

# Islamic Educational Thought and Challenges of The Revolution Industry 4.0 and Society 5.0

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**Abstract:** *The rapid development of the Industrial Revolution 4.0, driven by digitalisation, artificial intelligence, and Big Data, together with the emergence of human-centred Society 5.0, requires a fundamental transformation of Islamic education. This study aims to analyse the epistemological, axiological, pedagogical, socio-cultural, and economic challenges faced by Islamic educational institutions in responding to digital technology disruption, and to formulate integrative-contextual solutions. This research used a descriptive qualitative approach through library research. Data were analysed critically and philosophically using content analysis of classical and contemporary Islamic educational thought. The findings show four latent problems that hinder the acceleration of Islamic education, namely cultural lag, second-class stigma, the dichotomy of sciences, and dualism in educational policy. The study proposes knowledge integration through an integrative-interconnected paradigm, adab-based character strengthening, digital tarbiyah, innovative learning methods, and adaptive curriculum reconstruction. Tawazun, Ulul Albab, and Iqra' serve as theological foundations for developing intellectually excellent, technologically adaptive, spiritually strong, and morally noble Muslim generations.*

**Keywords:** *Islamic Educational Thought, Industrial Revolution 4.0, Society 5.0, Knowledge Integration, Character*

**Abstrak:** Perkembangan pesat Revolusi Industri 4.0 yang ditandai oleh digitalisasi, kecerdasan buatan, dan Big Data, serta kemunculan Society 5.0 yang berpusat pada manusia, menuntut transformasi mendasar dalam pendidikan Islam. Penelitian ini bertujuan menganalisis tantangan epistemologis, aksiologis, pedagogis, sosial-budaya, dan ekonomi yang dihadapi lembaga pendidikan Islam dalam merespons disrupsi teknologi digital, serta merumuskan solusi integratif-kontekstual. Penelitian ini menggunakan pendekatan kualitatif deskriptif melalui studi kepustakaan. Analisis data dilakukan secara kritis-filosofis dengan metode analisis isi terhadap literatur pemikiran pendidikan Islam klasik hingga kontemporer. Hasil penelitian menunjukkan empat problematika laten yang menghambat akselerasi pendidikan Islam, yaitu kesenjangan budaya, stigma kelas dua, dikotomi ilmu, dan dualisme kebijakan pendidikan. Penelitian ini menawarkan integrasi keilmuan melalui paradigma integratif-interkoneksi, penguatan karakter berbasis adab, digital tarbiyah, inovasi pembelajaran, dan rekonstruksi kurikulum adaptif. Nilai Tawazun, Ulul

Albab, dan Iqra' menjadi fondasi teologis untuk membentuk generasi Muslim yang unggul secara intelektual, adaptif terhadap teknologi, serta berintegritas spiritual dan moral.

**Kata Kunci:** Pemikiran Pendidikan Islam, Revolusi Industri 4.0, Society 5.0, Integrasi Ilmu, Karakter

## INTRODUCTION

Education in our country still leaves many problems, both in terms of curriculum, management, and education actors and users. The challenges faced by the world of education are becoming increasingly complex, education is required to adapt to the existence of the era of technological advancement and technological integration. The modernization of Islamic education based on character education is a necessity to create education that is in accordance with the needs of the millennial generation.

Islamic education at this time is faced with a very big challenge, not yet with the rollout of the industrial era 4.0, we are surprised again by the emergence of *society* 5.0. The industrial revolution 4.0 and 5.0 demand a massive transformation in the education system. Digital technologies, such as *e-learning*, *artificial intelligence* (ai), and *big* data, are changing the way humans learn and access knowledge. However, many Islamic educational institutions are not ready to face this reality due to the limitations of digital infrastructure, low technological literacy among teachers, and the lack of a structured Islamic education digitalization policy. (Nevira et al., 2025) Education cannot entail the process of globalization that will create this global society, which must be faced and become a challenge in the world of Islamic education. In the era of globalization, Indonesia must reform the education process, with the pressure of creating a more comprehensive and flexible education system, so that graduates can function effectively in the life of a democratic global society.

The transformation of Islamic education is needed to bring out crises and problems, the strengthening of Islamic educational institutions also needs attention, including strengthening Islamic education management, strengthening Islamic education leadership, and reforming education policies, with the aim of forming a whole generation and superior competitive human beings, namely creative, innovative, characterful, independent, loving and religious human beings to face the 4.0 and 5.0 era where Humans are required to be fast-paced, precise, effective and efficient. (Nashuddin, 2021) For this reason, education must be designed in such a way that allows students to develop their natural and creative potential in an atmosphere full of freedom, togetherness, and responsibility.

