

Technological Pedagogical Islamic Content: A Systematic Literature Study

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Abstract

The integration of technology in Islamic education is crucial, as are educational methods. Islamic academic institutions need to incorporate digital tools without losing the core values of Islamic teachings. This study reviews literature from 2022 to 2024, using databases such as Scopus and Eric—the study flow of study based on the PRISMA framework. Following specific inclusion criteria, 22 relevant studies were selected and analyzed through qualitative content analysis and quantitative meta-analysis to identify trends, challenges, and results in the use of Technological Pedagogical Islamic Content (TPIC). The primary problem addressed is the need for an updated and structured overview of how technology is being used to enhance the educational learning process. To obtain this, we conducted an advanced search of scholarly articles. The findings were divided into three themes: (1) technology integration in Islamic education, (2) pedagogical skills and teacher competence, and (3) sociocultural implications and policy perspectives. The analysis reveals that key factors for the successful integration of technology in the learning process include effective teacher training, culturally appropriate content development, and strong technological infrastructure. Challenges include resistance to change, limited digital skills among educators, and the need for continuous policy support.

Keywords: content knowledge, technological knowledge; Islamic education.

1.0 INTRODUCTION

The integration of technology into educational practices has revolutionized teaching methodologies, creating new paradigms for the delivery of subject content. Among these advancements, the concept of Technological Pedagogical Islamic Content (TPIC) emerges as a crucial area of study, reflecting the need to harmonize technological tools with Islamic educational principles (Buchori et al., 2023; Fandir, 2024; Firdaus et al., 2023; Salsabila et al., 2023; Sholeh, 2023; Suraijiah et al., 2023). This convergence aims to enhance the effectiveness of Islamic pedagogy, ensuring that the richness of Islamic teachings is preserved while embracing modern educational techniques. Technological advancements offer numerous opportunities for educators to enrich Islamic education. Digital platforms and interactive tools facilitate access to a wide array of Islamic resources, from classical texts to contemporary interpretations (Bukhori et al., 2024; Kharismatunisa, 2023; Salsabila et al., 2022). This digital accessibility ensures that learners can engage with Islamic content in diverse and meaningful ways, transcending geographical and temporal barriers.

Pedagogical strategies in Islamic education must progress to incorporate these technological tools effectively. The Technological Pedagogical Content Knowledge (TPACK) framework serves as a valuable model in this regard, emphasizing the intersection of technological knowledge, pedagogical skills, and content expertise. For Islamic education, this framework necessitates a nuanced understanding of how technology can be employed to teach Islamic principles effectively. Technological Pedagogical Islamic Content development requires a careful balance between innovation and tradition (Abdullah et al., 2022; Nursyahidin et al., 2021; Said et al., 2018; Shofiyah et al., 2023). While technology can significantly enhance the accessibility and engagement of Islamic education, it must be implemented to uphold the integrity of Islamic teachings. The goal is to create a harmonious blend of technology and pedagogy that deepens the learners' understanding and appreciation of Islamic knowledge. Challenges in integrating technology with Islamic pedagogy must be culturally sensitive and accurately reflect Islamic traditions.

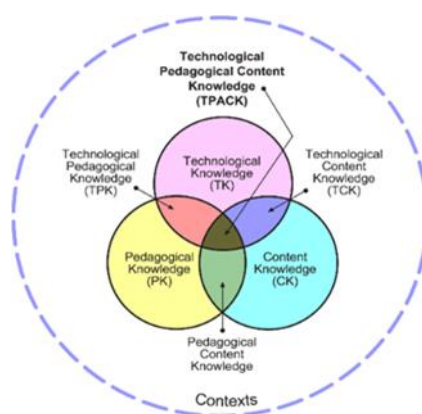


Figure 1 TPACK Framework

In conclusion, Technological Pedagogical Islamic Content (TPIC) represents a significant advancement in the field of Islamic education, merging the benefits of modern technology with the rich traditions of Islamic pedagogy. By leveraging the TPACK framework (Figure 1.) and addressing the unique challenges of this convergence, educators can develop innovative strategies that honor the past while embracing the future of Islamic education.

