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Enhancing Islamic Education through Technology Integration: A Study of Teaching Practices in Indonesia

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ENHANCING ISLAMIC EDUCATION THROUGH TECHNOLOGY INTEGRATION: A STUDY OF TEACHING PRACTICES IN INDONESIA

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Abstract

The integration of technology in education presents both opportunities and challenges, particularly in the context of Islamic education, where maintaining pedagogical effectiveness while embracing digital tools remains a key concern. This study aims to analyze technology integration in Islamic education, explore educators' strategies to enhance student engagement and understanding, and identify challenges and opportunities related to technology use, including artificial intelligence and social media, to optimize digital-based learning. Employing a quantitative cross-sectional survey design, the study collected data from 11,372 Islamic education teachers across Indonesia, following a pilot phase involving 569 teachers. The findings indicate a generally positive reception of technology integration, with a high overall average response (4.4035), demonstrating its perceived effectiveness in supporting student engagement and comprehension. Key recommendations include enhancing teacher training programs, improving technological infrastructure, and adopting a balanced pedagogical approach to optimize educational outcomes.

Keywords: *Integration; Islamic Education; Practices; Teaching; Technology.*

A. Introduction

Islamic education is changing to suit the needs of the times, and technology plays a vital role in that transformation (Harmathilda et al., 2024). Technology is useful in education because it can provide content that suits students' individual learning needs (Mayor et al., 2021). Digital content is provided by integrating digital tools and pedagogical approaches for flexible and interactive learning. This shift provides opportunities for more personalized learning experiences through Islamic educational applications, video tutorials, infographics, and interactive quizzes (Hartati et al., 2022).

Digital technology in the classroom refers to various software and gadgets designed to help students with specific accessibility needs. Educational technology saves time and effort by automating tasks such as attendance and monitoring student performance (Haleem et al., 2022). Technology integration is increasingly being used in teaching to improve teaching and learning. The rapid development of technology integration has introduced better patterns for finding innovative teaching models (Cherkasova et al., 2022). One of the integrations of technology in the study of religion is the application of simulation and gamification. In religious studies, technology enables experiential learning, increasing student engagement and understanding. Additionally, technological advances allow real-time assessment and feedback, optimizing the evaluation process (Siregar et al., 2022).

The use of technology has positive and negative impacts. Therefore, collaboration between various stakeholders is needed to maximize benefits and minimize shortcomings. The role of innovation in technology-based learning is critical to ensure that technology is utilized optimally and comprehensively (Ambarwati et al., 2021).

One of the stakeholders in technology integration in learning is the teacher. Educators have a role in effectively adapting and combining technology in teaching methods. Teachers must ensure that digital tools not only replace, but also strengthen teaching through pedagogical strategies. Technology integration requires training, institutional support, and digital classroom

management to prevent misuse (Kholifah, 2022). Without adequate preparation, technology can hinder rather than enhance the learning experience. Integrating information technology significantly improves teachers' digital skills, enhancing learning quality. Teachers experience increased proficiency in operating learning software, using e-learning platforms, and utilizing social media for educational purposes (Dahmayanti & Nurmila, 2024; Mesran et al., 2024).

In the digital era, utilizing social media networks as a means of interaction is also an effective strategy. Social media, such as discussion groups and communication applications, expand learning and enable interaction outside the classroom. Social media can increase student engagement by offering a space to ask questions, share ideas, and collaborate virtually. Finally, efforts to encourage students to engage effectively in learning require a motivational and inspirational approach. Teachers need to create a supportive learning environment, provide feedback, and show concern for each student's progress (Maulia, 2023). With the right approach and technology, teachers can increase student participation and learning outcomes.

Teachers who play an important role in technology integration should ideally have implemented technology-based learning. However, research examining the application of technology by teachers has not been widely discussed. Many studies acknowledge the benefits of technology, but few discuss its impact on understanding Islamic teachings (Siregar, 2023). Specific challenges and strategies for its effective integration in Islamic education remain underexplored (Elbanna & Muthoifin, 2024; Mala & Hunaida, 2023). There is also a gap in research regarding the alignment between technological advances and traditional methodologies of Islamic pedagogy (Isaeva et al., 2025). Some research has assessed how technology improves understanding of the Al-Qur'an and Hadith (Helandri & Supriadi, 2024). However, the learning practices used by teachers still require further exploration. How teachers implement learning innovations that integrate with technology still needs to be

explored. It is also necessary to examine their alignment with Islamic values and balance with modern principles.

