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Conceptual Framework of Islamic Religious Education Curriculum Innovation in Primary Schools during the Era of the Industrial Revolution 4.0.

Abdullah Hasan Busri[1*], Najwa Elfirdah[2], Ahmad Zakariya Al-Anshori[3] Faqih Abdul Aziz[4], and Ahmed Nur Hidayatullah Muhammad[5]
[1,2,4,5]Universitas Islam Negeri Sunan Ampel Surabaya, Indonesia
[3] Universitas Kiai Haji Abdul Chalim Mojokerto, Indonesia
*abdullahbusri@gmail.com

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ABSTRACT

The Industrial Revolution 4.0 has fundamentally transformed the educational landscape, demanding systematic curriculum innovation, especially in Islamic Religious Education (PAI) at the primary school level. This study aims to develop a conceptual framework for innovating the PAI curriculum in primary schools within the context of the Industrial Revolution 4.0. Employing a systematic literature review methodology with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) protocol, this research analyzed 20 articles published between 2015 and 2025, selected from an initial pool of 172 articles through a structured screening process. The synthesis reveals four key findings: (1) curriculum innovation in PAI must integrate the values of aqidah, syariah, and akhlak with digital literacy competencies; (2) the Tyler Rationale and Taba model provide complementary theoretical foundations for the design of PAI curriculum reform; (3) effective innovation requires a four-stage cyclical process of planning, organizing, implementation, and evaluation; and (4) the involvement of all stakeholders, educators, families, communities, and policymakers, is indispensable. Based on these findings, a conceptual framework is proposed in which digital literacy and Islamic values serve as dual inputs processed through the four stages of innovation to produce graduates who are spiritually grounded and digitally competent. These findings contribute to the body of knowledge on Islamic education reform in the digital era.

1. INTRODUCTION

Education is not solely a mechanism for knowledge transmission but also an instrument for character formation, ethical cultivation, and life skills development (Ansori, 2025). In its strategic positioning, education serves as the primary vehicle for producing competitive and competent human resources equipped to navigate the opportunities and challenges of contemporary societyThe aim of innovative education is also to train a universal, morally mature person, a competent specialist with a developed professional culture (Mikheeva & Pankova, 2021). The global context has entered the epoch of the Industrial Revolution 4.0, characterized by the pervasive integration of cyber-physical systems, artificial intelligence, the Internet of Things (IoT)(Nwafor, Enekwe, Kanife, & Osuji, 2024), and advanced automation technologies into virtually all dimensions of human activity (Rizwan Matloob Ellahi, Ali Khan, & Shah, 2019). This transformation carries profound implications for the education sector, which is compelled to adapt

dynamically to remain relevant. Educational institutions bear the strategic responsibility of formulating responses that adequately prepare the younger generation to face the complex challenges of the digital era (Yanti, Prastawa, Utomo, Wiliyanti, & Utomo, 2024). Within this context, Islamic Religious Education (PAI) as a compulsory intracurricular subject in Indonesian primary schools faces a dual challenge: maintaining its normative function of transmitting religious values while simultaneously adapting to the demands of digital-era competencies. From a contemporary analytical perspective, the development of Islamic education shows signs of stagnation, as evidenced by the proliferation of general educational digital platforms such as Zenius, Pahamify, and Ruang Guru, while Islamic-specific digital educational initiatives remain limited and underappreciated at the community level (Rahmawati, Maisyanah, Subakti, & Nisak, 2021). The primary school level serves as a critical foundation in the formation of students' character frameworks. At this developmental stage, PAI learning must be comprehensively designed to instill Islamic values while equipping students with basic digital competencies relevant to their future (Aulia, Ananda, Hadiati, Ayu, & Fauzan, 2025). Previous scholarly works, including those by (Febriani, S., M., Iswantir, Akhyar, 2024),(Akhyar, M, & Gusli, 2023), and (Angguan, Pahrudin, & Rahmi, 2025), have addressed curriculum innovation in PAI within the broader context of the 4.0 era; however, none have offered a specific, visualized conceptual framework grounded in classical curriculum theory that is tailored to the primary school level. This constitutes the scholarly gap that the present study seeks to address. Accordingly, this study aims to construct a conceptual framework for PAI curriculum innovation at the primary school level by synthesizing relevant curriculum theories, specifically the Tyler Rationale (Tyler, 1949) and the Taba model (Taba, 1962), with contemporary digital literacy frameworks and Islamic educational values. The framework is intended to serve as an operational reference for curriculum developers, educators, and policymakers.