2.0 LITERATURE REVIEW

Recent technological advancements have significantly impacted Islamic educational methodologies. This approach is crucial in adapting to modern educational needs and improving students' efficiency and competency development through technology-enhanced materials. Ramadhan et al., (2022) discuss the broader implications of the Industrial Revolution 4.0 on Islamic education. Their research highlights Islam's adaptive and inclusive nature, which facilitates the integration of technological advancements into educational practices. Wulandari, (2022) provides additional insights into implementing Islamic education for the millennial generation, focusing on Wasathiyah education and da'wah. The study underscores the need for preachers to be creative and innovative, leveraging technology to engage the millennial audience effectively.

Gross, (2023) discusses religious education's broader challenges and opportunities within a multicultural and technologically advanced world. The study suggests that religious education can still be transformative if it adapts to these new realities, integrating modern technological tools to maintain relevance and effectiveness. The concept of an Islamic Pedagogical Renaissance, as introduced by Aminov, (2022), provides a historical perspective on the integration of pedagogical and technological advancements. Iqbal & Akram, (2020) contribute to this discourse by analyzing the perceptions of Sekola Islam and pesantren alumni regarding their role in nation-building in Indonesia. Their research indicates that these institutions have been instrumental in religious, societal, economic, and technological development.

The evolution of Islamic education is significantly influenced by technological advancements and pedagogical innovations, reflecting the need to integrate contemporary methodologies into traditional frameworks. The implementation of Mahmud Yunus' Islamic education concept at Madrasah Aliyah Miftahul Huda Tegalwaru exemplifies this integration. This model prioritizes moral education, an integrated curriculum, adaptive teaching methods, and continuous educator development to align with technological advancements (Ainissyifa & Nurseha, 2022). In Singapore, the development of teaching and learning methodologies at Madrasah Irsyad Zuhri Al-Islamiah demonstrates how technology can enhance Islamic education, particularly in the teaching of Hadith. The limited lesson periods for Hadith necessitate innovative teaching approaches that leverage technological tools to facilitate deeper cognitive understanding and holistic character development (Ithnin et al., 2020).

Pedagogic competence among Islamic education teachers, particularly in Gorontalo, is also influenced by technological integration (Mubarak et al., 2022). Effective classroom management, teaching practices, and technology skills impact pedagogic competence (Otaya et al., 2023). This finding emphasizes the role of technology in empowering teachers to deliver more effective and engaging instruction. This shift suggests that Islamic educational institutions must leverage digital tools to support continuous learning and adaptation to future educational landscapes. The transformative impact of technological advancements on the Teungku Dayah learning model in Aceh (Rajiani et al., 2024) illustrates how Islamic educational institutions are renewing their teaching perspectives. Factors such as a paradigm shift, evolving perceptions of media use, and changing views of the learning environment drive this transformation. The integration of technology into the learning model is deemed essential, with a call for supportive government policies to enhance educators' technological skills (Abubakari et al., 2023). This transformation highlights the need for a strategic approach to integrating technology in Islamic education to ensure effective teaching and learning.

Despite its advantages, moral education in Islamic contexts, particularly through the lens of Qur’anic stories, addresses the challenges posed by negative social and technological influences. These stories advocate for a holistic approach to moral education, integrating religious, psychological, physical, and social dimensions (Thalgi, 2019). This approach underscores the enduring relevance of traditional Islamic teachings in contemporary educational frameworks. Digital competence is increasingly recognized as a crucial skill in Islamic education for lifelong learning. A study involving participants from Indonesia, Uganda, and Malaysia validates the applicability of the DigComp 2.1 framework in assessing digital competence within Islamic educational contexts (Basilotta-Gómez-Pablos et al., 2022). The moderate levels of digital competence observed across five domains suggest the need for seamless integration of digital tools and contemporary skills in Islamic education (Abubakari & Kalinaki, 2024). The integration of digital tools as didactic resources in modern Islamic education underscores the importance of designing educational strategies that align with Islamic ideals while embracing technological advancements (Ramadhan et al., 2022).

3.0 METHODOLOGY

3.1 Identification

Three essential phases were utilized in the systematic review process to identify numerous relevant publications for this study. Initially, we identified key terms and explored related words. After developing search strings for the Scopus and Eric databases (refer to Table 1), all relevant keywords were chosen. In the first stage of the systematic review, we acquired a total of 633 publications from these databases for the current research project.

