

## Tawhid as a Value-Based Framework for Science and Technology Education: An Islamic Educational Perspective

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### Abstrak

Perkembangan ilmu pengetahuan dan teknologi kontemporer menghadirkan peluang sekaligus tantangan bagi pendidikan Islam, khususnya dalam menjaga keseimbangan antara kemajuan intelektual, nilai spiritual, dan tanggung jawab etis. Penelitian ini bertujuan menganalisis tauhid sebagai kerangka berbasis nilai dalam pendidikan ilmu pengetahuan dan teknologi dari perspektif pendidikan Islam. Penelitian menggunakan metode *Systematic Literature Review* (SLR) dengan pendekatan studi pustaka. Literatur yang relevan mengenai tauhid, pendidikan Islam, etika sains dan teknologi, *maqāṣid al-sharī'ah*, dan pengetahuan berbasis nilai diidentifikasi, dikaji, dan dianalisis secara sistematis. Hasil penelitian menunjukkan bahwa tauhid dapat menjadi landasan teologis, epistemologis, dan etis dalam mengintegrasikan ilmu pengetahuan dan teknologi dengan nilai-nilai Islam. Integrasi tersebut mendorong peserta didik memahami ilmu sebagai amanah dan tanggung jawab kepada Allah, manusia, dan lingkungan. Prinsip *maqāṣid al-sharī'ah* juga mengarahkan pemanfaatan teknologi pada kemaslahatan, keadilan, keberlanjutan, dan perlindungan nilai kemanusiaan. Dengan demikian, pendidikan berbasis tauhid dapat membentuk peserta didik yang cerdas, beretika, dan berkarakter Islami.

**Kata kunci:** Tauhid; Pendidikan Islam; Etika Sains dan Teknologi; *Maqāṣid al-Sharī'ah*; Pengetahuan Berbasis Nilai.

### Abstract

The contemporary development of science and technology presents both opportunities and challenges for Islamic education, particularly in maintaining a balance between intellectual advancement, spiritual values, and ethical responsibility. This study aims to analyze *tawhid* as a value-based framework for science and technology education from the perspective of Islamic education. The study employs a *Systematic Literature Review* (SLR) method with a literature-based approach. Relevant literature on *tawhid*, Islamic education, the ethics of science and technology, *maqāṣid al-sharī'ah*, and value-based knowledge was systematically identified, examined, and analyzed. The findings indicate that *tawhid* can serve as a theological, epistemological, and ethical foundation for integrating science and technology with Islamic values. Such integration encourages students to understand knowledge as a trust (*amānah*) and a responsibility toward Allah, humanity, and the environment. The principles of *maqāṣid al-sharī'ah* also guide the utilization of technology toward public welfare, justice, sustainability, and the protection of human values. Thus, *tawhid*-based education can foster students who are intellectually capable, ethical, and grounded in Islamic character.

**Keywords:** *Tawhid*; Islamic Education; Ethics of Science and Technology; *Maqāṣid al-Sharī'ah*; Value-Based Knowledge.

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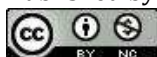
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## Introduction

The rapid advancement of science and technology has fundamentally transformed contemporary human life, reshaping education, healthcare, communication, economic activities, and social relations. Emerging technologies, including artificial intelligence (AI), digital platforms, biotechnology, and data-driven innovations, have substantially expanded human capacity to generate, access, process, and apply knowledge.<sup>1</sup> At the same time, these developments have generated complex ethical and societal challenges that cannot be addressed solely through technical expertise. The misuse of digital technologies, irresponsible information dissemination, algorithmic bias, unethical applications of AI, and the potential humanitarian consequences of biotechnology demonstrate that technological progress does not necessarily correspond to the development of moral responsibility.<sup>2</sup> This tension raises a fundamental question for education: how can scientific and technological competencies be developed without detaching them from ethical values, human dignity, and responsibility for the consequences of technological advancement? This question is particularly significant within Islamic education, where knowledge is fundamentally connected to faith, morality, and human responsibility before God. From an Islamic perspective, knowledge is not understood as a value-neutral instrument that can be developed independently of ethical considerations.

Rather, the pursuit and application of knowledge are embedded within a broader worldview concerning the relationship between God, human beings, nature, and the purpose of existence. Within this worldview, tawhid the affirmation of the oneness of Allah extends beyond a theological doctrine and provides an ontological and epistemological orientation for understanding reality and human responsibility.<sup>3</sup> A tawhid-based worldview therefore has the potential to reposition

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<sup>1</sup> Wenzheng Wei and Ying Jin, "A Novel Internet of Things-Supported Intelligent Education Management System Implemented via Collaboration of Knowledge and Data," *MBE: Mathematical Biosciences and Engineering* 20, no. April (2023): 13457–73, <https://doi.org/10.3934/mbe.2023600>.

<sup>2</sup> Dedi Andrianto and Wakib Kurniawan, "The Character of Early Childhood Education : Perspectives of Ki Hajar Dewantara and Maria Montessori," *Jurnal Obsesi: Jurnal Pendidikan Anak Usia Dini* 9, no. 1 (2025): 117–29, <https://doi.org/10.31004/obsesi.v9i1.6316>.