## RESEARCH METHODOLOGY

This study used a descriptive qualitative design with a library research approach. The study focused on analysing texts, concepts, and scholarly literature related to Islamic educational thought, the Industrial Revolution 4.0, and Society 5.0. Since this research was desk-based, it did not involve a specific field location. Data were collected from books, journal articles, policy documents, and relevant academic publications. The research subjects consisted of selected literature that discussed Islamic education, digital transformation, character education, knowledge integration, and the challenges of Islamic education in the contemporary era. The research procedure involved identifying the research problem, collecting relevant literature, screening sources based on relevance and credibility, classifying data into major themes, and interpreting the findings critically. Data were collected using documentation techniques, while the main instrument was a literature review matrix containing source identity, key concepts, theoretical arguments, and relevance to the study. The data were analysed using content analysis with a critical-philosophical orientation. The analysis included identifying key ideas, categorising themes, comparing arguments, and synthesising findings to formulate integrative-contextual solutions for Islamic education in the era of Industrial Revolution 4.0 and Society 5.0

## RESULTS AND DISCUSSION

### Results

#### Transformation of Islamic Educational Thought in the Industrial Revolution 4.0 and Society 5.0

The results of this study indicate that Islamic educational thought is experiencing a fundamental shift in response to the Industrial Revolution 4.0 and Society 5.0. The Industrial Revolution 4.0 emphasises digitalisation, artificial intelligence, Big Data, automation, and the Internet of Things, while Society 5.0 places human beings at the centre of technological development. This shift requires Islamic education to move beyond conventional instructional models and develop a more adaptive, integrative, and value-oriented educational system. In this context, Islamic education cannot merely adopt technology as a learning instrument, but must also frame technology within Islamic ethical, epistemological, and spiritual foundations.

The transformation of Islamic education is reflected in the need to reconstruct its learning orientation. Education is no longer limited to the transmission of knowledge, but must develop learners' intellectual, moral, spiritual, and technological capacities. This finding is consistent with the view that Islamic education is rooted in *tarbiyah*, *ta'lim*, and *ta'dib*, which respectively refer to nurturing, teaching, and forming adab (Tafsir, 2012). Therefore, the development of Islamic education in the digital era must integrate knowledge mastery, moral formation, digital competence, and social responsibility.

#### Latent Problems in the Development of Islamic Education

This study identifies four latent problems that hinder the acceleration of Islamic education in responding to the digital era. The first problem is cultural lag, which refers to the gap between the rapid development of science and technology and the slower adaptation of Islamic educational institutions. This condition causes Islamic education to be less responsive to social change and technological disruption. The second problem is the second-class stigma attached to Islamic educational institutions. This stigma emerges because Islamic education is often perceived as less adaptive to modern science, technology, and global educational standards. The third problem is the dichotomy of knowledge, namely the separation between religious knowledge and general science. This dichotomy has produced epistemological fragmentation and weakened the capacity of Islamic education to develop an integrated worldview. The fourth problem is the dualism of educational policy, particularly the institutional separation between religious and general education governance. This dualism often creates differences in policy direction, resource allocation, teacher development, and institutional quality assurance.

These four problems show that the challenges of Islamic education are not only technical, but also structural and paradigmatic. They indicate that Islamic education requires systemic reform in curriculum, pedagogy, institutional management, teacher competence, and educational policy.

#### Epistemological, Axiological, Pedagogical, Socio-Cultural, and Economic Challenges

The findings show that the challenges of Islamic education in the era of the Industrial Revolution 4.0 and Society 5.0 can be classified into five main dimensions. The first is the epistemological challenge. Islamic education still faces the dichotomy between religious sciences and modern sciences. This separation limits the development of an integrated scientific tradition and weakens the ability of Islamic education to respond to contemporary technological change. In addition, the dominance of secular rationalism in modern knowledge systems tends to marginalise revelation, spirituality, and intuition as valid sources of knowledge (Rahman, 1982; Nata, 2012). The second is the axiological and moral challenge. Digital technology provides broad access to information, but it also exposes students to negative content, misinformation, violence, pornography, and radical ideas. This condition creates new problems in character formation and Islamic identity. Digital culture also tends to strengthen individualism and materialism, which may contradict Islamic values such as *ukhuwwah*, responsibility, humility, and moral self-control (Majid, 2017; Muhaimin, 2013).