Table 1 Search String

Scopus	TITLE-ABS-KEY ((technology* OR digital) AND (pedagogy* OR teach* OR instruction OR "education* activity") AND islam*) AND (LIMIT-TO (PUBYEAR , 2022) OR LIMIT-TO (PUBYEAR , 2023) OR LIMIT-TO (PUBYEAR , 2024)) AND (LIMIT-TO (DOCTYPE , "ar")) AND (LIMIT-TO (SUBJAREA , "SOC")) AND (LIMIT-TO (PUBSTAGE , "final")) AND (LIMIT-TO (LANGUAGE , "English")) Date of Access: May 2024
Eric	(technology* OR digital) AND (pedagogy* OR teach* OR instruction OR "education* activity") AND islam* Date of Access: May 2024

3.2 Screening

During the screening phase, we evaluate research articles to determine their relevance to our established research questions. The criteria for selection include focusing on studies related to technology and Islamic pedagogical content. We also eliminate any duplicate entries from the list to maintain accuracy. In the initial screening, 487 publications were removed, while the next phase involved assessing 146 papers based on specific inclusion and exclusion criteria (see Table 2). Our main interest is in full articles, as they offer actionable recommendations. This review is restricted to English-language sources published between 2022 and 2024. In total, 10 publications were discarded due to duplication.

Table 2 The selection criterion for database searching

Criterion	Inclusion	Exclusion
Language	English	Non-English
Timeline	2022 – 2024	< 2021
Literature Type	Journal (Article)	Conference, Book, Review
Publication stage	Final	In Press
Subject	Social Sciences	Other than social sciences

3.3 Eligibility

In the third phase of the eligibility assessment, we compiled a set of 136 articles. During this stage, we thoroughly examined article titles and core content to verify their alignment with the inclusion criteria and relevance to the ongoing study's research objectives. As a result, 114 papers were excluded due to being out of scope, having insignificant titles, lacking abstracts related to the study's objective, or having no full-text access supported by empirical evidence. Consequently, a total of 22 articles remain for the upcoming review.

3.4 Data Extraction and Analysis Phase

In this research, an integrative analysis was used as one of the methods to examine and combine different research approaches. The main aim was to pinpoint relevant topics and subtopics. The process began with the initial stage of data collection, which started the development of thematic content. Following this, the researchers reviewed significant studies concerning the integration of technology into Islamic educational content. They thoroughly examined the methodologies used in these studies as well as their research outcomes. Working with co-authors, the lead researcher formulated themes based on the evidence within the study's framework. Subsequently, the authors cross-verified the results to address any inconsistencies in the theme development process. The themes were adjusted to ensure alignment and coherence. Three experts reviewed each subtheme to validate the analysis for clarity, importance, and relevance. This expert evaluation phase confirmed the domain validity by addressing the following questions:

- 1) How are modern technological tools integrated into Islamic education?
- 2) How do pedagogical skills impact teacher competencies?
- 3) What are the sociocultural implications and policy perspectives about technology?