2. METHODS

This research employs a systematic literature review (SLR) methodology guided by the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) protocol (Creswell, J. W., & Creswell, J. D., 2018). This approach was selected due to its capacity for conducting rigorous, transparent, and reproducible synthesis of existing scholarly knowledge on a defined research question. Articles were retrieved from Google Scholar and Publish or Perish databases using the following primary keywords: "PAI curriculum innovation," "Islamic Religious Education 4.0," "curriculum design primary school," "digital literacy Islamic education," and "industrial revolution education curriculum." The search was limited to publications between 2015 and 2025 to ensure contemporaneity of the evidence base. Articles were included if they: (1) discussed curriculum innovation or development in Islamic Religious Education; (2) addressed the primary school level or discussed innovations applicable to that level; (3) were published in peer-reviewed journals or reputable academic sources; and (4) were available in full text. Articles were excluded if they: (1) were conference abstracts without full text; (2) focused exclusively on higher education levels without transferable insights; or (3) lacked methodological transparency. The PRISMA-guided selection process proceeded as follows:

Table 1. PRISMA- guided article selection process

Stage	Description	Number of Articles
Initial Identification	Articles identified through keyword search in Google Scholar and Publish or Perish	172

Title/Abstract Screening	Articles screened based on title and abstract for relevance	74 excluded
Full-Text Eligibility Assessment	Remaining articles assessed for full-text eligibility against inclusion/exclusion criteria	38 articles
Articles Included for Final Analysis	Articles meeting all inclusion criteria and contributing to framework construction	20 articles

The selected articles were analyzed through thematic synthesis, whereby recurring themes, theoretical frameworks, and empirical findings were identified, coded, and integrated into a coherent conceptual framework. Special attention was given to the application of the Tyler Rationale and the Taba model as foundational theoretical lenses.

3. RESULTS AND DISCUSSION

3.1 Theoretical Foundations of Curriculum Innovation

Innovation in the educational context constitutes a substantive transformation toward qualitatively superior forms of educational practice. Conceptually, innovation is distinguished from mere change or renewal: whereas change may indicate regression and renewal implies comprehensive improvement, innovation is understood as a pragmatic and partial improvement process that introduces new ideas, methods, or products to replace conventional approaches (Rahmawati et al., 2021). In the Islamic epistemological framework, the imperative for innovation finds its theological basis in the Qur'anic principle articulated in Surah Ar-Ra'd (13:11): "Indeed, Allah will not change the condition of a people until they change what is within themselves." This principle underscores innovation not merely as a practical necessity but as a religious obligation (Zalmi, Murhayati, & Zaitun, 2022). Two classical curriculum theories provide the primary theoretical scaffolding for the proposed framework. First, Tyler's Rationale (Tyler, 1949) posits four fundamental questions that must guide any curriculum development process: (1) What educational purposes should the school seek to attain? (2) What educational experiences can be provided to attain these purposes? (3) How can these educational experiences be effectively organized? (4) How can we determine whether these purposes are being attained? Tyler's model emphasizes the primacy of objectives and systematic evaluation, making it particularly suited for structured curriculum reform environments such as the formal school system (Sata, 2024). Second, the Taba model (Taba, 1962) complements Tyler's framework through its inductive, bottom-up approach. Taba argued that curriculum development must commence with a diagnosis of learners' needs and must actively involve teachers in the design process. The Taba model proceeds through seven sequential steps: (1) diagnosis of needs, (2) formulation of objectives, (3) selection of content, (4) organization of content, (5) selection of learning experiences, (6) organization of learning experiences, and (7) evaluation (Zein, Suasti, & Ernawati, 2022). In the context of PAI curriculum reform in Islamic educational institutions, the Taba model has demonstrated particular relevance as it privileges student needs and teacher participation over purely top-down administrative prescription (Nurhusni, Intan Permata Putri, & Sukiman, 2023). The synthesis of these two models reveals a complementary relationship: Tyler's rationale provides the structural logic and evaluative rigor, while Taba's model supplies the participatory dynamism and needs-responsiveness essential in rapidly changing educational environments.

