INTEGRATING ICT IN ISLAMIC RELIGIOUS EDUCATION: ENHANCING LEARNING OUTCOMES AND OVERCOMING CHALLENGES IN THE 21ST CENTURY

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Abstrak

Penelitian ini mengkaji integrasi Teknologi Informasi dan Komunikasi (TIK) dalam Pendidikan Agama Islam (PAI), dengan tujuan untuk meningkatkan hasil pembelajaran dan mengatasi tantangan dalam beradaptasi dengan tuntutan pendidikan modern. Menggunakan metodologi tinjauan pustaka, penelitian ini mensintesis studi yang dipublikasikan antara 2015 dan 2025, yang berfokus pada efektivitas alat TIK, jenis sumber daya digital yang digunakan dalam PAI, dan hambatan yang dihadapi oleh pendidik dalam mengimplementasikan teknologi ini. Temuan menunjukkan bahwa TIK secara signifikan meningkatkan keterlibatan siswa, motivasi, dan pemahaman materi dalam mata pelajaran PAI, khususnya melalui alat multimedia, aplikasi mobile, dan platform e-learning. Namun, tantangan seperti infrastruktur yang tidak memadai, literasi digital di kalangan guru, dan kesenjangan digital antara daerah perkotaan dan pedesaan membatasi penggunaan TIK secara luas di kelas PAI. Penelitian ini menyoroti perlunya peningkatan investasi dalam infrastruktur dan pengembangan profesional berkelanjutan untuk guru guna menjembatani kesenjangan tersebut. Selain itu, penelitian ini juga mengajak dukungan kebijakan baik di tingkat institusi maupun pemerintah untuk memfasilitasi integrasi TIK dalam pendidikan agama. Kebaruan dari penelitian ini terletak pada fokusnya pada aplikasi spesifik TIK dalam PAI, memberikan wawasan tentang bagaimana alat digital dapat memodernisasi pendidikan agama Islam tanpa mengabaikan nilai-nilai intinya. Temuan ini memberikan rekomendasi yang berharga bagi pendidik dan pembuat kebijakan untuk meningkatkan integrasi TIK dalam PAI dan memastikan penggunaannya yang efektif di abad ke-21.

Kata Kunci: Integrasi TIK; Pendidikan Agama Islam; Teknologi Pendidikan

Abstract

This study explores the integration of Information and Communication Technology (ICT) in Islamic Religious Education (PAI), aiming to enhance learning outcomes and address

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challenges in adapting to modern educational demands. Using a literature review methodology, this research synthesizes studies published between 2015 and 2023, focusing on the effectiveness of ICT tools, the types of digital resources used in PAI, and the barriers faced by educators in implementing these technologies. The findings indicate that ICT significantly improves student engagement, motivation, and comprehension in PAI subjects, particularly through multimedia tools, mobile applications, and e-learning platforms. However, challenges such as inadequate infrastructure, digital literacy among teachers, and the digital divide between urban and rural areas limit the widespread use of ICT in PAI classrooms. The study highlights the need for increased investments in infrastructure and continuous professional development for teachers to bridge these gaps. Additionally, it calls for policy support at both institutional and governmental levels to facilitate the integration of ICT in religious education. The novelty of this research lies in its focus on the specific application of ICT in PAI, offering insights into how digital tools can modernize Islamic education while preserving its core values. The findings provide valuable recommendations for educators and policymakers to enhance ICT integration in PAI and ensure its effective use in the 21st century.

INTRODUCTION

The rapid advancement of Information and Communication Technology (ICT) in the 21st century has significantly impacted various sectors, including education. As digital transformation reshapes how knowledge is delivered and accessed, Islamic Religious Education (PAI) must evolve to meet the needs of a digitally native generation. PAI, traditionally focused on moral development, understanding, and the practice of Islamic values, faces the challenge of integrating modern technological tools to enhance the learning experience and ensure relevance in an increasingly digital world (Bahri et al., 2025; Rusdi et al., 2023). In this context, the integration of ICT in PAI offers the potential to transform traditional teaching methods into more dynamic, interactive, and engaging educational experiences for students (Hafizah Almardiah & Abd. Muis, 2025; Muhammad & Wahab, 2025).