The third is the pedagogical challenge. Many Islamic educational institutions still face limitations in teacher digital competence, learning innovation, and adaptive curriculum development. Teachers are expected not only to master subject matter, but also to integrate digital

tools, manage online learning, develop interactive media, and guide students in using technology ethically. However, the readiness of teachers and institutions remains uneven, particularly in Islamic schools and pesantren located in rural or resource-limited areas (Salahuddin, 2019; Ministry of Religion of the Republic of Indonesia, 2024). The fourth is the socio-cultural challenge. Some Islamic educational communities still view digital technology with suspicion because it is considered a threat to religious tradition and institutional identity. At the same time, many parents are not fully prepared to assist children in using digital technology wisely. This situation creates a gap between technological exposure and moral guidance in the family and school environment.

The fifth is the economic challenge. The digitalisation of Islamic education requires infrastructure, devices, internet access, platforms, teacher training, and institutional investment. However, not all Islamic educational institutions have sufficient resources to develop these components. The digital divide among students also creates unequal learning opportunities, especially for learners from lower-income families or remote areas (APJII, 2024; Mastuki, 2016).

### **Integrative-Contextual Solutions for Islamic Education**

The study finds that Islamic education needs an integrative-contextual response to address the challenges of the Industrial Revolution 4.0 and Society 5.0. The first solution is the integration of knowledge through the integrative-interconnected paradigm. This approach rejects the dichotomy between religious knowledge and general science by positioning Islamic values as the ethical and epistemological foundation of knowledge development (Abdullah, 2012). Knowledge integration allows Islamic education to develop scientific competence without losing its spiritual orientation. The second solution is adab-based character strengthening through digital tarbiyah. Digital tarbiyah refers to the development of ethical awareness in using technology. It includes social media ethics, information literacy, anti-hoax awareness, protection from harmful content, and responsibility in the digital space. This solution is important because digital literacy without moral literacy may lead to ethical disorientation.

The third solution is pedagogical innovation. Islamic education needs to adopt learning models such as flipped classroom, project-based learning, adaptive learning, gamification, and hybrid halaqah models. These methods can make Islamic learning more interactive, contextual, and relevant to the digital generation. However, pedagogical innovation must remain connected to Islamic values so that learning does not become merely technical. The fourth solution is adaptive curriculum reconstruction. The Islamic education curriculum must integrate digital literacy, computational thinking, critical thinking, creativity, collaboration, communication skills, and Islamic ethics. Adaptive curriculum development is needed to ensure that Islamic education can prepare students to participate in contemporary life while maintaining religious identity and moral integrity.

The fifth solution is institutional and policy strengthening. Islamic education requires better governance, stronger teacher development systems, quality assurance, digital infrastructure, and collaboration among government, private sectors, philanthropic institutions, and Islamic educational networks. Multi-stakeholder collaboration is necessary because digital transformation cannot be achieved by individual institutions alone.

### **Theological Foundations of Islamic Education in the Digital Era**

The study identifies three theological foundations that can guide Islamic education in the era of technological disruption. The first is *Tawazun*, or balance. This principle requires Islamic education to balance worldly and ukhrawi orientations, technological competence and moral formation, individual achievement and social responsibility, as well as intellectual development and spiritual refinement (An-Nahlawi, 1999). In the context of the digital era, *Tawazun* prevents education from becoming overly technocratic and disconnected from human values. The second is *Ulul Albab*. The Qur'anic concept of *Ulul Albab* refers to people who combine remembrance of Allah with deep intellectual reflection. This concept provides a model of learners who are not only critical, creative, and analytical, but also spiritually conscious and morally responsible. In the era of the Industrial Revolution 4.0, *Ulul Albab* can be understood as the ideal profile of Muslim

learners who master science and technology while maintaining faith, ethics, and social awareness (Muhaimin, 2009; Shihab, 2002).

The third is the principle of *Iqra'*. The command to read is not limited to reading written texts, but also includes reading social reality, the universe, technological change, and human problems. In the digital era, *Iqra'* can become the theological basis of digital literacy. It encourages Muslims to access, evaluate, interpret, and use information wisely, critically, and responsibly (Nata, 2010).