Based on the background, this study evaluates how teaching practices are applied in modern education. It focuses primarily on student motivation, content delivery, and classroom management. This study also analyzes technology integration in Islamic education and practical solutions for its use. It examines the strategies used by educators to implement technology effectively. In addition, it identifies challenges and opportunities in using technology, including AI and social media. This aims to optimize digital-based learning in Islamic education.

This study offers a relatively new approach by combining the evaluation of traditional teaching practices with the integration of modern technology. The novelty of this research is identifying the synergy between tradition and technology in education. While much research explores technology in education, this study focuses on traditional teaching practices. It also assesses how technology can enhance teaching practices in the digital era. The findings of this study provide recommendations for educators and policymakers both nationally and internationally.

B. Method

This study employed a quantitative approach with a cross-sectional survey design to collect data at one point (Creswell, 2012; Wang & Cheng, 2020). The design examined specific population characteristics, focusing on technology integration in Islamic education (Creswell, 2012). Cross-sectional studies offer efficiency, cost-effectiveness, and key insights for future research directions (Wang & Cheng, 2020). Participants were selected based on clear criteria to ensure relevance to the research objectives. Stratified random sampling ensured balanced representation across different regions, educational levels, and teaching experiences.

Survey participants were drawn from diverse regions in Indonesia, considering gender, age, and school type. During the pilot phase, 569 teachers participated, followed by 11,372 teachers in the main survey. The

sample size ensured representation with a 95% confidence level and a 5% margin of error (Gill & Johnson, 2010; Krejcie & Morgan, 1970). The research instrument was systematically developed and guided by the TPACK framework. Each questionnaire item aligned with technological, pedagogical, and content knowledge components relevant to Islamic education.

Content validity was established through expert questionnaire reviews for clarity, appropriateness, and relevance. Pilot testing identified comprehension difficulties and assessed instrument reliability using Cronbach's Alpha and factor analysis. Fourteen out of fifteen items were valid, yielding a Cronbach's Alpha of 0.929, indicating excellent reliability. Inferential analysis involved One-Way ANOVA and Tukey HSD to assess group differences. Assumptions of normality and variance homogeneity were tested to validate the inferential results.

Fundamental descriptive statistics summarized demographic characteristics and technology integration trends among respondents. Data interpretation systematically mapped statistical outcomes onto the TPACK framework for contextual relevance. Data cleaning addressed missing values and outliers through appropriate imputation or exclusion methods. Although quantitative research captures broad trends, it often misses deeper meanings in Islamic education. To address this limitation, the discussion section provides a more nuanced interpretation of the findings.

C. Results and Discussion

The following section presents the research findings, which provide a comprehensive analysis of learning Islamic religious education using artificial intelligence.

1. Results

a. Demographic characteristics

Data was collected by administering a questionnaire to participants. The gathered data includes various characteristics. Table 1 presents the participants' demographics as follows.

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Table 1. Demographics of participants

Demographic Characteristics	Total	Percent
Gender		
Male	4124	36,265
Female	7248	63,735
Age		
<30	1671	14,694
31-40	6294	55,346
41-50	3023	26,583
>51	384	3,377
Region		
Aceh	388	3,406
Bali	1	0,009
Banten	133	1,167
Bengkulu	176	1,545
DI Yogyakarta	98	0,860
DKI Jakarta	1	0,009
Gorontalo	115	1,009
Jambi	421	3,695
Jawa Barat	2335	20,495
Jawa Tengah	2034	17,853
Jawa Timur	794	6,969
Kalimantan Barat	1	0,009
Kalimantan Selatan	417	3,660
Kalimantan Tengah	79	0,693
Kalimantan Timur	190	1,668
Kalimantan Utara	59	0,518
Kepulauan Bangka Belitung	38	0,334
Kepulauan Riau	403	3,537
Lampung	230	2,019
Nusa Tenggara Barat	124	1,088
Nusa Tenggara Timur	3	0,026
Papua Barat	41	0,360
Riau	321	2,818
Sulawesi Barat	9	0,079
Sulawesi Selatan	1169	10,261
Sulawesi Tengah	161	1,413
Sulawesi Tenggara	57	0,500
Sulawesi Utara	59	0,518
Sumatera Barat	792	6,952
Sumatera Selatan	233	2,045
Sumatera Utara	490	4,301
Level		