While the potential of ICT in education is well-documented, the integration of technology within PAI is still a developing area. Despite the increasing availability of digital resources, studies show that ICT implementation in PAI is still limited and inconsistent, especially in rural areas and among less technologically advanced educational institutions. The digital divide, limited teacher competencies in ICT, and inadequate infrastructure are prominent barriers to the effective use of technology in PAI classrooms (Rabani et al., 2023). Moreover, while some studies have explored the benefits of ICT in enhancing student motivation, engagement, and knowledge acquisition, few have specifically addressed how these technological tools can be leveraged to

enhance PAI content and pedagogy in the unique context of Islamic education (Fadzkur Abdul Malik Mar'an, Akla, & Muhammad Ali, 2021).

Thus, the gap in the current literature lies in the insufficient understanding of how ICT can be effectively integrated into PAI curricula to enhance the learning experience while overcoming the barriers faced by educators. While existing research highlights the importance of ICT in modernizing education, there is a need for more specific studies focused on PAI, particularly in how digital tools can be used to facilitate a deeper understanding of Islamic teachings in a way that aligns with the technological landscape of the 21st century.

This study aims to bridge this gap by reviewing and synthesizing existing literature on the role and integration of ICT in PAI. The novelty of this research lies in its focus on exploring the specific ways in which ICT can be utilized to improve the delivery of Islamic education in the 21st century, taking into account both the potential and the challenges. The primary objectives of this study are to: (1) analyze the role of ICT in enhancing PAI learning outcomes, (2) explore the integration of digital tools and resources in PAI teaching, and (3) identify the barriers to effective ICT use in PAI and suggest possible solutions to overcome these challenges. Through this review, the study intends to provide valuable insights into how PAI can evolve to meet the demands of modern education while preserving its core values and objectives.

METHODS

This study employs a literature review methodology to examine the integration and utilization of Information and ICT in PAI in the 21st century. The literature review method is appropriate for synthesizing existing research, identifying gaps, and gaining insights into the current state of the field. By analyzing peer-reviewed journals, books, conference proceedings, and other scholarly works, the study aims to evaluate the effectiveness, challenges, and potential strategies for ICT integration in PAI. This method allows for a comprehensive understanding of the topic while highlighting the academic debates and the evolving nature of ICT use in education.

PRISMA Flow Diagram

To ensure transparency in the selection process, a PRISMA flow diagram was used to illustrate the systematic study screening. A total of 800 records were identified through database searches, including articles, books, and conference papers published between 2015 and 2025. Keywords such as *ICT in Islamic education*, *technology integration in PAI*, and *digital learning tools in Islamic studies* were used during the search process. After the initial review, 100 duplicate records were removed to eliminate redundant entries. Following this, 600 records were excluded due to irrelevance to the specific focus on ICT integration in Islamic Religious Education (PAI), based on a review of titles and abstracts. Of the remaining records, 150 articles that met the inclusion criteria were assessed in full. These studies specifically