<sup>3</sup> M Fokkens-Bruinsma and E Canrinus, *Motivation and Degree Completion in a University-Based Teacher Education Programme*, 2015, <https://doi.org/10.1080/10476210.2015.1034682>.

science and technology not merely as instruments for human mastery over nature, but as forms of knowledge and human activity subject to moral accountability and oriented toward the preservation and improvement of life. The implications of this perspective are particularly important for the development of science and technology education. Islamic education is expected not only to cultivate intellectual competence but also to develop faith, ethical awareness, character, social responsibility, and an understanding of human purpose.<sup>4</sup> Consequently, technological literacy within Islamic education cannot be reduced to the ability to operate digital tools or acquire scientific knowledge. It should also encompass the capacity to evaluate the ethical, social, environmental, and humanitarian consequences of scientific and technological applications. Such an orientation requires educational frameworks that integrate scientific competence with Islamic values through curriculum design, pedagogical practices, digital literacy, science education, and ethical reflection on technology. In this sense, the challenge is not whether science and technology should be integrated into Islamic education, but how such integration can be conceptually and pedagogically grounded in an Islamic value system.

Existing scholarship has increasingly explored the relationship between Islam, science, technology, and education. A body of literature has examined tawhid as a foundation for the integration of knowledge and as a framework for overcoming the fragmentation between religious and scientific domains. Other studies have investigated the integration of Islamic perspectives into science education and curriculum development, emphasizing the relevance of religious values in shaping learners' understanding and use of scientific knowledge.<sup>5</sup> Meanwhile, the concept of maqāṣid al-sharī'ah has gained increasing attention as a framework for evaluating contemporary scientific and technological developments according to their contribution to human welfare, justice, dignity, and the prevention of harm. Parallel scholarship on technology ethics has addressed emerging challenges associated

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<sup>4</sup> Suryani, "Enhancing Tajwid Mastery through Participatory Action Research in Primary Education," *Pendidikan Islam Kontemporer*, 2024.

<sup>5</sup> Wakib Kurniawan, Lilik Susanti, and Zaidatul Inayah, "Internalisasi Nilai-Nilai Pendidikan Islam Dalam Organisasi Pencak Silat Pagar Nusa," *Bustanul Ulum Journal of Islamic Education* 2, no. 2 (2024): 156-173., <https://doi.org/https://doi.org/10.62448/bujie.v2i2.90>.

with AI, digitalization, biotechnology, data governance, and other technological transformations. Although these strands of scholarship provide important conceptual resources, they have largely developed along separate trajectories.

This fragmentation represents an important unresolved issue in the literature. Studies concerning tawhid and science tend to emphasize philosophical, theological, or epistemological questions, while scholarship on technology ethics frequently approaches emerging technologies through secular normative frameworks. Research on *maqāṣid al-sharī'ah* provides a strong basis for considering welfare and harm but is not always explicitly connected to educational processes.<sup>6</sup> Similarly, studies on the integration of Islam and science in education have demonstrated the importance of value integration but have not sufficiently articulated how a theological worldview can be translated into a systematic ethical and pedagogical framework for contemporary science and technology education. The literature therefore lacks a comprehensive synthesis that connects the theological foundation of tawhid, the ethical orientation of *maqāṣid al-sharī'ah*, the normative dimension of science and technology ethics, and the pedagogical function of Islamic education.

Addressing this gap requires moving beyond a simple claim that Islam and science are compatible toward a more integrated conceptual framework explaining how Islamic values can actively shape the purposes, processes, and outcomes of science and technology education. In such a framework, tawhid functions as the foundational worldview that establishes the relationship between knowledge, human agency, and divine responsibility.<sup>7</sup> *Maqāṣid al-sharī'ah* provides an ethical orientation for determining whether scientific and technological developments contribute to human welfare and prevent harm. Science and technology ethics translates these principles into normative considerations concerning responsible innovation, human dignity, justice, sustainability, and accountability. Islamic

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<sup>6</sup> Salami Mahmud et al., "Building Students' Character Based on *Maqāṣid Al-Shari'ah*: Perspectives of Parents, Teachers, and Community Members in Banda Aceh," *Samarah* 7, no. 3 (2023): 1803–26, <https://doi.org/10.22373/sjhg.v7i3.17708>.

<sup>7</sup> H I N Sholeh and A Z Muttaqin, "Local Wisdom in Sebambangan Traditional Marriage Practices: A *Maqāṣid Sharī'ah* Perspective," *Ijtihad: Jurnal Wacana Hukum Islam Dan Kemanusiaan*, 2024.

education then provides the pedagogical context through which these principles can be incorporated into curricula, learning experiences, digital literacy, character formation, and students' decision-making. The resulting framework positions science and technology education as an intellectual and moral enterprise rather than merely a process of technical skills acquisition.

The need for such an integrated perspective has become more urgent with the rapid expansion of AI and digital technologies in educational contexts. While these technologies offer significant opportunities for personalized learning, knowledge production, accessibility, and educational innovation, they also introduce questions concerning academic integrity, privacy, algorithmic bias, misinformation, human agency, and the changing role of educators. These challenges require learners to possess not only technological competencies but also the ethical capacity to determine when, why, and how technology should be used. From an Islamic educational perspective, technological literacy should therefore be developed alongside moral and spiritual literacy.<sup>8</sup> The tawhid paradigm can provide a normative orientation in which technological competence remains connected to devotion to Allah, respect for human dignity, social responsibility, and stewardship of the natural environment.

