Integration of Digital Learning Media in Religious Education: A Policy Framework for Sustainable Educational Innovation

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Abstract. Digital transformation in Islamic religious education is an urgent need to support the achievement of Sustainable Development Goal (SDG) 4 on quality education. This research aims to develop a DIGITAL-PATRA (Digital-Integrated Religious Learning with Accessibility) that integrates digital learning media with Islamic religious education values. Using a conceptual framework development method through systematic literature analysis and policy synthesis, this study identified four main gaps in the existing approach: the unavailability of an integrated model that considers technological, pedagogical, and policy aspects holistically; the lack of an implementation framework that is adaptive to the local Indonesian context; the lack of measurable success indicators; and limited digital divide mitigation strategies. The developed DIGITAL-PATRA model consists of seven integrated components: Adaptive learning design, Integration of religious content-technology, Policy governance, Phased implementation, Appropriate technology, Universal accessibility, and Digital literacy. This research contributes to the development of sustainable Islamic religious education through a technological approach that is inclusive and responsive to the needs of Indonesia's digital society.

Keywords:digital learning media, Islamic religious education, education policy, sustainable innovation, digital transformation

Introduction

The era of digital transformation has fundamentally changed the global education landscape, creating both new opportunities and challenges in achieving Sustainable Development Goal (SDG) 4 on inclusive and equitable quality education. In Indonesia, this situation is even more pressing given that SDG 4 targets only 65.94% of high school graduates to complete higher education, far from the universal target set (*Bappenas*, 2021). The 2024 Indonesian Digital Society Index (IMDI) shows a diverse categorization of people's digital capabilities, from very low to very high, reflecting the digital divide (*digital divide*) which has direct implications for inequality in access to quality education (Ministry of Communication and Information, 2024).

The COVID-19 pandemic has accelerated the massive adoption of learning technologies, but has exposed the harsh reality that the sudden transition to online learning occurred without adequate infrastructure and capacity preparation (SDGs Center Unpad, 2020). The 2019 Susenas data shows a significant gap in internet access among students, with only 18% of children from the poorest 25% of families having at least basic reading skills, compared to 48% in the richest 25%. This phenomenon has the potential to exacerbate educational inequality, particularly in the context of Islamic religious education, which requires a special approach to integrating spiritual values with digital technology.

The Indonesian government's response through the Merdeka Belajar program demonstrates a serious commitment to the digitalization of education. Data from the Ministry of Education, Culture, Research,

and Technology (2024) recorded the distribution of 1,382,512 ICT devices to 79,259 schools and the development of four main digital platforms: the Merdeka Mengajar (PMM) Platform, the Merdeka Campus Platform, the School Resources Platform, and the Education Report Profile Platform. A total of 3,540,856 logins to PMM during 2023, with 225,400 schools implementing the Merdeka Curriculum using the platform, marked a significant digital transformation momentum in the national education system.

However, in the context of Islamic religious education, digital transformation faces particular complexities. A bibliometric analysis of 227 publications from the Scopus database (2019–2024) shows a significant increase in publications on digital transformation in Islamic education since 2023, with Indonesia and Malaysia as the main contributors (Prayoga et al., 2025). Dominant keywords include "*Islamic education*" And "*e-learning*" indicates the research focus on the technological aspects of learning, but is still limited to a partial approach that has not integrated the policy dimension comprehensively.

Current research indicates several important trends in the digital transformation of Islamic religious education. First, the development of technology-based learning media, such as Android applications for Quranic materials, has proven effective in improving student understanding (Abdullah & Sumardiono, 2019). Second, the integration of spiritual values into digital learning requires a specific approach that considers pedagogical, technological, and cultural dimensions (Syafruddin, 2025). Third, the implementation of digital education policies requires an adaptive and inclusive governance framework (Erna, 2022). Fourth, the experience of hybrid work models (*hybrid working models*) provides valuable insights into the dynamics of blended learning in a digital context (Erna et al., 2024).