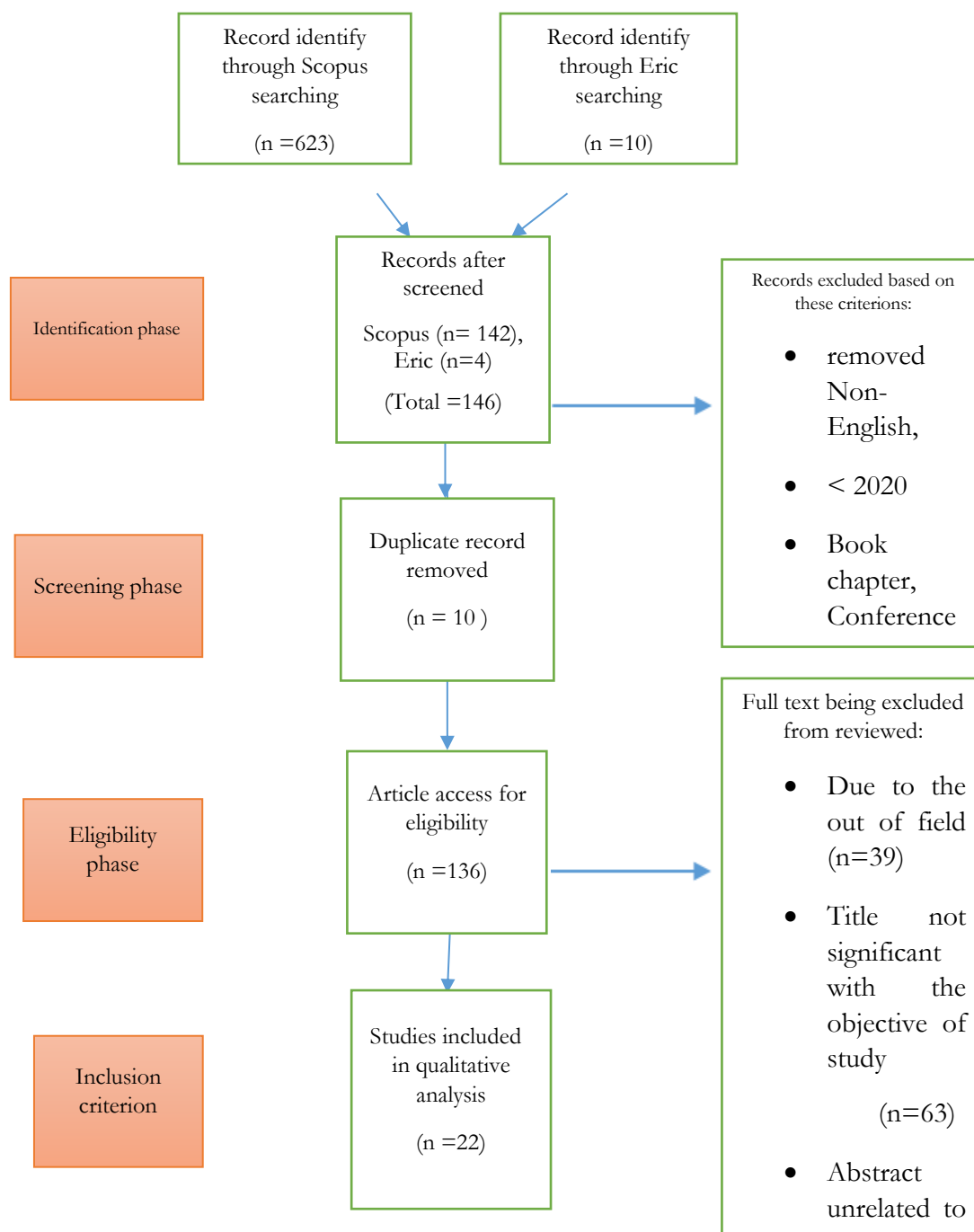


Figure 2 The PRISMA analysis table for proposed searched study

The complete procedure of article selection, including identification, screening, and inclusion based on established criteria, is visually shown in Figure 2, which follows the PRISMA guideline for systematic review. This figure helps to clarify how the final set of studies was obtained in a structured and transparent way. After completing the screening step, the next phase involved further checking of the selected articles to ensure they meet the specific objectives and scope of this study, as explained in the following subsection.

4.0 RESULTS AND FINDINGS

The following discussion presents the findings and recommendations based on these themes, highlighting the importance of strategic implementation and policy support to ensure the effective integration of technology in Islamic educational settings. This study explores the intersection of digital technology and Islamic education, focusing on three main themes: technology integration

in Islamic education, pedagogical skills and teacher competence, and sociocultural implications and policy perspectives. Each theme addresses challenges and opportunities presented by technological advancements, offering insights into how Islamic education can evolve while maintaining its core principles.

4.1 Technology Integration in Islamic Education

The integration of technology in Islamic education is a multifaceted endeavor that draws upon various aspects of Islamic philosophy, pedagogy, and contemporary advancements. Abdelgalil, (2023) explores the philosophical underpinnings of innovation and creativity in Islam, emphasizing the rich heritage of creativity, innovation, and technology within Islamic history. Hamdeh, (2024) discusses the challenge posed by the internet and digital media to traditional Islamic knowledge transmission methods. The accessibility of information through digital platforms has led to increased self-learning among lay Muslims, altering traditional pedagogical dynamics and challenging the authority of traditional scholars. Awang et al., (2022) present the development of the Tarannum Smart Learning Application (Tarannum-SLA), designed to facilitate the learning of tarannum, a technique for beautifying Quranic recitation. This multimedia tool not only caters to Muslims interested in mastering this art but also serves as a means to promote Quranic education among non-Muslims. Similarly, Ghani, Fatayan, Azhar, & Ayu, (2022) evaluate the use of technology-based learning in Islamic schools, emphasizing the importance of technology in enhancing the teaching and learning process.