Against this background, this study aims to systematically analyze and synthesize existing literature concerning tawhid as a value-based framework for science and technology education from the perspective of Islamic education. The study addresses three research questions: (1) How is tawhid conceptualized and positioned as a value foundation for science and technology education? (2) How are tawhid, maqāṣid al-sharī'ah, and science and technology ethics interconnected within the discourse of Islamic education? and (3) How can this integrated framework be translated into curriculum and pedagogical practices to develop learners who are scientifically and technologically competent, ethically responsible, and grounded in Islamic values? To address these questions, the study employs a Systematic Literature Review (SLR) using a structured literature-based approach to

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<sup>8</sup> Sholihul Huda, Mukayat Al Amin, and Mahmud Muhsinin, "Religious Conflict Management: A Study on the Ansor Youth Movement and Muhammadiyah in Lamongan, Indonesia," *Abrahamic Religions: Jurnal Studi Agama-Agama* 4, no. 1 (2024): 16, <https://doi.org/10.22373/arj.v4i1.22512>.

identify, select, critically examine, and synthesize relevant scholarly studies. The distinctive contribution of this study lies in its effort to bring together four dimensions that are frequently examined separately: tawhid as a theological and worldview foundation, maqāṣid al-sharī'ah as an orientation toward human welfare, science and technology ethics as a normative framework, and Islamic education as a pedagogical mechanism for value internalization. Rather than merely reaffirming the compatibility between Islam and science, this study develops a conceptual synthesis that explains how theological principles can inform ethical orientations and ultimately be operationalized within educational practices.

Theoretically, this study contributes to the discourse on Islamic education by advancing a value-based framework for understanding the relationship between faith, knowledge, science, and technology. It also extends discussions of Islamic epistemology by demonstrating the potential of tawhid to function not only as a theological principle but also as a framework for ethical and educational decision-making. Practically, the findings may inform curriculum development, science and technology pedagogy, AI and digital literacy initiatives, and the preparation of future Muslim scientists, educators, and technology users. Ultimately, the study seeks to contribute to an educational paradigm in which scientific and technological advancement is pursued not as an end in itself, but as a form of responsible human activity oriented toward knowledge, ethical integrity, human dignity, social justice, environmental sustainability, and the realization of human well-being under the guidance of Islamic values.

## Methods

This study employed a qualitative approach using a Systematic Literature Review (SLR) design based on a literature review.<sup>9</sup> The review process followed the principles of the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) to ensure that the identification, screening, selection, and reporting of relevant literature were conducted systematically, transparently, and traceably. The PRISMA framework served as a guideline for determining literature

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<sup>9</sup> Ahmad Mukhtar et al., *Metode Penelitian Pendidikan* (Jln. Sungai Lareh No.26, Kel. Lubuk Minturun, Kec. Koto Tengah, Kota Padang, Sumatera Barat: AIKOMEDIA PRESS, 2024).

relevant to the research focus, namely tawhid as a value-based framework for science and technology education from the perspective of Islamic education. The literature search was conducted through Scopus, Google Scholar, Crossref, and the Directory of Open Access Journals (DOAJ) using combinations of keywords in English and Indonesian, including “tawhid and Islamic education,” “tawhid and science,” “Islamic education and science and technology,” “Islamic ethics and technology,” “maqāṣid al-sharī‘ah and technology,” “Islamic science education,” and “value-based science education.” The search was limited to publications from 2019 to 2026, with priority given to recent and directly relevant scholarly publications.

The literature selection process followed four stages adapted from the PRISMA framework: identification, screening, eligibility, and inclusion. During the identification stage, all records retrieved from the selected databases were collected using the predetermined keyword combinations.<sup>10</sup> Duplicate records were subsequently identified and removed. In the screening stage, the titles and abstracts of the retrieved publications were examined to assess their alignment with the research focus. Publications that did not substantially address tawhid, Islamic education, science and technology ethics, maqāṣid al-sharī‘ah, or the relationship between Islam and science and technology were excluded. The eligibility stage involved a full-text assessment of the remaining publications to evaluate their substantive relevance, academic quality, methodological rigor, and alignment with the objectives of the study. Finally, at the inclusion stage, publications that satisfied all predetermined inclusion criteria were retained as the primary sources of data and subjected to thematic analysis.

The inclusion criteria comprised publications published between 2019 and 2026; studies directly relevant to tawhid, Islamic education, the integration of Islam and science, science and technology ethics, or maqāṣid al-sharī‘ah; scholarly articles, academic books, conference proceedings, or other verifiable academic sources; publications with clear bibliographic information; and sources available in full text. The exclusion criteria comprised publications lacking substantive relevance to the

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<sup>10</sup> Mulkan Azhari, Putri Rizki Syafrayani, and Maulia Rahman, “The Role of Digital Platforms in Islamic Education: Opportunities and Challenges,” *Proceeding International Seminar on Islamic Studies* 6, no. 1 (2025): 2124–30.

research focus, popular articles, news reports, opinion pieces, promotional materials, duplicate publications, and sources with insufficient academic or bibliographic information. The credibility of the selected sources was assessed based on the quality and reputation of the journal or publisher, the presence of a peer-review process, clarity of the research objectives, methodological appropriateness, strength of the arguments or findings, relevance to the research focus, and traceability of bibliographic information.