Nevertheless, the literature review identified four significant research gaps. First, the lack of an integrated model that holistically combines technology, pedagogy, and policy aspects in Islamic religious education. Existing research tends to focus on a single dimension without considering the interdependencies between these factors. Second, the lack of an implementation framework that adapts to Indonesia's diverse socio-cultural and geographical context. Third, the lack of measurable success indicators to evaluate the effectiveness of technology integration in religious learning. Fourth, the limited comprehensive and sustainable digital divide mitigation strategies.

Abdullah (2018) in his research on the effectiveness of the method *qishshatu al-qurānī* shows that a technology-based narrative approach can significantly improve students' noble character, but requires systematic policy support for large-scale implementation. Meanwhile, research on religious and humanitarian cultural education models (Abdullah & Syahri, 2018) underscores the importance of integrating spiritual values into learning design, but has not explored the technological dimension in depth. On the other hand, a study on the implementation of good environmental governance (Erna et al., 2022) provides a policy perspective that can be adapted to the context of digital education.

Based on the identification of these gaps, this study aims to develop a DIGITAL-PATRA (policy framework) *Digital-Integrated Religious Learning with Accessibility*) that integrates digital learning media with Islamic religious education values through a holistic approach. This framework is designed to bridge the gap between technological innovation and policy implementation that is responsive to the needs of Indonesia's digital society. The contributions of this research include: (1) developing an integrated model that combines technological, pedagogical, and policy dimensions; (2) providing an implementation framework that is adaptive to local contexts; (3) formulating measurable success indicators; and (4) comprehensive and sustainable digital divide mitigation strategies.

This research is expected to make a significant contribution to the development of sustainable Islamic religious education through an inclusive technological approach that is responsive to the challenges of the digital era. Thus, SDG 4's target of inclusive and equitable quality education can be achieved through innovation rooted in local values yet responsive to global developments.

Method

Research Design

This research uses an approach to the development **of a conceptual framework** (*conceptual framework development*), namely a research method that aims to build a new model or framework of thought through the synthesis of various existing theories and empirical findings (Jabareen, 2009). This approach was chosen because the main objective of the research is to integrate various dimensions (technology, pedagogy, and policy) into a coherent and applicable model for the context of Islamic religious education in Indonesia.

A conceptual framework is a structure of thought that describes the logical relationships between various concepts, variables, or elements in a phenomenon (Grant & Osanloo, 2014). In the context of this research, the DIGITAL-PATRA framework was developed as a synthesis of existing findings scattered across the literature on digital education, Islamic religious pedagogy, and Indonesian education policy.

Data source

This research uses data **seconds from** three main source categories:

First, scientific publications for the period 2018-2024focusing on the theme of digital transformation in Islamic religious education, with priority given to accredited national journals and reputable international publications. Selection criteria include: relevance of the topic to Islamic religious education and learning technology; publications within the last five years to ensure currency; credibility of the publication source; and accessibility of the complete document.

Second, Indonesia's digital education policy document, including the Ministry of Education, Culture, Research, and Technology's regulations on the Independent Learning program, guidelines for implementing learning technology, and evaluation reports on the school digitalization program. These policy documents are crucial for understanding the implementation context and practical challenges on the ground.

Third, the results of the research of the two authors as a basis for developing the framework, particularly Abdullah's (2018, 2019) publications on digital learning media and Islamic religious learning methods, as well as Erna's (2022, 2024) research on policy implementation and hybrid work models. Using the author's own work as a basis for development is a common practice in conceptual development research.

Analysis Techniques

This study uses three complementary analysis techniques:

Content analysis (*content analysis*) is used to identify patterns, themes, and key concepts from the reviewed literature (Krippendorff, 2018). Content analysis is a research technique for drawing replicable and valid conclusions from data based on its context. In this study, content analysis was applied to extract key concepts about technology integration in Islamic religious education, identify success factors and implementation constraints, and identify previously developed digital learning models.

Literature synthesis (*literature synthesis*) is used to combine findings from various sources into a comprehensive and integrated understanding (Sandelowski et al., 1997). Unlike a typical literature review that simply summarizes, literature synthesis involves a process of critical analysis to identify patterns, contradictions, and gaps in knowledge, then build a new, more holistic understanding.