Demographic Characteristics	Total	Percent
Kindergarten	75	0,660
Elementary School	8529	75,000
Middle School	1796	15,793
High School	972	8,547

Based on Table 1, the survey participants were mostly female, comprising 63.74%, while males comprised 36.27%. The average age was 37 years, with 55.35% of participants in the 31-40 age range. Participants were drawn from 31 out of 38 regions in Indonesia, with the highest representation from West Java (Jawa Barat) at 2,335 participants, or 20.5%. Most participants, 8,529 or 75%, were from the Elementary School level.

b. Results of descriptive statistical analysis

Descriptive statistical analysis was conducted to determine the total number, mean, and standard deviation for each item, as shown in Table 2 below.

Table 2. Descriptive statistics

Item	N	Sum	Mean	Std. Deviation	Variance
Item01	11372	53241.00	4.6818	.66213	.438
Item02	11372	52844.00	4.6469	.67061	.450
Item03	11372	51830.00	4.5577	.69958	.489
Item04	11372	52061.00	4.5780	.68720	.472
Item05	11372	52517.00	4.6181	.66776	.446
Item06	11372	50109.00	4.4063	.75240	.566
Item07	11372	50964.00	4.4815	.72198	.521
Item08	11372	52561.00	4.6220	.65415	.428
Item09	11372	50830.00	4.4698	.71435	.510
Item10	11372	49746.00	4.3744	.74290	.552
Item11	11372	47992.00	4.2202	.82815	.686
Item12	11372	49101.00	4.3177	.78802	.621
Item13	11372	47584.00	4.1843	.85414	.730
Item14	11372	45479.00	3.9992	.95768	.917

The data from Table 2 reveals that the item with the highest average score is Item 01, with an average of 4.6818, indicating that respondents strongly agree with the statement in this item. This is followed closely by Item 02 (4.6469) and Item 08 (4.6220), which also reflect a high level of

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agreement. On the other hand, Item 14 has the lowest average score at 3.9992, which still falls within the "agree" range but shows greater variability in respondents' agreement compared to the other items.

Standard deviation measures how spread out the responses are from the average. Item 14 has the highest standard deviation (0.95768), indicating more variation in respondents' answers. Conversely, Item 08 has the lowest standard deviation (0.65415), suggesting that respondents' answers are more consistent. Variance, the square of the standard deviation, is highest for Item 14 (0.917) and lowest for Item 08 (0.428).

c. Results of frequency analysis

Overall, the data indicate that most respondents generally agree or strongly agree with the statements in the questionnaire, particularly with Items 01 through 08. However, there is some variation in responses for specific items, especially Item 14, which may require further investigation or a more in-depth explanation. This insight helps understand respondents' views and attitudes toward the topic measured by each item. As illustrated in Table 3, the frequency distribution per item provides additional details on the collected data.

Table 3. Frequency analysis

Item	Strongly Agree	Agree	Netral	Disagree	Strongly Disagree
Motivation is provided to students at the beginning of the lesson.	8679 (76,32%)	2016 (17,73%)	512 (4,5%)	81 (0,71%)	84 (0,74%)
Lesson content is delivered in accordance with the learning objectives.	8288 (72,88%)	2398 (21,09%)	520 (4,57%)	86 (0,76%)	80 (0,7%)
Learning materials are presented systematically to ensure comprehension.	7411 (65,17%)	3127 (27,5%)	675 (5,94%)	83 (0,73%)	76 (0,67%)
Lessons are started	7578	3010	635	77	72 (0,63%)