The selected literature was analyzed using qualitative content analysis combined with thematic analysis. The analytical process involved several sequential stages: reading and comprehending the selected literature, conducting initial coding, grouping codes into conceptual categories, identifying recurring themes, interpreting relationships among themes, and synthesizing the findings across the literature.<sup>11</sup> Four major analytical themes were established in accordance with the research objectives: (1) tawhid, (2) science and technology ethics, (3) maqāṣid al-sharī'ah, and (4) Islamic education. The tawhid theme was examined in terms of its position as a theological principle, worldview, and value foundation for the development and use of knowledge. The science and technology ethics theme was analyzed in relation to principles of responsibility, human welfare, justice, prevention of harm, and responsibility toward humanity and the environment. The maqāṣid al-sharī'ah theme was examined based on its orientation toward the protection and advancement of fundamental dimensions of human well-being. Meanwhile, the Islamic education theme was analyzed in relation to curriculum development, pedagogical practices, character formation, science and technology literacy, and the development of learners who possess both academic competence and moral responsibility.

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<sup>11</sup> Fathor Rasyid, "Metodologi Penelitian Kualitatif Dan Kuantitatif: Teori, Metode, Dan Praktek," 2022.

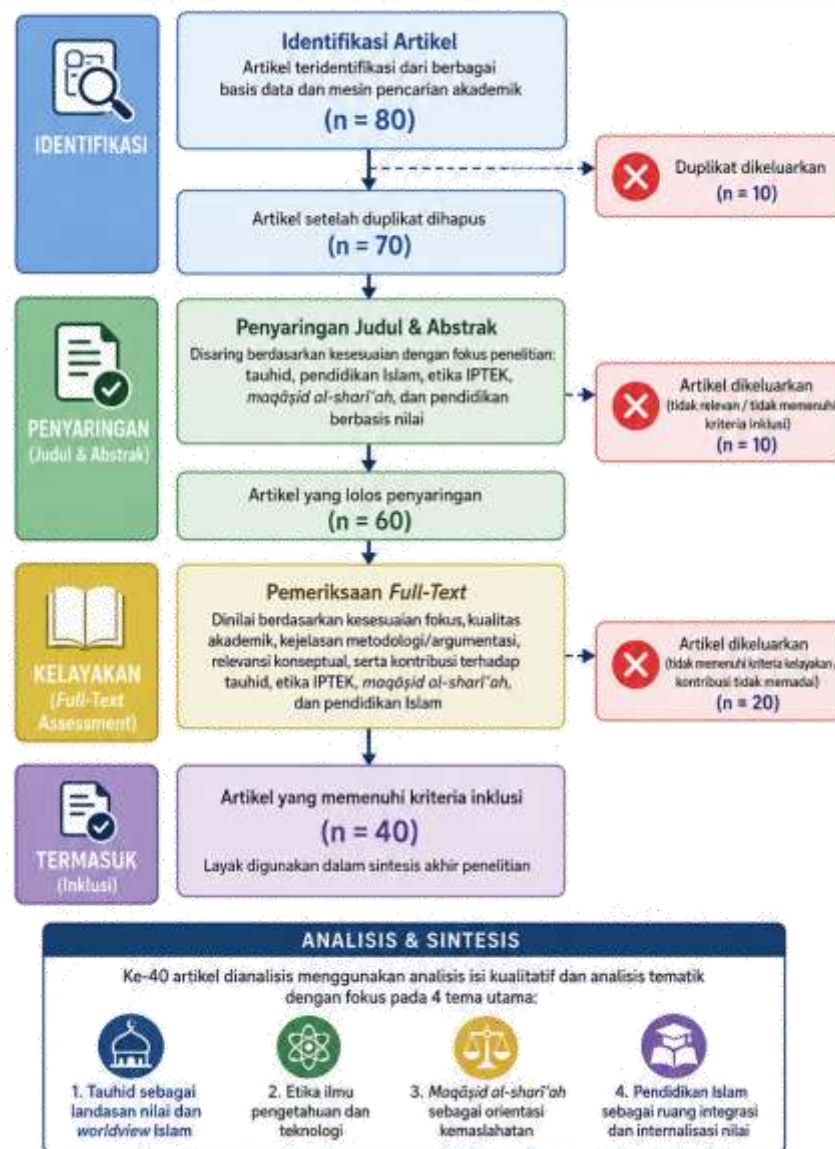


Figure 1: The Literature Selection Process Based on the PRISMA Protocol

## Results and Discussion

### Results

#### 1. Identification and Selection of the Literature

The identification and selection of the literature were conducted systematically to obtain sources relevant to the focus of this study, namely, tawhid as a value-based framework for science and technology education from an Islamic education perspective. Based on searches using the predetermined combination of keywords, a total of 80 articles were identified at the initial stage.

After duplicate records were examined, 10 articles were removed, leaving 70 articles for the screening stage. During the screening stage, the titles and abstracts of the 70 articles were examined based on their relevance to the research focus, particularly their discussion of tawhid, Islamic education, science and technology, science and technology ethics, and *maqāṣid al-sharī'ah*. A total of 10 articles were excluded because they were not substantively relevant to the research focus. Consequently, 60 articles proceeded to the full-text assessment stage.