Furthermore, Mussa Saidi Abubakari et al., (2023) explore the transformative impact of technological advancements on Islamic education in Aceh, Indonesia. Through qualitative analysis, they identify paradigm shifts, changing perceptions of media use, and evolving views of the learning environment as key factors driving the transformation of traditional Islamic educational models. Additionally, Hamid et al., (2024) propose the Integrated Management Tahfiz Model (IM-Tahfiz) as a solution to address the challenges faced by Tahfiz education management in Malaysia. By leveraging technology, the IM-Tahfiz model aims to enhance the quality of education and satisfaction among students and educators. Finally, Ritonga, (2021) highlights the importance of digital tools such as Maktabah Syamilah in facilitating information-seeking for higher education in Islamic studies.

In conclusion, the integration of technology in Islamic education encompasses philosophical, practical, and transformative dimensions. From philosophical reflections on creativity and innovation to the development of digital applications and models for educational enhancement, technology plays a pivotal role in shaping the present and future of Islamic education.

4.2 Pedagogical Skills and Teacher Competence

The scope of pedagogical skills and teacher competence is critical in the evolving landscape of education. In the context of global educational advancements, the integration of technology, innovative teaching methods, and continuous professional development are essential. This analysis examines various studies within this scope, highlighting their objectives, methodologies, findings, and future research directions (see Table 3)

Table 3 Analysis Relating to Study on Teachers' Skills and Competencies Using Technology

No	References	Objectives	Methodologies	Findings	Conclusion & Future Research
1	Solikhah & Budiharso, (2022)	To explore the effects of Linguistic Landscape (LL) on language learning and its connection with blended learning, student motivation, and teacher effectiveness in an Islamic educational setting.	Confirmatory Factor Analysis (CFA) and Structural Equation Modeling (SEM) using SmartPLS.	All independent and moderating variables affect the quality of learning.	It is recommended that educational administrators improve linguistic signs as teaching materials and frequently update the text to enhance language exposure. Future studies should consider additional variables.
2	H. S. Siregar, (2023)	To assess the perceived ease of use and benefits of the SPACE platform for online education among professional education students.	Mixed-methods approach, descriptive techniques, Technology Acceptance Model (TAM) questionnaire, and multiple linear regression analysis	The perceived ease of use and usefulness have a significant effect on online learning effectiveness, leading to a 14.77% increase in graduation rates.	Schools should prioritize user-friendly online platforms and explore other factors affecting learning outcomes.
3	Alkandari & Al-Failakawei, (2022)	To improve the autonomous learning skills of preservice Islamic studies teachers through a reverse learning project.	Analysis using both qualitative and quantitative methods of the reverse learning project	The project enhanced self-regulation, responsibility, technology integration, and design skills, and improved emotional, cognitive, and manageability levels.	Further research should investigate reverse learning projects for preservice teachers in other fields and refine the project designs.
4	Munifah & Purwaningrum, (2022)	To identify effective leadership strategies for developing school culture through digital Turats learning.	Qualitative ex post facto design involving observation, documentation, and interviews	Trust was built, school programs were developed, and regular monitoring and evaluation were ensured through digital Turats learning.	Schools should align with their vision and mission, create programs with expert teams, and allocate necessary resources. Future research might look into wider applications of digital learning strategies.
5	Sary, Dudija, & Moslem, (2023)	Study how digital competency and self-leadership affect teachers' innovative work behavior in Islamic International schools.	Quantitative research with SEM-PLS analysis	Digital competency and self-leadership have a significant effect on innovative work behaviour, with a combined impact of 58.4%.	Emphasizes the importance of teacher training and self-development programs. Future studies should examine other factors that influence innovative behavior.
6	Jarudin, (2024)	To review the historical development, current status, and prospects of teacher competency in	Qualitative methods, including interviews with educators, policymakers, and academics	Notable progress has been made in teacher competency, though ongoing efforts are needed in pedagogical	Continued focus on holistic teacher competency development is recommended. Future research should address

Islamic education in Indonesia.	skills and ICT integration.	emerging challenges and offer insights into inclusive education.
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4.3 Sociocultural Implications and Policy Perspectives

The sociocultural implications and policy perspectives in digital technology and Islamic education are multifaceted. The findings (see Table 4) highlight significant implications for policy-making and suggest directions for future research to support the digital transformation in Islamic educational settings.