addressed ICT's role in PAI or were relevant empirical case studies, systematic reviews, or literature analyses. After thorough evaluation, a total of 6 studies were finally included in the review. These studies were selected based on their relevance to the research questions and their ability to provide insights into the effectiveness, challenges, and strategies of ICT integration in PAI.
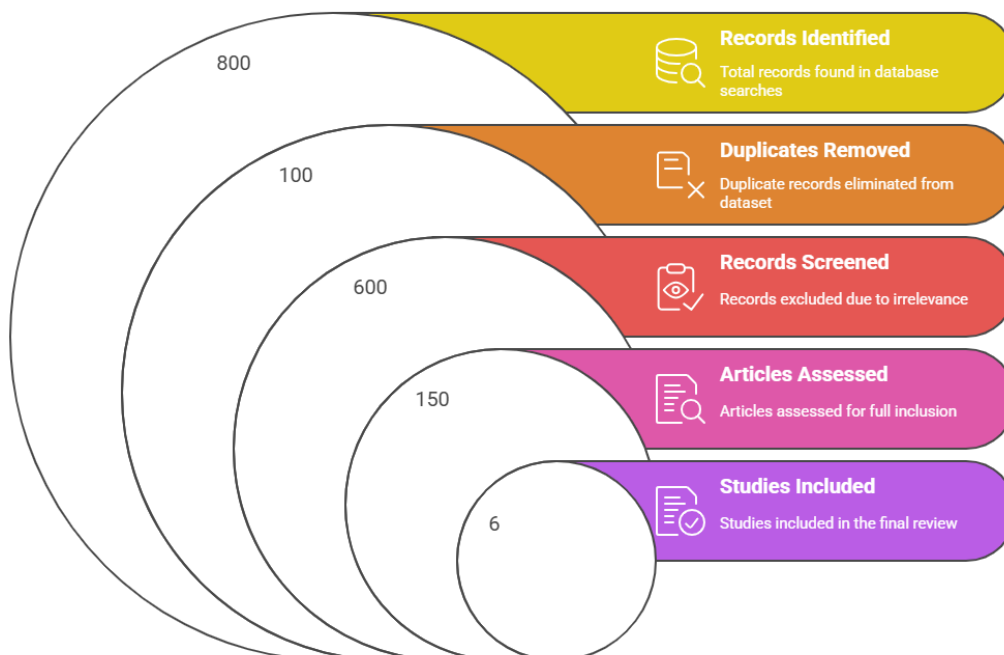

Figure 1. PRISMA Flow Diagram of Study Selection

Search Strategy

The first step in the literature review process is identifying and selecting relevant sources. A systematic search was conducted across several academic databases, including Google Scholar, JSTOR, ScienceDirect, and ERIC, to identify studies published between 2015 and 2024. The keywords used during the search included "ICT in Islamic education," "technology integration in PAI," "digital learning tools in Islamic studies," "Islamic religious education and ICT," and

"ICT for religious pedagogy." Only peer-reviewed journal articles, book chapters, and reputable conference papers were considered to ensure the reliability and academic rigor of the sources. The selection criteria included studies that explicitly focused on the role of ICT in PAI or related educational fields, with a preference for empirical studies, case studies, and reviews.

Table 1 below outlines the inclusion and exclusion criteria for selecting the studies included in the review.

Table 1. Inclusion and Exclusion Criteria for Study Selection

Criteria	Inclusion Criteria	Exclusion Criteria
Time Frame	Studies published between 2015 and 2025	Studies published before 2015
Type of Study	Peer-reviewed articles, books, conference papers	Non-peer-reviewed articles, opinion pieces, blog posts
Language	Studies published in English and Indonesian	Studies published in languages other than English and Indonesian
Focus Area	ICT integration in Islamic Religious Education (PAI)	Studies not related to education or PAI
Methodology	Empirical studies, case studies, systematic reviews	Studies without clear methodological design

Data Extraction and Analysis

Once the studies were identified and selected, data extraction was performed based on key themes relevant to the research questions. A standardized extraction template was used to gather information about the study's objectives, research design, ICT tools or methods explored, key findings, challenges identified, and the recommendations made by the authors. This allowed for consistency and ensured that relevant data was captured from each study.

Table 2 presents the key themes extracted from the studies reviewed in this literature review, which are central to the analysis of ICT integration in PAI.

Table 2. Key Themes Extracted from Reviewed Studies

Theme	Description
Effectiveness of ICT in PAI	Examines the impact of ICT on enhancing students' understanding and engagement in PAI.
Types of ICT Tools	Identifies the specific digital tools, platforms, and applications

Theme	Description
Used	employed in PAI teaching.
Challenges in ICT Integration	Highlights the barriers to effective ICT use in PAI, including infrastructure, digital literacy, and access issues.
Teacher Competencies	Focuses on the need for teacher training and professional development in ICT usage.
Impact on Student Motivation	Investigates how ICT enhances student interest and motivation in learning PAI.
Policy and Infrastructure	Analyzes the role of institutional support, policies, and infrastructure in enabling ICT integration.