Item	Strongly Agree	Agree	Netral	Disagree	Strongly Disagree
and concluded within the allocated time.	(66,64%)	(26,47%)	(5,58%)	(0,68%)	
Opportunities are given to students who have not yet understood the material to ask questions and discuss.	7945 (69,86%)	2722 (23,94%)	560 (4,92%)	79 (0,69%)	66 (0,58%)
Teaching approaches are applied according to the characteristics of each student.	6158 (54,15%)	3921 (34,48%)	1115 (9,8%)	112 (0,98%)	66 (0,58%)
Lessons are concluded with closing steps.	6721 (59,1%)	3640 (32,01%)	842 (7,4%)	104 (0,91%)	65 (0,57%)
Efforts are made to ensure students actively participate in the learning process.	7925 (69,69%)	2784 (24,48%)	529 (4,65%)	79 (0,69%)	55 (0,48%)
Engaging prompt questions are designed to enhance student involvement.	6577 (57,84%)	3757 (33,04%)	894 (7,86%)	91 (0,8%)	53 (0,47%)
Various assessment strategies are developed to measure student learning outcomes.	5784 (50,86%)	4289 (37,72%)	1125 (9,89%)	121 (1,06%)	53 (0,47%)
Personal data security is understood and applied.	4956 (43,58%)	4359 (38,33%)	1738 (15,28%)	243 (2,14%)	76 (0,67%)
Learning procedures are communicated before the lesson begins.	5518 (48,52%)	4264 (37,5%)	1353 (11,9%)	159 (1,4%)	78 (0,69%)
Student characteristics are analyzed before selecting artificial intelligence applications for learning.	4788 (42,1%)	4383 (38,54%)	1820 (16%)	271 (2,38%)	110 (0,97%)

Item	Strongly Agree	Agree	Netral	Disagree	Strongly Disagree
Social media networks are utilized for effective interaction with students.	4030 (35,44%)	4274 (37,58%)	2306 (20,28 %)	553 (4,86%)	209 (1,84%)

Based on Table 3, the study results indicate a strong commitment among participants to student motivation and engagement practices. Specifically, 76.3% of participants consistently motivated the learning process. Similarly, 69.7% regularly ensured active student involvement throughout learning activities. Moreover, 57.8% of participants consistently employed engaging trigger questions to stimulate student participation. Thus, fostering motivation and engagement is central to participants' teaching strategies. However, the slightly lower use of trigger questions suggests opportunities for enhancing classroom interaction techniques.

In addition to motivation and engagement, the results demonstrate systematic instructional planning and delivery approaches. Specifically, 72.9% of participants consistently aligned instructional content with clearly defined learning objectives. Moreover, 65.2% organized teaching materials systematically, ensuring coherence and instructional flow. Similarly, 66.6% adhered strictly to scheduled lesson times, reflecting discipline in instructional time management. Additionally, 69.9% gave students sufficient time to comprehend the presented materials. However, only 59.1% consistently concluded lessons with structured closing activities. This pattern suggests a strong pedagogical framework, although lesson summarization practices may require further reinforcement.

Parallel to these findings, though at relatively moderate levels, differentiated instruction practices were also observed. Specifically, 54.2% of participants consistently adapted their teaching methods to accommodate diverse student characteristics. While this demonstrates a substantial commitment to student-centered learning, the figure remains lower than in other areas. Thus, differentiated instruction represents a potential area for professional development and pedagogical growth.

Similarly, assessment practices reveal a comparable trend in participant behavior and commitment. 50.9% consistently employed diverse strategies to measure student learning outcomes. Although a majority values varied assessment methods, the widespread adoption of innovative strategies remains limited. These findings suggest that assessment practices, while recognized, require continued pedagogical attention and enhancement.

Finally, in the domain of technology integration and digital literacy, substantial variation among participants was evident. Only 48.5% consistently informed students about the technical aspects of the learning process. Similarly, 42.1% regularly analyzed student characteristics before applying artificial intelligence applications. Furthermore, only 35.4% consistently used social media platforms to communicate with students. Additionally, 43.6% demonstrated consistent awareness regarding personal data protection practices. Thus, while technology adoption is increasing, critical competencies in this area remain underdeveloped for many participants.

Although the majority of participants demonstrated a strong commitment to core teaching practices, notably high percentages in motivation, instructional planning, and content delivery, the lower scores in certain items offer important academic implications.

First, the relatively lower consistent use of social media (35.4%) for communication with students suggests a gap in digital communication competence among educators. This finding is significant in light of increasing expectations for technology-mediated learning environments. The low adoption rate may reflect concerns about maintaining professionalism, data privacy issues, or limited digital literacy skills among teachers, which require further professional development initiatives.

Second, the lower levels of data protection awareness (43.6%) highlight a critical concern regarding ethical responsibilities in digital education. As educational activities increasingly rely on digital platforms, protecting students' personal information becomes essential. The

insufficient awareness among participants suggests that training on data security and ethical digital practices should be prioritized in teacher professional development programs.