3.2 PAI Curriculum Scope and Structure at the Primary School Level

The curriculum of Islamic Religious Education at the primary school level is substantively differentiated from that of higher educational levels in its focus on building the foundational triad of human relationships: with Allah (the Creator), with fellow human beings, and with the natural

environment. According to Febriani, the ontological scope of PAI encompasses three interrelated domains: aqidah (creed and theological belief), syariah (normative Islamic law governing worship and social transactions), and akhlak (the ethical-moral framework governing human conduct based on Islamic norms) (Febriani, S., M., Iswantir, Akhyar, 2024). At the primary school level, the PAI curriculum is structured around four pillars identified by (Numiati, 2021): (1) strengthening aspects of faith (aqidah); (2) developing understanding of the Qur'an and Hadith as primary normative sources; (3) internalizing noble moral values through character education; and (4) facilitating the mastery of basic worship practices (fiqh) in accordance with the cognitive and developmental stage of primary school students. The integration of these curricular pillars with digital literacy represents the central innovation challenge (Caratozzolo, Alvarez-Delgado, Gonzalez-Pineda, Sirkis, & Piloto, 2021). Rosyidah notes that primary school students are growing up amid unprecedented technological acceleration, making the cultivation of digital competencies not merely supplementary but essential to holistic education in the current era (Menon & Castrillon, 2019; Rosyidah, Septiani, & Wibowo, 2025).

3.3 The Industrial Revolution 4.0 and Its Implications for PAI

The Industrial Revolution 4.0, which reached its conceptual crystallization around 2012, is characterized by the convergence of digital, physical, and biological technologies through Cyber-Physical Systems (CPS), the Internet of Things (IoT), and the Internet of Services (IoS) (R. M Ellahi, Ali Khan, & Shah, 2019). This revolution has not merely transformed industrial production processes but has fundamentally restructured the competency demands of contemporary society. In the educational sphere, the 4.0 era necessitates graduates who possess digital literacy, critical thinking, creativity, collaboration, communication, and adaptability (Nwafor et al., 2024). For PAI specifically, this era presents a paradox: while digital technologies offer powerful new tools for religious learning and dissemination, they simultaneously introduce threats to Islamic values through unfiltered content, misinformation, and the erosion of traditional moral frameworks. Hakim argues that PAI faces the fundamental question of whether the Industrial Revolution 4.0 represents an opportunity or a threat for Islamic education, and concludes that the outcome is contingent upon the strategic response of curriculum designers and educators (L. Hakim, 2021). Pramodana further demonstrates that in schools that have implemented integrated digital-Islamic curricula, learning outcomes have improved while spiritual values have been maintained, suggesting that strategic integration is not only feasible but effective(Pramodana, Pahrudin, Jatmiko, & Koderi, 2024). Based on the thematic synthesis of 20 analyzed articles, the following conceptual framework is proposed for PAI curriculum innovation in primary schools in the era of the Industrial Revolution 4.0:

Table 2. Conceptual Framework for PAI Curriculum Innovation in the Industrial Revolution 4.0 Era