Quality Assessment

To assess the quality and reliability of the included studies, the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines were followed. This framework ensures that the review is comprehensive, transparent, and reproducible. Each study was evaluated for methodological rigor, sample size (if applicable), and the clarity of its findings.

Studies with clear research designs, robust methodologies, and significant findings were prioritized for inclusion. Studies that lacked sufficient methodological transparency or had a high risk of bias were excluded from the final analysis.

Table 3 below provides an overview of the quality assessment criteria used to evaluate the studies included in the literature review.

Table 3. Quality Assessment Criteria for Included Studies

Criterion	Evaluation Description	Scoring Method
Methodological Rigor	Clear explanation of research design, data collection methods, and analysis techniques	High, Medium, Low
Sample Size (if applicable)	Sufficient sample size to ensure reliable results in empirical studies	High, Medium, Low
Relevance to Research Questions	Study directly addresses the role and integration of ICT in PAI	Yes, No

Bias Risk	Evaluation of potential conflicts of interest or methodological bias	Low, Medium, High
Findings and Recommendations	Clear and actionable conclusions based on data analysis	High, Medium, Low

Synthesis of Findings

After completing the data extraction and quality assessment, a thematic synthesis was conducted to identify common trends, contradictions, and gaps in the literature.

The findings were categorized according to the themes outlined in Table 2, with particular attention given to the effectiveness of ICT in PAI, the types of digital tools used, and the challenges faced by educators. The synthesis also included recommendations for improving ICT integration in PAI, such as enhancing teacher training, improving infrastructure, and creating supportive policies.

The final section of this review provides an overall discussion of the findings, highlighting the implications for educational practice and suggesting areas for further research. By systematically synthesizing existing literature, this study offers valuable insights into how ICT can be harnessed to enhance the quality of Islamic education in the 21st century, addressing both the opportunities and challenges that come with digital transformation in education.

RESULTS AND DISCUSSION

The results section synthesizes the key findings from the reviewed studies, which highlight the effectiveness, challenges, and strategies associated with the integration of ICT in PAI. The studies reviewed illustrate the potential benefits of ICT in enhancing learning experiences, fostering student engagement, and improving teaching methods. However, they also expose several challenges related to infrastructure, teacher competencies, and unequal access to technology.

Effectiveness of ICT in Enhancing PAI

One of the most prominent findings from the literature is the significant impact that ICT has on the effectiveness of PAI teaching. Numerous studies indicated that the use of ICT tools, such as multimedia applications, digital resources, and online platforms, has led to improved student engagement, understanding, and overall academic performance in PAI subjects. For example, Staneviciene and Žekienė (2025) found that the use of multimedia tools in PAI classrooms significantly enhanced students' comprehension of religious teachings, as these tools provided interactive and visually stimulating content. Similarly, Liang et al. (2023) highlighted how Android-based applications in PAI classrooms increased student motivation, making the learning process more engaging and less monotonous.

Furthermore, ICT facilitates flexible learning opportunities, enabling students to

access learning materials anytime and anywhere. This flexibility helps students with different learning styles and paces to engage more effectively with PAI content. In line with this, research by Dewi Kunthi et al. (2025) found that students who used digital platforms for PAI showed higher participation and motivation compared to those taught through traditional methods.