Third, the relatively moderate percentage of participants (42.1%) who consistently analyzed students' characteristics before implementing artificial intelligence (AI) applications points to another meaningful academic implication. It suggests that while educators may adopt AI tools, they may lack sufficient critical reflection regarding the personalization of learning. Effective AI integration requires technical skills and a deep understanding of individual learner needs, reinforcing the need for targeted pedagogical training in AI-informed education.

These findings collectively suggest that while foundational teaching practices are well-established among participants, there are critical gaps in digital literacy, ethical technology use, and differentiated digital pedagogy. Addressing these gaps would not only enhance current teaching practices but also align them more closely with contemporary educational demands.

Descriptive statistical analysis confirms that the research data have an appropriate distribution, accurate measurements, and relevant variation. These results allow for reliable data interpretation of trends, patterns, and relationships, supporting strong decision-making in the research context. Thus, further analysis based on this data is reliable and can support strong conclusions and evidence-based decisions. Additionally, a one-way ANOVA and Tukey's Honest Significant Difference (HSD) Post Hoc test were conducted to assess whether the observed differences are statistically significant, as shown in Table 4.

Table 4. ANOVA with Tukey's test for noadditivity

			Sum of Squares	df	Mean Square	F	Sig
Within People	Between People		2497.361	568	4.397		
	Between Items		364.755	14	26.054	83.805	.000
	Residual	Nonadditivity	.669[a]	1	.669	2.154	.142
		Balance	2471.509	7951	.311		

	Sum of Squares	df	Mean Square	F	Sig
Total	2472.178	7952	.311		
Total	2836.933	7966	.356		
Total	5334.295	8534	.625		

Grand Mean = 4.4035

a. Tukey's estimate of power to which observations must be raised to achieve additivity = .651.

Data from Table 4 reveals that "Between People" shows variation among respondents, highlighting how individual differences affect survey results, with significant variation observed. "Within People" data indicates that variations between items show substantial differences in respondents' responses to different items. The high F-value (83.805) and very small significance value (Sig = .000) indicate that the differences between items are statistically significant. Nonadditivity residual data show that nonadditivity, or deviations from additive effects, is not significant (Sig = 0.142), meaning the additive assumption in this model is acceptable. Balance data indicates that residual variation shows unexplained variation not accounted for by the model. Tukey's power estimation required for observations to achieve additivity is 0.651, indicating how much data must be changed to meet the additive assumption.

This analysis demonstrates significant variation among survey items, meaning respondents provide different responses for each item. However, no significant deviation from the additive assumption suggests that the model used adequately describes the data. The overall high average (4.4035) indicates a general tendency for respondents to provide positive feedback.

2. Discussion

Technology makes a significant contribution to learning. Findings show motivation goes beyond attention and underpins meaningful, engaging, and enjoyable learning experiences. Proper technology integration can increase the attractiveness of the material and strengthen

students' interest in learning. Through this approach, teachers not only deliver content but also facilitate an adaptive and inspiring learning process. When technology is incorporated into the learning process, students are more motivated and able to understand the material more effectively (Lawrence & Tar, 2018). The effectiveness of digital learning depends on the synergy of pedagogy and technology used reflectively by teachers. The right approach can create deeper student involvement and understanding.

A comprehensive understanding of student learning outcomes is to assess student achievement. Not only focusing on evaluating the final results, but also on the learning process. When technology is incorporated into learning, it captures students' attention effectively. It also facilitates a more profound and more enjoyable learning experience. Technology can potentially increase student motivation and strengthen their understanding of the material. Technology enables more active, effective student engagement than traditional learning methods can provide (Lawrence & Tar, 2018).

Deep understanding is part of the learning goal. Designing and delivering targeted content is an important practice in ensuring the effectiveness of the learning process. Platforms like LMS and cloud allow teachers to create structured and flexible materials according to learning outcomes. The right digital materials support students' independent access anytime, anywhere, and according to their learning style. Digital materials are easier to access and understand than traditional methods, enhancing technology-integrated learning. (Kumar et al., 2021; Suharsiwi et al., 2024). This increases student autonomy and strengthens learning goal achievement through enjoyable learning experiences.