## **Discussion**

### **Comparison with Previous Studies**

The findings of this study are consistent with previous research that views the Industrial Revolution 4.0 and Society 5.0 as major forces transforming Islamic education. Nevira *et al.* (2025) emphasise that Islamic education must respond to digitalisation, artificial intelligence, and Society 5.0 through curriculum transformation, teacher readiness, and value-based technological adaptation. This study supports that argument, but extends it by showing that the challenge is not only technological, but also epistemological, axiological, institutional, socio-cultural, and economic. The findings also align with Nugroho and Anwar (2018), who highlight the importance of digital competence among Islamic education teachers. However, this study expands the discussion by placing teacher competence within a wider ecosystem that includes curriculum reconstruction, digital infrastructure, parental readiness, institutional governance, and moral supervision. Thus, teacher digital competence should not be treated as an isolated skill, but as part of institutional transformation.

This study also strengthens the arguments of Rahman (1982), Al-Attas (1993), and Abdullah (2012) regarding the need to overcome the dichotomy of knowledge in Islamic education. While earlier scholarship focused mainly on the philosophical and epistemological critique of knowledge separation, the present study situates this issue within the context of digital disruption. The dichotomy of knowledge is no longer only a classical debate in Islamic education. It has become a practical obstacle in developing digital curriculum, scientific literacy, technological ethics, and adaptive learning models.

### **Reframing Technology through Islamic Epistemology**

A major finding of this study is that Islamic education must not respond to the Industrial Revolution 4.0 merely by adopting digital tools. Technological adoption without epistemological reconstruction may produce a superficial form of modernisation. Islamic educational institutions may use digital platforms, online classrooms, and artificial intelligence, but still maintain fragmented knowledge, conventional pedagogy, and weak ethical orientation. This condition shows that digital transformation must be accompanied by epistemological transformation. The integrative-interconnected paradigm provides a relevant framework because it allows Islamic education to connect revelation, reason, empirical knowledge, and ethical reflection. This approach is important in the age of artificial intelligence and Big Data, where knowledge is often reduced to information processing. Islamic education must offer a deeper framework that connects knowledge with meaning, responsibility, and divine accountability.

The integration of knowledge also has practical consequences. It requires curriculum designers to connect Islamic studies with science, technology, social issues, environmental ethics, media literacy, and contemporary human problems. It also requires teachers to guide students in understanding technology not as a neutral object, but as a tool that must be directed by ethical and spiritual values.

### **Digital Tarbiyah and Character Formation**

The findings show that one of the most urgent issues in Islamic education is the need to develop digital tarbiyah. Digital tarbiyah refers to character formation in digital environments. This concept is relevant because students today do not only learn in classrooms, but also through social media, digital platforms, online communities, and algorithmic information systems. Previous studies on character education emphasise the importance of moral formation, role modelling, and adab in Islamic education (Majid, 2017; Wan Daud, 1998). This study extends that discussion by showing that adab must be contextualised in digital spaces. Students must learn

how to communicate politely online, verify information, avoid harmful content, respect privacy, control digital behaviour, and use technology for beneficial purposes.

Digital tarbiyah also requires the involvement of teachers and parents. Teachers must become digital moral guides, not only content deliverers. Parents must also assist children in using technology responsibly. Without collaboration between school and family, students may experience a gap between religious values taught in formal education and digital behaviour practised in daily life.

### **Pedagogical Transformation and Learner Agency**

The transition from teacher-centred learning to student-centred learning is one of the major implications of the Industrial Revolution 4.0 and Society 5.0. Islamic education needs to adopt learning models that encourage active participation, critical thinking, collaboration, creativity, and problem solving. This finding is consistent with the demands of 21st-century education and the human-centred orientation of Society 5.0. However, student-centred learning in Islamic education should not be understood as reducing the role of teachers. Instead, the teacher's role must transform from a single source of knowledge into a facilitator, mentor, moral guide, and learning designer. This transformation is consistent with the Islamic concept of educator as *murabbi*, *mu'allim*, and *mu'addib*. Teachers must guide students intellectually, spiritually, and ethically.

Pedagogical transformation also requires the use of learning technologies that are appropriate, accessible, and aligned with institutional capacity. Islamic education does not always need to adopt the most advanced technology. What matters is the ability to use technology effectively to strengthen learning quality, religious understanding, and character formation. The results of this study have important implications for Islamic educational institutions and policymakers. At the institutional level, Islamic schools, madrasas, pesantren, and Islamic universities need to develop strategic plans for digital transformation. These plans should include teacher training, curriculum reform, digital infrastructure, content development, online learning platforms, and ethical guidelines for technology use.