Conceptual validation through **source triangulation** (*source triangulation*) is used to ensure the reliability of the developed framework (Denzin, 1978). Source triangulation means comparing information from different types of sources (academic publications, policy documents, and empirical findings) to strengthen conceptual validity. This approach helps reduce bias that may arise from relying on only one type of source.

Development Procedures

The development of the DIGITAL-PATRA framework was carried out in four sequential stages:

Stage 1: Systematic Literature Review (week 1-2) Conducting searches, selection, and analysis of scientific publications relevant to the established criteria. This stage results in a mapping.*state of the art*research on the digitalization of Islamic religious education and identification of key concepts that will become the building blocks of the framework.

Stage 2: Gap Analysis (*Gap Analysis*) (Week 3) Identifying gaps between ideal conditions (based on theory and best practices) and actual conditions (based on empirical findings and program evaluation). Gap analysis is a systematic process for understanding the differences between current performance and desired performance. This stage results in the identification of specific problems that need to be addressed through the developed framework.

Stage 3: Construction of the DIGITAL-PATRA Framework (weeks 4-5) Construct a conceptual model by integrating findings from the previous phase. Construction involves: determining the main components of the framework; establishing logical relationships between components; developing implementation mechanisms; and formulating measurable success indicators.

Stage 4: Conceptual Validation (Week 6) Testing the reliability and feasibility of the framework through source triangulation and logical consistency. Conceptual validation in framework development research is usually carried out through: checking the internal consistency of the model; verification with existing literature; and assessing the feasibility of implementation based on the Indonesian context.

Limitations of the Method

As a conceptual development study, this research has several limitations that need to be objectively acknowledged:

First, reliance on secondary data This limits the depth of analysis to real-world conditions. This research did not involve primary data collection from teachers, students, or education practitioners, so stakeholder perspectives may not be comprehensively represented.

Second, conceptual validation The research conducted is still limited to source triangulation and has not yet involved expert validation or pilot testing. The reliability of the framework in practical implementation still requires further empirical testing.

Third, focus on the Indonesian context may limit the generalizability of the findings to other countries or contexts with different socio-cultural characteristics.

Fourth, limited development time does not allow for a more in-depth iterative process for refining the framework based on feedback from various stakeholders.

However, these limitations do not diminish the research's contribution in developing a conceptual understanding that can serve as a basis for future empirical research and practical implementation.

Results and Discussion

Gap Analysis in the Digitalization of Islamic Religious Education

An analysis of existing literature and empirical conditions in Indonesia identified four key gaps hindering the effective integration of technology in Islamic religious education. Table 1 presents a summary of the gap analysis that formed the basis for the development of the DIGITAL-PATRA framework.

Table 1. Analysis of the Digitalization Gap of Islamic Religious Education in Indonesia

Dimensions	Present condition	Ideal Conditions	Main Gap	Impact
Technology-Pedagogy	Partial use of technology, focusing on tools without pedagogical integration (Abdullah, 2019)	Holistic integration of technology with effective religious learning methods	Lack of learning models that integrate spiritual values with technology	Digital learning that does not touch on the spiritual aspects of students
Policy-Implementation	Top-down policies without considering local context (Erna, 2022)	Adaptive policies that are responsive to Indonesia's socio-cultural diversity	Policy rigidity and lack of flexibility in implementation	The failure of digitalization programs in areas with special characteristics
Accessibility-Equity	High digital divide, 18% vs 48% for different economic groups (SDGs Center Unpad, 2020)	Universal access to quality digital education	The digital divide exacerbates educational inequality	Discrimination in access to education based on economic and geographical status
Evaluation-Monitoring	Evaluation focuses on technical aspects without measuring the impact of spiritual learning.	A comprehensive evaluation system that measures academic and spiritual achievement.	Lack of success indicators that integrate academic-spiritual dimensions	Inability to measure the effectiveness of religious learning holistically

The first gap lies in the still-partial integration of technology and pedagogy. Abdullah's (2019) research on Android learning media demonstrated the effectiveness of technology in improving understanding of Quranic material, but the approach used still focused on content transfer without deeply integrating it with unique Islamic learning methodologies. This results in digital learning that fails to address the spiritual aspects and character building that are the essence of Islamic education.