Learning materials arranged systematically in the teaching process reflect a strong awareness of understanding the content. The systematization of material is becoming increasingly important in the technology-based learning environment. Technology not only provides visual and interactive tools but also enables more organized content

distribution. The use of technology in teaching practice has been proven to increase learning effectiveness significantly. Technology has changed the tools available and how teaching is conducted in the classroom (Ayanwale et al., 2024). Teachers who master content, pedagogy, and technology can measurably increase the effectiveness of Islamic Education learning (Halimatussakdiah et al., 2024). This balance is important to achieve learning goals on time.

Teachers who consistently maintain lesson time show effective classroom management and efficiency awareness. Disciplined time management impacts the achievement of learning goals and reflects strong pedagogical competence. Time management is increasingly crucial when integrating laptops, tablets, and educational software. These digital tools help organize teaching and learning activities more structurally and adaptively. Teachers who actively use technology create more interactive and efficient learning in time management (Ditzler et al., 2016; Susanti et al., 2023). Effective time management is closely related to sufficient time for students to understand the material.

Giving students enough time shows pedagogical awareness of different students' learning abilities. Modern education emphasizes a personalized learning approach, making time flexibility crucial. Students need flexibility to learn according to their pace and learning style (Bertiz & Karoğlu, 2020). Technology is vital in supporting this flexibility, where learning must be appropriate to the student's character.

Adapting teaching to student characteristics reflects an orientation to a student-centered learning approach. This effort is essential in modern learning, where student diversity demands flexible teaching strategies. Technology integration supports this diversity and transforms students' engagement with learning materials (Bernacki et al., 2020). Technology supports personalized learning through multimodal content and diverse learning resources.

Active student involvement helps ensure that intended learning outcomes are successfully achieved. For students to be active, creative

learning is needed. Creativity in teaching is an essential factor that can improve student learning experiences. Creative approaches, such as innovative and interactive methods, have been proven to increase learning effectiveness (Fauzan et al., 2022). Teachers use various methods to attract attention and significantly increase student engagement. This approach can also stimulate students' questions and encourage discussion of the material being taught.

Student engagement through questions and stimulating discussions, highlighting the importance of dynamic interaction in learning. Stimulating questions and discussions can lead students to think critically and encourage them to deepen the studied topic. Technology enriches learning experiences and develops 21st-century skills such as collaboration and digital literacy (Vali, 2023). These skills are essential as many life and work sectors rely on digital collaboration.

Learning achievement is proven through student evaluations. Evaluation at the end of learning ensures student involvement meets learning objectives. Students in technology-based learning improve these skills more than conventional method learners (Widiyanti & Rahman, 2024). This emphasizes that technology is not only a teaching aid but also a crucial learning instrument. It helps develop highly relevant skills to contemporary educational and professional demands (Abuhassna et al., 2020). Digital quizzes and interactive feedback enable more in-depth and reflective real-time evaluation.

Technical understanding must be adequate in learning that integrates technology. Adequate understanding is a prerequisite for creating a smooth and effective learning experience. Students must know how to access the material to engage fully with the digital learning process. Although most teachers provide technical info, challenges persist, especially in professional readiness. Many teachers still have not received adequate training in the use of educational technology (Butler et al., 2024). This lack of training may hinder digital learning optimization. It can also create a gap between teachers' skills and modern pedagogy demands.

Without a solid understanding and adequate skills, teachers may struggle to effectively integrate technology into their teaching. Limited infrastructure hinders effective technology integration, especially in remote schools (Negoescu & Mitrulescu, 2023; Imran & Mardhiah, 2023). This condition creates significant barriers to comprehensive digital learning adoption (Ullah et al., 2021; Lubis et al., 2024). Another challenge is over-reliance on technology. This can reduce direct interaction between teachers and students, an essential part of learning (Zhai et al., 2024; Susanti et al., 2024).

This study offers strategic insights for Muslim-majority countries developing value-based digital Islamic education. Technology integration in Islamic education enhances students' understanding, motivation, and engagement. This occurs through the pivotal roles of teachers, digital platforms, differentiated strategies, reflection, and assessment (Purwanto et al., 2023; Asyari et al., 2024). However, its success largely depends on robust teacher training and equitable digital infrastructure (Herawati et al., 2024; Mamat & Nugraha, 2023; Suryawati et al., 2025).