At the policy level, the government needs to strengthen support for Islamic education digitalisation without weakening the distinctiveness of Islamic educational institutions. Policy support should include digital competency standards for Islamic education teachers, funding for infrastructure, development of Islamic digital learning platforms, and protection mechanisms for students in digital spaces. The study also implies that collaboration is essential. Islamic education cannot face digital disruption through isolated institutional efforts. Collaboration among government, educational institutions, parents, technology providers, religious scholars, and community organisations is needed to build a supportive ecosystem for Islamic education in the digital era. Theoretically, this study contributes to the development of Islamic educational thought by integrating classical Islamic concepts with contemporary educational transformation. Concepts such as *Tawazun*, *Ulul Albab*, *Iqra'*, *ta'dib*, and knowledge integration can serve as theoretical foundations for constructing an Islamic model of digital education. This model does not reject technological progress, but places it within a moral, spiritual, and humanistic framework.

The study also shows that Society 5.0 has conceptual compatibility with Islamic education because both emphasise human-centred development. However, Islamic education provides a deeper theological foundation by linking human development with divine purpose, moral accountability, and social responsibility. This makes Islamic education relevant not only as a religious education system, but also as a framework for humanising technological civilisation. Practically, this study suggests that Islamic educational institutions should prioritise five strategies. First, they should strengthen teacher digital competence through continuous professional development. Second, they should reconstruct the curriculum by integrating digital literacy, Islamic ethics, critical thinking, and knowledge integration. Third, they should develop digital tarbiyah programmes to guide students' ethical behaviour in online spaces. Fourth, they should build accessible digital learning systems based on institutional capacity. Fifth, they should strengthen collaboration with parents and communities to ensure continuity between formal learning and daily digital life.

These strategies can help Islamic education remain relevant, competitive, and morally grounded. They also support the formation of Muslim learners who are intellectually capable, technologically adaptive, socially responsible, and spiritually mature. This study has several limitations that can become directions for future research. Since the study uses a library research approach, its findings are conceptual and interpretative. This approach is appropriate for mapping theoretical issues and formulating integrative solutions, but future studies can enrich the findings through empirical research involving Islamic schools, madrasas, pesantren, teachers, students, and policymakers.

Future research may also compare the implementation of digital transformation across different Islamic educational institutions. Comparative studies between urban and rural institutions, public and private Islamic schools, or madrasas and pesantren can provide a more detailed understanding of institutional readiness. In addition, further research can examine the effectiveness of digital tarbiyah, adaptive curriculum models, and Islamic digital learning platforms in improving students' learning outcomes, digital literacy, and moral development. Overall, the limitations of this study do not reduce its conceptual contribution. Instead, they open space for further empirical testing and model development. The study provides a foundation for future research that connects Islamic educational thought, technological transformation, and human-centred education in the context of the Industrial Revolution 4.0 and Society 5.0.

## CONCLUSION

This study concludes that Islamic education in the era of the Industrial Revolution 4.0 and Society 5.0 faces complex challenges in epistemological, axiological, pedagogical, socio-cultural, and economic dimensions. The main problems include cultural lag, second-class stigma, the dichotomy of knowledge, and the dualism of educational policy. These challenges show that Islamic education requires more than technological adaptation. It needs a fundamental transformation that integrates digital competence, Islamic values, character formation, and institutional reform. The study also finds that integrative-interconnected knowledge, adab-based character strengthening, digital tarbiyah, innovative learning models, and adaptive curriculum reconstruction are relevant solutions for developing Islamic education that is intellectually strong, technologically adaptive, spiritually grounded, and morally responsible. The theological foundations of Tawazun, Ulul Albab, and Iqra' provide an important framework for ensuring that technological progress remains aligned with Islamic educational values and human-centred development.

Future research is recommended to examine the implementation of these concepts through empirical studies in Islamic schools, madrasas, pesantren, and Islamic higher education institutions. Comparative research across different institutional contexts is also needed to identify variations in digital readiness, curriculum adaptation, and teacher competence. For practitioners, Islamic educational institutions should strengthen teacher digital literacy, develop ethical digital learning environments, integrate adab into technology-based learning, and build collaboration with parents and communities. At the policy level, the government needs to provide stronger support through digital infrastructure, teacher professional development, curriculum reform, and clear regulations for Islamic education digitalisation. These efforts are essential to ensure that Islamic education remains relevant, competitive, and capable of preparing Muslim learners for the challenges of contemporary technological civilisation.

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