Table 4. Impact of ICT on Student Engagement and Academic Performance

Author(s)	ICT Tools Used	Findings
Staneviciene and Žekienė (2025)	Multimedia tools (videos, animations)	Enhanced student comprehension and engagement in PAI
Liang et al. (2023)	Android applications for PAI	Increased student motivation and activity in learning
Dewi Kunthi et al. (2025)	Digital platforms, online quizzes, e-books	Higher participation and improved academic performance

Types of ICT Tools and Methods Used in PAI

The integration of various ICT tools and methods has become essential in enhancing the learning process in PAI. Studies show that the types of ICT tools used in PAI classrooms range from multimedia applications, e-books, educational videos, and audio recordings to more interactive platforms such as e-learning systems and mobile apps. For instance, Cita Suci Soleha et al. (2025) discussed the use of interactive multimedia and simulation tools in PAI, which allowed students to engage with religious content in more dynamic and contextually relevant ways. Similarly, Bahri et al. (2025) developed an Android application designed to help students learn the Quran, which proved to be both effective and accessible for elementary school students in remote areas.

Another significant finding is the use of online learning platforms and mobile applications, which are particularly beneficial in making religious education more accessible and interactive. Research by Arifin and Mustofa (2025) revealed that multimedia interactive platforms helped increase students' interest in PAI by presenting material through digital images and videos that were more relatable and engaging.

Table 6. Types of ICT Tools and Their Impact in PAI

ICT Tool Type	Application in PAI	Outcome/Impact
Multimedia tools (videos, animations)	Enhance comprehension and engagement	Increased student engagement and interest in PAI

ICT Tool Type	Application in PAI	Outcome/Impact
Mobile applications (Android-based apps)	Learning tools for Quran and Islamic studies	Improved learning outcomes, especially in remote areas
E-learning platforms and online resources	Platforms for flexible and self-paced learning	Increased student independence and accessibility

Challenges in ICT Integration in PAI

While the benefits of ICT integration in PAI are evident, several challenges remain in its widespread implementation.

One of the primary challenges is the lack of adequate infrastructure, especially in rural and underfunded schools and madrasahs. Many institutions struggle with limited access to high-speed internet, outdated devices, and inadequate digital resources. Zafar et al. (2024) found that, despite the availability of ICT infrastructure in some madrasahs, its usage was limited due to insufficient teacher training and a lack of support from educational institutions.

Moreover, the digital divide between urban and rural schools has led to unequal access to ICT resources. Schools in rural areas often face more significant barriers in accessing technology and the internet, which hinders the effective use of ICT in PAI teaching. Maulidah (2025) observed that while some urban schools have embraced digital tools in PAI, many rural schools still rely heavily on traditional methods due to the absence of technological infrastructure.

Teacher competencies in using ICT also remain a significant challenge. Many teachers, particularly in rural areas, lack the necessary digital literacy skills to effectively integrate ICT into their teaching practices.

The need for professional development and continuous training is critical to overcoming this barrier. Research by Alzakwani et al. (2025) indicated that teachers who received adequate ICT training were more likely to use digital tools effectively in their classrooms, improving the overall quality of PAI education.

Table 7. Challenges in ICT Integration in PAI

Author(s)	Challenge	Description
Zafar et al. (2024)	Insufficient infrastructure	Lack of high-speed internet and modern devices in many madrasahs
Maulidah (2025)	Digital divide	Unequal access to ICT resources between urban and rural schools
Alzakwani et al. (2025)	Teacher competency	Insufficient ICT training for teachers,

Author(s)	Challenge	Description
		limiting effective integration

Strategies for Overcoming Challenges

To address these challenges, the literature suggests several strategies to enhance ICT integration in PAI. One of the key recommendations is to invest in the development of infrastructure, particularly in underserved and rural areas. Ensuring that schools have reliable internet connections and up-to-date devices is essential for supporting the digital learning environment (Marsden et al., 2025). Additionally, there is a strong emphasis on the need for professional development for teachers. Ongoing training programs that focus on enhancing digital literacy and pedagogical skills in using ICT for religious education are crucial (Nurhayati et al., 2024).

Furthermore, policy support is needed to ensure that ICT integration in PAI is not only supported at the school level but also guided by national and regional education policies. Governments should prioritize the provision of resources, training, and digital infrastructure to facilitate the integration of ICT in religious education across all levels of schooling (Pandaleke et al., 2025).