The second gap lies at the policy-implementation level. Analysis of the Merdeka Belajar program shows that despite distributing 1.38 million ICT devices, implementation still faces challenges adapting to diverse local contexts (Kemendikbudristek, 2024). Erna's (2022) research on public policy implementation underscores the importance of a bottom-up approach that considers the socio-cultural characteristics of local communities.

The third gap concerns accessibility and equity. Data shows that only 18% of children from the poorest families have minimal reading skills, compared to 48% from the richest families (SDGs Center Unpad, 2020). In the context of Islamic religious education, this means that most students from low-income families do not have equal access to technology-based religious learning, which in turn can exacerbate spiritual and moral gaps.

The fourth gap lies in the lack of comprehensive evaluation and monitoring systems. Evaluations of educational digitalization programs generally focus on technical indicators such as the number of devices

distributed or the frequency of platform use, without measuring the impact on achieving Islamic learning goals such as strengthening morals, spiritual understanding, and internalizing Islamic values.

Development of the DIGITAL-PATRA Model

Based on the gap analysis above, this study developed the DIGITAL-PATRA (Digital Accessibility-Friendly Integrated Religious Learning) framework, consisting of seven interrelated components. Table 2 presents details of each component, along with its characteristics and functions within the system.

Table 2. DIGITAL-PATRA Model Components and Their Characteristics

Component	Acronym	Main Characteristics	Functions in the System	Success Indicators
Adaptive Learning Design	D	Personalize content based on students' level of understanding and learning style	Accommodating the diversity of abilities and characteristics of students	Increased student engagement >80%, content adaptation based on individual assessment
Religious-Technology Content Integration	I	Combining Islamic values with interactive technology features	Ensuring technology strengthens, not replaces, the essence of religious learning	Increased spiritual understanding measured through pre-post assessment
Policy Governance	G	Governance involving stakeholders from national to local levels	Ensuring responsive and implementable policies across contexts	Policy adoption rate >75% in various regions with different characteristics
Phased Implementation	I	Gradual implementation with pilot testing and scaling up	Reduces the risk of implementation failure and enables iterative improvement	Successful pilot project and smooth scaling process
Appropriate Technology	T	Selection of technology that is appropriate to local infrastructure and capacity	Ensuring sustainability and accessibility of technology	System uptime >95%, empirically proven ease of use
Universal Accessibility	A	Design that takes into account economic, geographic, and physical limitations	Addressing the digital divide and ensuring equitable access	Increased access for marginalized groups >60%
Digital Literacy	L	Digital capacity development integrated with Islamic values	Building digital competencies that are ethical and in accordance with Islamic teachings	Improving digital literacy skills integrated with Islamic morals

Components **Adaptive Learning Design is** the technical foundation of the DIGITAL-PATRA model. Unlike the commonly used one-size-fits-all approach, this component adopts the principle of personalized learning based on an initial assessment of students' level of religious understanding, learning styles, and socio-cultural backgrounds. Its implementation can utilize adaptive learning algorithms that have proven effective in digital education contexts, but with modifications that take into account the specific characteristics of Islamic religious learning.

Components **Religious-Technology Content Integration is** the main differentiator of the DIGITAL-PATRA model from conventional digital learning frameworks. Referring to Abdullah's (2018) findings on the effectiveness of the Qiṣṣatu al-Quranānī method, this component develops an approach that goes beyond digitizing religious content, but integrates Islamic spiritual values with interactive technological features. Examples of its implementation include gamification that teaches moral concepts, virtual simulations for worship practices, and collaborative platforms for thematic religious discussions.

Components **Policy Governance** Adopt a multi-level governance model involving stakeholders from the national level (Ministry of Education, Culture, Research, and Technology, Ministry of Religious Affairs) to the local level (teachers, parents, and religious leaders). Based on the policy implementation experience reviewed by Erna (2022), this component emphasizes the importance of bottom-up feedback mechanisms and policy adaptation based on local conditions. The proposed governance structure includes a central coordination team, regional implementation teams, and participatory evaluation committees at the school level.