At the eligibility stage, the full texts of the selected articles were examined to assess their substantive relevance, academic quality, traceability of information, and contribution to the objectives of the study. Of the 60 articles assessed, 20 articles were excluded because they did not meet the inclusion criteria. Therefore, 40 articles were considered eligible and included in the final synthesis.

| PRISMA Stage                                | Number of Articles |
|---------------------------------------------|--------------------|
| Records identified                          | n = 80             |
| Duplicate records removed                   | n = 10             |
| Records after duplicates removed            | n = 70             |
| Records screened by title and abstract      | n = 70             |
| Records excluded                            | n = 10             |
| Full-text articles assessed for eligibility | n = 60             |
| Full-text articles excluded                 | n = 20             |
| Studies included in the final synthesis     | <b>n = 40</b>      |

This selection process resulted in a corpus of literature that was subsequently analyzed thematically to identify conceptual patterns, similarities, differences, and relationships among the themes of tawhid, *maqāṣid al-sharī'ah*, science and technology ethics, and Islamic education.

## 2. Characteristics of the Analyzed Literature

The 40 articles that met the inclusion criteria were analyzed based on publication year, research focus, methodological approach, key concepts, and their contribution to the focus of the study. The mapping of the literature revealed several interconnected conceptual trends concerning the relationship

between Islam, science, technology, and education. The first trend positions tawhid as the foundation of the Islamic worldview and epistemology. Studies within this category discuss the relationship between faith, revelation, knowledge, and the ways in which human beings understand reality. Tawhid is understood not merely as a theological principle but also as a foundational perspective that influences how knowledge is acquired, developed, and utilized.

The second trend concerns the integration of Islam, science, and technology within education. Studies in this category focus on how Islamic values can be incorporated into curricula, learning processes, science and technology literacy, and students' character development. The third trend positions *maqāṣid al-sharī'ah* as a framework for promoting human welfare in responding to developments in science and technology. Studies in this category emphasize the importance of considering the benefits, risks, protection of life, justice, prevention of harm, and human well-being associated with technological development. The fourth trend concerns science and technology ethics and digital literacy, including issues related to artificial intelligence, academic integrity, privacy, responsibility, justice, information security, and the social implications of technology.

Based on this mapping, the analyzed literature can be organized into four major themes: (1) tawhid as a value foundation and worldview; (2) the integration of Islam, science, and technology in education; (3) *maqāṣid al-sharī'ah* as an orientation toward human welfare; and (4) science and technology ethics and the internalization of values in Islamic education.

### **3. Coding and Thematic Categorization**

The 40 articles were analyzed through a process of coding, categorization, and thematic synthesis. Information sharing similar meanings was grouped into broader conceptual categories to identify patterns of relationships among the key concepts. The coding results indicate that the theme of tawhid primarily emerged in discussions of the oneness of God, the Islamic worldview, Islamic epistemology, the relationship between knowledge and revelation, and the purposes underlying the use of knowledge. The theme of *maqāṣid al-sharī'ah* emerged in discussions of human welfare, the protection of life, prevention of

harm, social responsibility, justice, and the direction of technological development.

Meanwhile, the theme of science and technology ethics was associated with responsibility, honesty, trustworthiness, justice, privacy, academic integrity, social impact, and sustainability. The theme of Islamic education encompassed curriculum, pedagogy, teachers' roles, moral and character development, science and technology literacy, and the development of learners with both competence and moral responsibility. The categorization results demonstrate that these four themes do not exist independently. Rather, the literature reveals a consistent conceptual relationship among them. Tawhid provides the value foundation and worldview; *maqāṣid al-sharī'ah* provides the orientation toward human welfare; science and technology ethics translates these values into principles of conduct; and Islamic education provides the pedagogical space for internalizing these values among learners.

#### **4. Tawhid as a Value Foundation for Science and Technology Education**

The synthesis indicates that tawhid serves a function that extends beyond its role as a theological principle. In the literature analyzed, tawhid can be understood as a worldview that shapes how human beings perceive knowledge, technology, humanity, and the environment. Consequently, scientific knowledge is not regarded as an entirely value-neutral activity but rather as an entrusted responsibility that should be directed toward purposes consistent with Islamic principles. From this perspective, the acquisition and development of scientific and technological knowledge involve both spiritual and moral dimensions. Knowledge is not evaluated solely according to its ability to explain phenomena or generate innovations but also according to its purposes, benefits, consequences, and associated responsibilities.

This finding has direct implications for science and technology education. Education should not be limited to developing students' mastery of scientific concepts and technological skills; it should also cultivate their awareness of the moral consequences of scientific and technological applications. Learners need to understand the relationship between scientific knowledge, human responsibility, social welfare, and environmental sustainability. Thus, the

synthesis positions tawhid as a value foundation that determines the orientation of science and technology education. Tawhid serves as the starting point for connecting scientific knowledge with spiritual, moral, social, and ecological responsibility.

#### **5. Maqāṣid al-Sharī'ah as an Orientation toward Human Welfare in Science and Technology**

The synthesis of the second theme indicates that maqāṣid al-sharī'ah can function as an evaluative framework for determining the direction of scientific and technological development and utilization. The concept of human welfare provides a normative basis for considering the benefits and risks of science and technology for human life and the social environment. In the educational context, maqāṣid al-sharī'ah can be used to develop students' capacity for ethical reasoning concerning technological developments. Learners should not only understand how a technology works but also be able to question its purpose, identify who benefits from its use, assess potential risks, examine its social consequences, and consider its moral implications. The synthesis demonstrates that maqāṣid al-sharī'ah occupies the position of a bridge between the foundation of tawhid and the practice of science and technology ethics. Tawhid provides the theological foundation for human responsibility, while maqāṣid al-sharī'ah provides an orientation that directs science and technology toward human welfare and away from harm.

