPoint and video content shared on social media. Mastery of such skills not only improves students' comprehension of subject matter but also equips them with essential technological competencies in today's digital era. To maximize the effectiveness of technology in IRE, teachers require professional development to strengthen their digital competence, schools and madrasahs must provide adequate facilities and internet access, and the chosen media should be carefully aligned with both students' learning needs and Islamic educational values.

4. Conclusion

An analysis of 14 related studies demonstrates that the integration of technology-based media into Islamic Religious Education (IRE) at the elementary and Islamic elementary school levels has proven effective in enhancing the overall quality of education. The use of media such as animated videos, interactive applications, e-learning platforms, and educational games has been shown to significantly increase students' interest, motivation, comprehension, active participation, and academic achievement. Furthermore, the incorporation of technology supports the development of students' religious character and equips teachers with resources to deliver lessons in a more engaging, efficient, and contextually relevant manner.

Nevertheless, several challenges persist in the implementation process. Key issues include teachers' limited competence in utilizing digital tools, unequal access to technological infrastructure, reliance on internet connectivity, and the absence of systematic policies and institutional support. It is also crucial to ensure that the content delivered through digital media remains consistent with Islamic values and is appropriate for the developmental characteristics of elementary school students. To optimize the potential of technology-based media in IRE, comprehensive strategies are required. These include enhancing teacher training in digital literacy, ensuring the provision of adequate infrastructure and facilities,

curating educational content that integrates religious values, and establishing school policies that actively promote learning innovation.

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