Components **Phased Implementation designed** to reduce the risk of failure that often occurs in large-scale digitalization programs. Following an agile development methodology, implementation begins with pilot projects in schools with adequate infrastructure and human resources, then scales up gradually with continuous improvements based on lessons learned. This approach allows for early identification and mitigation of potential implementation obstacles.

Components**Appropriate Technology**ensuring that the selected technology solutions align with the infrastructure capacity and operational capabilities of various regions in Indonesia. Given the diverse nature of ICT infrastructure, this component prioritizes robust, easy-to-operate technology that doesn't require high bandwidth. The technology selection also takes into account long-term sustainability, including ease of maintenance and updates.

Components **Universal Accessibility** This component responds to findings of a significant digital divide in Indonesia. This component integrates universal design principles into interface development, provides multiple modalities for content access (audio, visual, text), and develops subsidy or resource-sharing mechanisms to address economic limitations. Implementation could include device lending programs, free internet access in mosques/prayer rooms, and partnerships with local communities.

Components **Digital Literacy** It focuses not only on technical skills in using technology but also integrates Islamic ethical values into its use. Drawing on the concept of digital morality, which aligns with Islamic teachings, this component develops a digital literacy curriculum that encompasses online communication ethics, critical thinking in consuming digital information, and the use of technology for good (*maslahah*).

Synthesis and Contextualization for Indonesia

The DIGITAL-PATRA model was developed with the specific context of Indonesia as the world's largest Muslim-majority country with high socio-cultural diversity in mind. A synthesis of various research findings indicates that the successful digitalization of Islamic religious education in Indonesia requires an approach that is not only technically oriented but also culturally sensitive and contextually relevant.

The first contextualization relates to the diversity of Islamic schools of thought and traditions in Indonesia. The DIGITAL-PATRA model is designed to accommodate these differences through a modular content design that allows for content adaptation to local traditions without compromising the learning substance. This aligns with the principle of "Bhinneka Tunggal Ika," the fundamental philosophy of Indonesian education.

The second contextualization takes into account Indonesia's geographic conditions as an archipelagic nation with varying levels of connectivity. The appropriate technology component in the DIGITAL-PATRA model is designed with an offline-first approach, where primary content can be accessed without a real-

time internet connection, while synchronization and updates can be performed periodically when a connection is available.

The third contextualization integrates the Islamic boarding school (pesantren) education system, which plays a strategic role in Islamic religious education in Indonesia. The DIGITAL-PATRA model provides a bridge between traditional and digital learning methods, enabling Islamic boarding schools to adopt technology without losing the distinctive characteristics of traditional learning.

Comparison with Existing Model

An evaluation of existing educational digitalization models reveals several distinctive advantages of the DIGITAL-PATRA model. Table 3 presents a comprehensive comparison with relevant existing frameworks.

Table 3. Comparison of the DIGITAL-PATRA Model with the Existing Framework

Comparative Aspects	Conventional Model	Teaching Freedom Platform	Model DIGITAL-PATRA	DIGITAL-PATRA Advantages
Integration Focus	Technology-centric	Curriculum-centric	Holistic (technology-pedagogy-policy-spiritual)	Integrating specific spiritual dimensions to religious education
Context Adaptability	One-size-fits-all	National standard	Multi-level adaptive	Responsive to socio-cultural diversity and local infrastructure
Impact Evaluation	Technical metrics	Curriculum achievement	Comprehensive (academic-spiritual-social)	Measuring the holistic impact of Islamic religious learning
Sustainability Model	Grant-dependent	Government-centric	Multi-stakeholder	Engaging communities and reducing dependence on a single funding source
Inclusivity Approach	Technology divide	Digital inclusion	Universal accessibility	Overcoming multiple barriers (economic, geographical, physical, cultural)

The main advantage of the DIGITAL-PATRA model lies in its holistic approach, integrating the spiritual dimension as a core component, not simply an add-on. Unlike conventional digital learning platforms that focus on information transfer, or the Merdeka Mengajar Platform, which emphasizes curriculum standardization, the DIGITAL-PATRA model prioritizes character development and spirituality, supported by technology.