#### **6. Science and Technology Ethics as a Normative Guideline**

The third theme indicates that developments in science and technology cannot be addressed solely by improving technical competencies. Digital technologies and artificial intelligence, for example, have generated ethical concerns related to integrity, privacy, responsibility, justice, information use, security, and the relationship between human beings and technology. The literature analyzed emphasizes the importance of incorporating ethical dimensions into science and technology education. Values such as trustworthiness, honesty, justice, responsibility, human welfare, and respect for human dignity constitute essential elements in developing responsible patterns of technology use. Within the synthesis of this study, science and technology

ethics functions as a normative guideline that translates the principles of tawhid and the orientation of maqāṣid al-sharī'ah into concrete decisions and behaviors. Accordingly, value-based science and technology education is not intended to restrict innovation but rather to ensure that innovation is developed and utilized responsibly, fairly, safely, and in ways that promote human welfare.

## **7. Islamic Education as a Space for Value Integration**

The synthesis indicates that Islamic education occupies a strategic position in connecting the values of tawhid with developments in science and technology. Such integration should not be limited to adding religious content to science or technology lessons. Instead, it should be embedded more fundamentally in educational objectives, curricula, pedagogical practices, academic culture, and teachers' role modeling. Islamic education can provide a pedagogical space in which learners develop the capacity to connect scientific knowledge with spiritual and moral values. Within this context, science and technology learning should not focus exclusively on the question "How does the technology work?" but should also address questions such as "What is the technology intended for?", "Who benefits from its use?", "What are the potential risks?", and "Is its use consistent with the principles of human welfare?" This approach shifts the orientation of education from mere knowledge acquisition toward the development of reflective and ethical capacities. Learners are expected to understand scientific knowledge, use technology appropriately, evaluate its consequences, and make decisions based on moral considerations. Therefore, Islamic education has a transformative function in developing learners who are capable of mastering science and technology while possessing the capacity for moral reasoning and responsible action.

## **8. Synthesis of the Relationship among Tawhid, Maqāṣid al-Sharī'ah, Science and Technology Ethics, and Islamic Education**

The comparison and integration of findings from the 40 articles resulted in a conceptual relationship that can be formulated through four interconnected levels. First, tawhid as the foundation. Tawhid provides the theological foundation and worldview for understanding the nature, purposes, and responsibilities associated with the use of science and technology. Second,

maqāṣid al-sharī'ah as the orientation. The principles of maqāṣid provide direction for ensuring that the development and utilization of science and technology promote human welfare, protect life, advance justice, and prevent harm. Third, science and technology ethics as the guideline. Ethical principles translate the value foundation and orientation toward human welfare into concrete considerations and behaviors in the development and utilization of technology.

Fourth, Islamic education as the space for implementation. Islamic education integrates these values, orientations, and ethical principles into curricula, learning processes, character development, technology literacy, and learners' educational experiences. Based on this synthesis, the conceptual framework generated by the study can be formulated as follows:

Tawhid → Islamic Worldview → Maqāṣid al-Sharī'ah → Science and Technology Ethics → Islamic Education → Competent, Ethical, and Responsible Learners.

This framework demonstrates that the integration of Islam and science and technology should not be understood merely as the incorporation of religious content into science and technology learning. Rather, integration takes place at four fundamental levels: value foundation, goal orientation, ethical principles, and pedagogical practice.

## **9. Main Findings and Contribution of the SLR**

Based on the synthesis of the 40 selected articles, this study generated three principal findings. First, tawhid can be positioned not merely as a religious doctrine but as a worldview framework and value foundation for science and technology education. This position provides a basis for connecting scientific knowledge with spiritual, moral, social, and ecological responsibility. Second, a complementary conceptual relationship exists among tawhid, maqāṣid al-sharī'ah, and science and technology ethics. Tawhid provides the theological and worldview foundation, maqāṣid al-sharī'ah provides an orientation toward human welfare, while science and technology ethics provides normative guidelines for the development and utilization of technology. Third, Islamic education constitutes a strategic space for translating this conceptual

relationship into educational practice. Integration can be realized through curriculum development, science and technology learning, digital literacy, character education, ethical technology use, and the development of learners' capacity to make responsible decisions.

These findings also demonstrate the research gap addressed by this study. Previous literature tends to discuss tawhid, the integration of Islam and science, maqāṣid al-sharī'ah, technology ethics, and Islamic education separately or through limited relationships among them. This study contributes a synthesis that connects these four dimensions within a single value-based framework by positioning tawhid as the foundation, maqāṣid al-sharī'ah as the orientation, science and technology ethics as the normative guideline, and Islamic education as the space for implementation. The primary contribution of this SLR therefore lies in developing a conceptual relationship that can serve as a foundation for science and technology education that is oriented not only toward scientific and technological competence but also toward character development, moral responsibility, and the pursuit of human welfare.

#### **10. Mapping the Findings onto the Research Questions**

The findings directly address the three research questions formulated in this study. First, concerning how tawhid is positioned as a value foundation for science and technology education, the synthesis indicates that tawhid functions as a worldview and value foundation that provides direction for the purposes, development, and utilization of scientific and technological knowledge. Tawhid connects knowledge with human responsibility toward God, other human beings, and the environment. Second, concerning how the relationship among tawhid, maqāṣid al-sharī'ah, and science and technology ethics is constructed from an Islamic education perspective, the findings demonstrate a hierarchical and complementary relationship among these concepts. Tawhid constitutes the theological foundation, maqāṣid al-sharī'ah provides the orientation toward human welfare, and science and technology ethics serves as the normative guideline for translating these values into the practical use of knowledge and technology.