INPUT	PROCESS	OUTPUT
Digital Literacy Competencies (IoT, AI, critical thinking, creativity, collaboration, communication) + Islamic Values (Aqidah, Syariah, Akhlak) + Curriculum Objectives	STAGE 1 Planning Define PAI objectives integrating Islamic values and digital competencies; STAGE 2 Organizing Integrate PAI curriculum with 4.0-era digital platforms and tools; STAGE 3 Implementation Apply through technology-mediated classroom instruction; STAGE 4 Evaluation Collaborative multi-stakeholder assessment and continuous improvement	Graduate Profile: Spiritual: Faith-based character, noble akhlak, religious resilience. Intellectual: Digital literacy, critical thinking, creativity. Social: Collaboration, communication, citizenship. Generational Mission: The Muslim generation that is digitally

		competent and spiritually grounded

This framework is grounded in the convergence of four key theoretical and empirical findings from the literature. First, findings indicate that curriculum innovation requires four interconnected stages, namely planning, organizing, implementation, and evaluation, that must be integrated with digital literacy and Islamic values simultaneously rather than sequentially (M. A. R. Hakim, Kahfi, Zamzami, Junaedi, & Wahib, 2025). Second, the Tyler Rationale provides the evaluative and objectives-based backbone of the framework, ensuring that all curricular decisions are anchored to clear, measurable educational purposes (Tyler, 1949). Third, the Taba model enriches the framework by mandating teacher and stakeholder participation and ensuring that the curriculum is responsive to the actual needs of primary school students in the digital environment (Nurhusni et al., 2023). Fourth, the integration of digital literacy into the PAI curriculum is positioned not as a replacement of Islamic values but as their amplification: digital tools serve as vehicles for the transmission, application, and defense of Islamic ethical principles (Rahmawati et al., 2021). Regarding the eight innovation models cited in the literature (Administrative Model, Grassroots Model, Beauchamp Model, Demonstration Model, Flipped Model, Rogers Individual Relations Model, Action Research System Model, and Emergent Action Model), the proposed framework most closely aligns with the Grassroots Model and the Action Research System Model, as both emphasize participatory design, empirical grounding, and iterative improvement (Achadah, 2020). This alignment is consistent with the Taba model's bottom-up philosophy and with contemporary evidence on effective curriculum reform in Islamic educational contexts. The effective operationalization (Rokhmani, Sujanto, & Luddin, 2019) of the proposed framework requires the coordinated engagement of four stakeholder groups, each fulfilling a distinct yet interdependent role: 1) Educators and educational institutions: Design and deliver technology-integrated PAI learning experiences; serve as digital facilitators and Islamic value transmitters simultaneously. 2) Students and families: Active participants in digital learning environments; families reinforce Islamic values in the domestic sphere. 3) Communities and environments: Provide contextual authenticity and social relevance to PAI learning; Islamic community organizations can serve as extended learning resources. 4) Policymakers and government: Formulate regulatory frameworks that mandate and support the integration of digital literacy into PAI curricula; provide resource allocation for teacher training and infrastructure

4. CONCLUSION

This systematic literature review has constructed a conceptual framework for PAI curriculum innovation at the primary school level in the era of the Industrial Revolution 4.0. The framework synthesizes the Tyler Rationale and the Taba model with contemporary evidence on digital literacy integration in Islamic education, proposing a four-stage cyclical process (planning, organizing, implementation, evaluation) that positions digital literacy competencies and Islamic values as dual inputs toward the production of graduates who are both spiritually grounded and digitally competent. The central contribution of this study lies in its provision of a visualized, theoretically grounded, and empirically informed conceptual framework that addresses the gap in existing literature regarding specific curriculum innovation designs for PAI at the primary school level. The framework is intended to serve as a practical reference for curriculum developers, educators, and policymakers engaged in PAI reform in the digital era. Future research should focus on the empirical validation of this framework through quasi-experimental studies in primary school settings, as well as on the development of specific instructional models and assessment instruments aligned with the proposed framework**.**

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