The second significant differentiator is contextual adaptability. While existing models generally use a top-down approach with national standardization, DIGITAL-PATRA adopts a multi-level adaptive approach

that allows for implementation adjustments based on local characteristics without compromising learning quality.

In terms of impact evaluation, the DIGITAL-PATRA model develops an assessment system that measures not only cognitive achievement but also changes in attitudes, behavior, and the internalization of spiritual values. This is crucial for Islamic religious education, the primary goal of which is the formation of noble character.

The sustainability model is the third aspect that differentiates DIGITAL-PATRA from existing frameworks. Rather than relying solely on government or donor funding, this model develops an ecosystem involving various stakeholders, including the private sector, religious communities, and civil society organizations, making it more resilient to policy changes or budget constraints.

Implementation Strategy and Roadmap

The DIGITAL-PATRA model is designed in three phases, each with specific targets, success indicators, and timelines. The first phase (Pilot Implementation) focuses on a trial in 10-15 schools with diverse characteristics for 6-12 months. Criteria for selecting pilot schools include ICT infrastructure readiness, school leadership commitment, and representativeness of Indonesia's demographics.

The second phase (Scaling Up) involves expanding to 100-200 schools within 18-24 months, focusing on process standardization and developing capacity-building programs for teachers and education personnel. This phase also includes developing sustainability mechanisms through partnerships with the private sector and community engagement programs.

The third phase (Mainstreaming) targets the integration of the DIGITAL-PATRA model into the national education system, targeting over 1,000 schools within 3-5 years. This phase includes the development of a supportive policy framework, integration with the national education information system, and the establishment of a comprehensive monitoring and evaluation system.

Each implementation phase is equipped with a feedback loop mechanism that allows for model refinement and adaptation based on empirical findings and changing contextual conditions. This iterative approach ensures that the DIGITAL-PATRA model remains relevant and effective in addressing the dynamics of technological change and educational needs.

Conclusion

This research has successfully developed the DIGITAL-PATRA (Digital-Integrated Religious Learning with Accessibility) policy framework in response to the urgent need for sustainable technology integration in Islamic religious education. Through a systematic analysis of existing literature and empirical conditions in Indonesia, the research identified four key gaps: partial technology-pedagogy integration, rigid policy-implementation, unequal accessibility-equity, and incomprehensive evaluation-monitoring.

The developed DIGITAL-PATRA model offers seven integrated components that holistically address these gaps. The Adaptive Learning Design component ensures personalized learning experiences, while the Integration of Religious Content and Technology maintains the spiritual essence of digital learning. Multi-level policy governance enables adaptation to local contexts, supported by phased implementation that reduces the risk of failure. Appropriate technology ensures sustainability, Universal Accessibility addresses the digital divide, and Digital Literacy integrates Islamic ethical values into the use of technology.

The primary contribution of this research lies in developing a framework that is not only technology-oriented but also spiritually grounded and contextually relevant for Indonesia. Unlike existing models, which are generally partial, DIGITAL-PATRA integrates academic, spiritual, and social dimensions into a

coherent system. Its multi-stakeholder approach to governance and phased implementation strategy make this model more realistic and sustainable than conventional top-down frameworks.

The practical implications of this research include providing an implementation roadmap that can be adopted by education policymakers, technical guidance for educators on integrating technology with religious learning, and an evaluation framework that measures the holistic impact of learning. For academics, this research opens up opportunities for the development of assessment instruments that integrate cognitive and spiritual achievement, as well as a deeper exploration of feedback loop mechanisms in adaptive learning systems.

The limitations of this study lie in its conceptual nature, which requires further empirical validation. Future research is recommended to pilot test the DIGITAL-PATRA model in various school contexts, develop more detailed instrumentation for each component, and explore model adaptations for different educational levels. Furthermore, a longitudinal study of the long-term impact of model implementation on achieving Islamic religious education goals would be invaluable for further development.

Thus, the DIGITAL-PATRA model is expected to be a significant contribution in realizing quality, inclusive, and sustainable Islamic religious education in the digital era, while supporting the achievement of SDG 4 through an approach that is rooted in local values but responsive to global developments.

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