Table 4 Analysis Table regarding Sociocultural Implications and Policy Perspectives

No	References	Objectives	Methodologies	Findings	Conclusion & Future Research
1	Juhaidi et al., (2023)	Explore and analyze digital citizenship knowledge and practices among IHS and IHE students.	Questionnaire, T-test, Pearson's correlation	There is a significant correlation between knowledge and practice of digital citizenship; IHS and IHE students show similar patterns.	Recommend introducing and instilling digital citizenship in Islamic educational institutions; policy support is needed from the government.
2	Zubair & Raquib, (2020)	Discuss social media addiction and its impact on human values from an Islamic perspective.	Literature review, ethical framework	Social media addiction alters human values, contradicting Islamic principles.	Propose an ethical framework for social media design based on Islamic law; there is a need for policies that address social media's moral implications.
3	Ghozali, Habibi, & Afifulloh, (2022)	Study the role and transformation of traditional Islamic teachers (Guru Kampong) in the digital era.	Qualitative, observations, unstructured interviews.	Traditional Guru Kampong facing a decline due to slow regeneration and a lack of stakeholder support.	Suggests improving stakeholder engagement and updating teaching methods in traditional pesantren.
4	Nawi, Zakaria, Hashim, Mahalle, & Ren, (2020)	Identify potential usage of Islamic Digital Resources in Polytechnic Brunei Darussalam.	Quantitative, survey.	High potential for Islamic Digital Resources; students are familiar with and willing to use digital learning tools.	Highlight the need for the development and implementation of Islamic Digital Resources in polytechnic education.
5	Asmuni, (2021)	Study moral teachings and spirituality of Javanese-Muslim ethnic groups in the digital age.	Qualitative, interviews, observations.	Kejawen's morals and spirituality are rooted in Javanese traditions; the digital era requires spiritual intelligence.	Emphasizes preserving Islamic Kejawen culture to enhance spirituality and morality in the digital age.
6	Mustas, (2021)	Discuss information behaviour and literacy development among santri in the digital era.	Qualitative, field study.	Santri adapting to digital era; implementation of information multiliteracy supported by pesantren policies.	Future research should explore more factors influencing information literacy and behavior among santri.
7	Rajiani, (2024)	Investigate students' readiness and attitudes towards sustained online learning post-pandemic in Islamic higher education.	Quantitative, Structural Equation Modelling.	Students show readiness and positive attitudes towards online learning; flexibility and accessibility are key benefits.	Recommend comprehensive online learning platforms, complex technological support, and conducive learning environments for sustained e-learning.
8	Yusoff, Hashim, Muhamad, & Hamat, (2021)	Identify elements for designing and developing an online problem-based learning module for Islamic Studies.	Quantitative, Fuzzy Delphi technique	Elements for the e-PBM PI-Poli module gained expert consensus and were needed for effective integration in polytechnic education.	Suggest further development and refinement of technology-based active learning modules in Islamic Studies.

5.0 DISCUSSION

The integration of technology in Islamic education encompasses various dimensions, drawing on Islamic philosophy, pedagogy, and contemporary advancements. The philosophical foundations of creativity and innovation in Islam highlight Muslim scholars' rich heritage of technological and scientific achievements, emphasizing the promotion of creativity as a religious duty. This perspective challenges the dominant Western discourse and underscores the historical commitment to innovation within Islamic tradition. Practical applications of technology in Islamic education are evident in tools like the Tarannum Smart Learning Application, which aids in Quranic recitation and promotes Quranic education among a broader audience.

The transformative impact of technological advancements is particularly noted in regions like Aceh, Indonesia, where paradigm shifts in media use and perceptions of the learning environment are reshaping traditional educational models. Models such as the Integrated Management Tahfiz (IM-Tahfiz) in Malaysia demonstrate how technology can address educational management challenges and improve the quality of education. Digital tools like Maktabah Syamilah facilitate academic research by providing access to original Arabic literature, underscoring the importance of digital literacy skills.

6.0 CONCLUSION

In conclusion, the integration of technology in Islamic education is crucial, but it must be done in a way that preserves the core values of Islamic teachings. This study provided three significant themes highlighting the need for effective teacher training, culturally appropriate content development, and solid technological infrastructure to incorporate technology into the learning process successfully. Challenges such as resistance to change and limited digital skills among educators must be addressed through proper training, strategic planning, and ongoing research. A balanced approach to integrating technology into Islamic pedagogy is essential for improving the quality and relevance of Islamic education in the digital age.

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Conflicts of Interest

The author declares that there is no conflict of interest regarding the publication of this paper

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