Third, concerning how this framework can be integrated into Islamic education, the synthesis indicates that integration can be achieved through curriculum development, science and technology learning, digital literacy, character education, ethical technology use, and the development of learners who possess scientific competence, technological literacy, faith, moral character, and social responsibility. Overall, the findings demonstrate that the integration of tawhid and science and technology should be understood as value-based integration rather than merely content integration. Tawhid provides the worldview foundation, maqāṣid al-sharī'ah provides the orientation toward human welfare, science and technology ethics provides normative guidance, and Islamic education provides the pedagogical mechanism for internalizing these dimensions. This synthesis constitutes the principal conceptual contribution of the study in formulating a value-based framework for science and technology education from an Islamic perspective.

## **Discussion**

### **Tawhid as an Epistemological Foundation and Value Framework for Science and Technology Education**

The findings of the Systematic Literature Review indicate that tawhid occupies a broader position than merely serving as a theological principle in Islamic education. Tawhid can be positioned as a foundational worldview that shapes how individuals understand the nature of knowledge, the purpose of acquiring knowledge, the position of human beings as seekers and developers of knowledge, and the direction of technological use. This perspective is consistent with Aulia et al, who demonstrate that the paradigm of tawhid can serve as an epistemological foundation for integrating science and technology into Islamic education. Such integration is intended to overcome the dichotomy of knowledge and establish a more holistic relationship among academic competence, technological mastery, and the development of spiritual and moral character.<sup>12</sup> These findings reinforce the

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<sup>12</sup> Muhammad Hizba Aulia; Aam Abdussalam; Aceng Kosasih; Ahmad Dimyati Ridwan; Muhamad Mauris Faruqi Ali; Achmad Ghyats Setiawan; M Nur Faizin, "Integrating Science and Technology in Islamic Education through the Tawhid Paradigm," *Mauriduna: Journal of Islamic*

argument that knowledge, from an Islamic perspective, cannot be entirely separated from values. Knowledge is not merely an instrument for understanding empirical reality but also forms part of humanity's responsibility in fulfilling its trust as khalifah.

Therefore, the human capacity to develop science and technology must be accompanied by an awareness of the purposes and consequences of their use. Within the framework of tawhid, scientific progress is evaluated not only in terms of its capacity to generate innovation, efficiency, or material benefits but also in terms of its contribution to human welfare. This perspective has direct implications for science and technology education. Education should not be limited to producing learners who are capable of mastering scientific concepts and technological skills; it should also cultivate individuals who are able to use knowledge responsibly. Learners need to be guided to understand not only how technology is used, but also why it is used, for what purposes, who benefits from it, and what consequences it may have for human beings and the environment. Such an orientation shifts the educational paradigm from merely developing technological competence toward fostering responsible technological competence.

Research on technology in Islamic education also demonstrates the ambivalent nature of technology. Technology can expand access to education, improve the effectiveness of learning, and enrich teaching methods. At the same time, however, it may generate ethical concerns when it is not guided by a clear value orientation. Khoiriah and Hude argue that the use of technology in Islamic education should be situated within an Islamic ethical perspective so that technological innovation continues to support the development of individuals with sound character and moral integrity. Accordingly, tawhid can be understood as a principle that connects the dimension of knowledge with the dimension of responsibility. Tawhid does not restrict the development of science; rather, it provides guidance regarding how scientific knowledge should be developed and utilized. This is particularly important because science and technology education that emphasizes technical aspects alone may produce individuals with advanced

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*Studies*, no. Vol. 6 No. 4 (2025): Mauriduna : Journal of Islamic Studies, November 2025 (2025): 759–88, <http://ejournal.mc.ac.id/index.php/mauriduna/article/view/26/54>.

technological capabilities but insufficient capacity to consider the moral consequences of the technologies they use.

Within Islamic education, the integration of tawhid also broadens the understanding of the relationship between religious and general knowledge. Integration cannot be achieved merely by adding Qur'anic verses to science materials or providing religious instruction after technology lessons. A more substantive form of integration occurs when the values of tawhid influence how learners understand the purposes of knowledge, engage in scientific activities, evaluate the consequences of technology, and make decisions. In this sense, tawhid functions as a value framework that integrates knowledge, purpose, action, and responsibility.

### **Tawhid and Maqāṣid al-Sharī'ah as an Orientation toward Human Welfare in Science and Technology**

The synthesis indicates that tawhid requires a framework capable of translating theological values into practical orientations for the development of science and technology. In this context, maqāṣid al-sharī'ah occupies an important position because it provides an orientation toward human welfare and the protection of fundamental human interests. The relationship between tawhid and maqāṣid al-sharī'ah can therefore be understood as a relationship between a value foundation and an orientation for action. Tawhid establishes the principle that human beings bear responsibility before God, whereas maqāṣid al-sharī'ah provides guidance to ensure that human actions promote human welfare and prevent harm. Therefore, technology should not be evaluated solely according to its level of sophistication. It should also be assessed in terms of its benefits, risks, social consequences, justice, safety, and contribution to human well-being.