These findings enrich global discourse on value-oriented digital religious education. Technology contextualizes religious values and supports humanistic and adaptive education policies (Hakim et al., 2024). Indonesia's experience shows that sustainable digital religious education needs synergy between values, pedagogy, and technology (Anis, 2024; Muslimin et al., 2022).

Interactive media, digital platforms, and student-centered approaches hold global relevance (Susanti et al., 2024; Herlina, 2022). Challenges like teacher readiness and infrastructure are also common in developing nations. Indonesia's digitalization and local wisdom balance emphasize preserving cultural and spiritual roots (Khasanah et al., 2023).

Aligned with SDG 4 on Quality Education, Indonesia's digitalization and teacher training efforts promote inclusive education (Nurdin et al., 2024). Addressing access gaps and enhancing teacher capacity is essential. Technology should complement, not replace,

religious education, ensuring meaningful, value-driven learning that informs global education reform (Wathoni et al., 2023).

Despite the overall positive trends, several key challenges remain. The relatively low use of social media as a communication tool (35.4%) raises several concerns. Issues include privacy, professionalism, and cultural appropriateness within Islamic education contexts. Teachers may hesitate to use social platforms to maintain ethical boundaries and protect students' data (Suryawati et al., 2025). This situation indicates the need for more straightforward guidelines and training in safe digital communication practices (Mamat & Nugraha, 2023).

Similarly, the moderate adoption of differentiated instruction (54.2%) suggests a gap in practical application. While teacher training programs are widespread, many challenges remain in real classroom implementation. Heavy teaching loads, rigid curriculum structures, and limited digital resources contribute to these challenges (Purwanto et al., 2023; Lubis et al., 2024). These findings highlight the need for more context-sensitive professional development initiatives for teachers. Such programs should empower teachers to personalize learning effectively using technology (Asyari et al., 2024).

These findings contribute to the global discourse on the digitalization of Islamic education today. Digitalization demands technological sophistication and sensitivity to religious values and wisdom (Khasanah et al., 2023). Indonesia's experiences show that successful technology integration carefully balances innovation and tradition (Nurdin et al., 2024). Other Muslim-majority countries can learn from Indonesia's spirituality and digital learning balance. This study may inspire adaptive, balanced, and value-based models of digital Islamic education (Lubis et al., 2024).

The TPACK framework offers a relevant theoretical foundation for advancing digital Islamic education globally. TPACK emphasizes the intersection of technology, pedagogy, and subject matter expertise in education. It enables teachers to integrate technology meaningfully while

maintaining fidelity to Islamic educational goals (Wathoni et al., 2023). In value-based education contexts, TPACK can guide the development of better teacher training programs. Such programs should foster critical, ethical, and effective use of technology among teachers (Imran & Mardhiah, 2023). By adopting TPACK-informed strategies, Muslim-majority countries can achieve balanced digital transformation. This transformation aligns with global educational reform movements and supports sustainable educational development (Asyari et al., 2024).

This study enriches Islamic pedagogy by offering insights into context-based technology-enhanced learning. It highlights how digital tools support value-driven and student-centered instruction in the Indonesian context (Susanti et al., 2024; Purwanto et al., 2023). The findings affirm that technology must align with Islamic spiritual and pedagogical principles. It bridges tradition and innovation in developing globally relevant Islamic education theory (Muslimin et al., 2022). The study serves as a foundational framework for future research on digital Islamic learning practices (Hakim et al., 2024).

Building on what we discussed before, it's important to point out that the technology integration model created in Indonesia is not just relevant to the local area but also has great potential to be used and adapted in different Islamic education systems around the world, especially in developing countries that face similar issues. The value-based learning practices developed in Indonesia demonstrate that technology can serve as a strategic medium to preserve the continuity between Islamic traditions and the demands of pedagogical innovation (Nurdin et al., 2024; Lubis et al., 2024). Countries such as Pakistan, Bangladesh, and Nigeria—home to large Muslim populations and currently undergoing digital transformation in education—can learn from Indonesia's experience, especially in balancing the authenticity of religious values with the application of modern technology (Wathoni et al., 2023).