Table 8. Strategies for Enhancing ICT Integration in PAI

Strategy	Recommended Action	Potential Outcome
Infrastructure	Improve	Enhanced
development	internet connectivity and provide modern devices	access to ICT tools, especially in rural areas
Teacher training and professional development	Provide continuous ICT training programs for teachers	Increased teacher competence and confidence in using ICT in PAI
Policy support	Implement national and regional policies supporting ICT in PAI	More equitable distribution of resources and sustained ICT integration

Discussion

The integration of ICT in PAI has shown to yield significant improvements in enhancing both the learning experience and student outcomes. This research's findings resonate with prior studies, which have established that ICT can transform traditional educational practices into more interactive and engaging experiences (Haleem et al., 2022; Maiti & Priyaadharshini, 2024; Mena-Guacas et al., 2025). The present study's focus on the role of ICT in PAI reinforces the critical need for modernizing religious education through

digital tools that make learning both accessible and compelling for a new generation of students.

One of the main novelties of this study is its exploration of how ICT can specifically address the unique challenges within PAI classrooms. Previous research Assalihee et al. (2024) focused on the general benefits of ICT in education, but few studies have concentrated on its potential to foster a deeper understanding of Islamic teachings. This study demonstrates how multimedia tools and digital platforms are not merely aids for traditional learning but have the potential to engage students in more complex, interactive learning processes that are directly aligned with contemporary pedagogical frameworks.

In addition to supporting the engagement and motivation of students, this study highlights ICT's role in bridging the digital divide, particularly between rural and urban educational institutions. Studies like those by Zafar et al. (2024) and Maulidah (2025) shed light on the barriers that limit the use of ICT in underserved areas. In contrast, this research provides actionable insights into overcoming these challenges through infrastructure improvements and targeted teacher training programs. This is a key contribution, as it emphasizes not only the integration of technology but also the need for sustained investments in teacher professional development, which has often been a neglected factor in ICT adoption in education (Alzakwani et al., 2025).

Another novel aspect of this research is the identification of the gaps in the literature concerning the integration of ICT specifically within Islamic education. While much has been written about ICT's role in general education, the incorporation of digital tools in PAI has received less attention. This study addresses this gap by focusing on how digital tools can be tailored to enhance understanding of Islamic teachings, ensuring that the integration of technology is not just about adopting new tools, but about doing so in a way that enhances religious pedagogy without compromising traditional values.

Furthermore, the study's synthesis of challenges faced in ICT integration ranging from infrastructure to teacher competencies adds to the growing body of knowledge by providing clear, empirical evidence of the need for holistic policy support. The role of government and educational institutions in supporting ICT use in PAI is crucial for ensuring equitable access to digital resources, which remains a significant barrier in many parts of Indonesia. Previous studies Marsden et al. (2025) and Pandaleke et al. (2025) have underscored the importance of policy intervention, a point that this study strongly reiterates, calling for the creation of comprehensive policies that support both infrastructure and training at all educational levels.

In conclusion, this research highlights the significant potential of ICT to modernize PAI, not only by improving the quality of learning and student engagement but also by addressing the digital and educational divides that currently exist. It offers a unique contribution to the field by focusing on the integration of digital tools in Islamic education and provides a detailed

exploration of the challenges and strategies necessary for their effective use. As such, the findings of this study serve as both a confirmation of existing literature on ICT in education and a novel contribution to the understanding of its specific application in Islamic educational contexts.

CONCLUSION

This study demonstrates that the integration of ICT in PAI can significantly enhance learning outcomes, particularly in terms of student engagement and understanding of the material. Although challenges related to infrastructure, teacher digital competencies, and the digital divide in certain areas persist, the findings emphasize the importance of sustained investments in infrastructure development and teacher professional training. The success of ICT integration in PAI relies not only on the adoption of technology but also on supportive policies at the institutional and governmental levels. This research offers a novel contribution by highlighting how ICT can enrich PAI teaching without compromising traditional values, providing practical insights for overcoming existing barriers and reinforcing the role of ICT as a key tool in modernizing religious education in the 21st century.

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