Furthermore, Indonesia's approach to integrating local wisdom—such as the cultural values of *pesantren* and spiritual principles—into

digital learning practices demonstrates broader relevance in supporting context-responsive education (Khasanah et al., 2023). This means that changing Islamic education with technology doesn't have to copy Western ways that ignore values; instead, it can be shaped by a focus on God and human values, as shown in how the TPACK framework is adapted to fit local culture (Purwanto et al., 2023). Thus, the findings of this study not only enrich the national discourse on Islamic education but also expand the horizons of transnational Islamic digital education theory development (Hakim et al., 2024).

Strategically, the adoption of the Indonesian model may contribute to global education reform efforts that emphasize values, identity, and humanity as central to 21st-century education. This aligns with UNESCO's agenda on Education for Sustainable Development, as well as other global initiatives that point out the importance of building educational systems that are inclusive, adaptive, and rooted in community values (Imran & Mardhiah, 2023; Suryawati et al., 2025). Therefore, this study can be regarded as an intellectual contribution that enriches the global design of Islamic digital education—one that is not only technically functional but also spiritually, culturally, and socially relevant (Lubis et al., 2024).

Given the shared socio-religious contexts among Muslim-majority countries, especially in the Global South, the Indonesian approach to value-based digital Islamic education offers a distinctive and context-responsive model of educational innovation. By focusing on combining religious values with modern technology, this model addresses the challenge of keeping Islamic identity while also moving forward with digital teaching methods. This balance is especially significant for countries undergoing rapid digital transformation, such as Pakistan, Bangladesh, and Nigeria, where religious traditions remain deeply embedded in educational institutions. Indonesia shows that digital platforms can reflect local wisdom, pesantren culture, and spiritual values, proving that digitalization doesn't have to follow Western secular models but can instead focus on Islamic principles and human values.

Furthermore, the Indonesian experience presents a replicable framework for other nations seeking to harmonize technological innovation with spiritual integrity. For example, the application of digital tools in pesantren has not only enhanced educational delivery but also reinforced moral and ethical development among students, aligning with broader global efforts to build inclusive and humane education systems (Huda et al., 2024). The addition of digital ethics, especially in keeping students safe from online dangers like false information and gender-based violence, makes this model even more important and useful (Huda et al., 2024; Suryawati et al., 2025). In this regard, the Indonesian approach is not merely a localized strategy but a conceptual contribution to global educational reform movements that call for culturally grounded and ethically responsible digital education (Imran & Mardhiah, 2023).

Additionally, digital Islamic education that includes different learning styles, thoughtful teaching methods, and accessible technology aligns with the main ideas of the TPACK framework, providing a useful way for teachers around the world to grow and improve (Purwanto et al., 2023; Asyari et al., 2024). Such an effort is particularly crucial as digital transformation increasingly impacts not only formal education but also broader domains such as family dynamics and community-based learning, as seen in the evolving roles of Muslim families in educating children within digital environments (Mahmud et al., 2024). In rural and less developed areas, using digital content that respects local cultures and providing training can help ensure everyone has access to education while keeping traditional learning methods relevant to today's needs.

Therefore, the Indonesian model holds substantial transnational potential. Future comparative studies across Southeast Asia, South Asia, and Sub-Saharan Africa could validate its transferability and scalability across varied educational and cultural ecosystems. Such research would contribute not only to Islamic pedagogy but also to the global discourse on sustainable, humanistic, and inclusive education. In this context, Indonesia's value-based digital Islamic education can serve as a prototype for a globally relevant, spiritually attuned, and technologically capable educational future.

D. Conclusion

The integration of technology into Islamic education in Indonesia has been implemented. This has an impact on more effective learning practices. Islamic Religious Education Teachers have demonstrated strong and consistent habits in utilizing technology. This method is done to support student involvement and understanding. Teachers' primary strategy is to design lessons effectively and ensure critical communication in learning. Teachers analyze student characteristics before implementing artificial intelligence applications. This ensures that digital tools are used to meet various learning needs. In addition, using social media as a communication tool increasingly facilitates interaction and knowledge sharing between students and educators.

Recommendations include ongoing training for teachers focusing on digital skills and technology-based pedagogy. Improving technological infrastructure in less developed areas is crucial to ensuring equitable access to digital education. Policies must balance digital innovation and religious values to optimize technology use in religious learning. If supported by appropriate policies, technology in Islamic education can encourage inclusive and value-based learning. This aligns with the Sustainable Development Goals (SDGs 4) regarding quality education.

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