The growing body of research on AI ethics further strengthens this argument. Elmahjub demonstrates that developments in artificial intelligence raise concerns related to autonomy, privacy, justice, and transparency, while contemporary AI ethics discourse has largely been influenced by Western ethical paradigms.<sup>13</sup> The

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<sup>13</sup> Ezieddin Elmahjub, "Artificial Intelligence (AI) in Islamic Ethics: Towards Pluralist Ethical Benchmarking for AI," *Philosophy & Technology* 36, no. 4 (2023): 73, <https://doi.org/10.1007/s13347-023-00668-x>.

study therefore advocates for a more pluralistic approach to developing ethical standards for AI so that non-Western moral traditions, including Islamic perspectives, can contribute to the development of technology ethics. From the perspective of *maqāṣid al-sharī'ah*, these issues can be analyzed through the orientation of protecting religion, life, intellect, lineage, and property. The protection of intellect, for example, is relevant to the use of educational technologies that support intellectual development without undermining human thinking and autonomy. Similarly, the protection of property can be associated with the security of digital transactions and protection against technological misuse, while the protection of life is relevant to ensuring human safety in the development and use of technology.

Mustapha demonstrates that *maqāṣid al-sharī'ah* can be used to evaluate artificial intelligence based on these five fundamental necessities. AI can generate benefits in healthcare, access to knowledge, social life, and the economy; however, its use still requires ethical consideration to ensure that innovation remains consistent with Islamic principles.<sup>14</sup> These findings are consistent with Wahyunisa and Aminullah, who developed an AI ethics framework based on *maqāṣid al-sharī'ah* to support sustainable digital transformation. Their study demonstrates that the development of AI requires a normative framework capable of connecting technological innovation with social interests and sustainability. Accordingly, this study positions *maqāṣid al-sharī'ah* not merely as a concept within Islamic law but as an evaluative framework for science and technology education. This relationship produces a conceptual pattern in which *tawhid* provides the foundation, whereas *maqāṣid al-sharī'ah* provides the orientation toward human welfare. Together, they provide the basis for developing an ethics of science and technology that is not merely reactive to technological developments but is capable of providing guidance throughout the processes of technological development, utilization, and evaluation.

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<sup>14</sup> Mukaffan and Ali Siswanto, "ETHICAL INTEGRATION OF GENERATIVE AI IN ISLAMIC EDUCATION: TOWARD INCLUSIVE AND SUSTAINABLE HUMAN CAPITAL DEVELOPMENT," *AL-ADABIYAH: Jurnal Pendidikan Agama Islam* 6 (July 9, 2025): 303–25, <https://doi.org/10.35719/adabiyah.v6i3.1178>.

### **Science and Technology Ethics as a Consequence of the Tawhid Framework**

The findings indicate that science and technology ethics constitute a logical consequence of understanding tawhid as a value framework. If knowledge is regarded as a trust, scientific activities must be conducted with honesty, responsibility, justice, and awareness of the consequences of their application. Ethics, therefore, should not be treated as an additional element introduced after technology has developed but as an integral component of both education and scientific advancement. Within the context of digital technology, these values have become increasingly important because technology enables the production and distribution of information on an unprecedented scale. Issues such as misinformation, information manipulation, privacy violations, plagiarism, cyberbullying, and data misuse demonstrate that the ability to use technology does not necessarily correspond with the ability to use it ethically.

Prabowo et.al, demonstrate that Islamic education plays an important role in developing digital citizens with strong character and the capacity to use technology ethically.<sup>15</sup> Islamic education can no longer focus exclusively on the conventional transmission of religious teachings but must also respond to moral challenges emerging in digital environments. The findings of Muksin and Afandi, through a Systematic Literature Review, likewise demonstrate the growing importance of digital ethics education within Islamic education, particularly because learners are increasingly exposed to misinformation, harmful content, and various ethical risks in digital environments. Their study emphasizes the need for pedagogical approaches that connect digital literacy with Qur'anic values and the exemplary conduct of the Prophet. Within the framework of tawhid, academic honesty has a deeper dimension. Learners avoid plagiarism not merely because institutional regulations prohibit it, but because they recognize that knowledge is a trust and that every action carries moral accountability. Thus, the values associated with tawhid

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<sup>15</sup> Yuga Prabowo, Dulfam Ervani, and Putri Archningtia, "Maqasid Al-Shariah and Artificial Intelligence: Unaddressed Issues in Contemporary AI Ethics Studies," *AL-IMAM: Journal on Islamic Studies, Civilization and Learning Societies* 7 (January 29, 2026): 231–44, <https://doi.org/10.58764/j.im.2026.7.132>.

can serve as a source of internal motivation for the development of academic integrity.

### **Artificial Intelligence Ethics from the Perspective of Islamic Education**

The development of artificial intelligence provides a particularly relevant context for applying the framework of tawhid and science and technology ethics. AI has created opportunities for personalized learning, information retrieval, content generation, translation, assessment, and various forms of pedagogical support. However, its use also raises concerns regarding academic integrity, privacy, algorithmic bias, technological dependence, and the potential erosion of human autonomy. Elmahjub identifies justice, transparency, privacy, and autonomy as central concerns in AI ethics from an Islamic perspective.<sup>16</sup> Nikmah Harahap, Nina Gajah, and Apriliana Apriliana, demonstrate that the trusteeship ethics approach can be used to evaluate different approaches to AI ethics by emphasizing human responsibility as trustees. Within Islamic education, these issues become more specific because AI directly influences both the formation of knowledge and the development of learners' character.<sup>17</sup> Hasanah et al., demonstrate that AI has the potential to improve the quality of Islamic Religious Education (PAI) learning; however, its implementation is accompanied by challenges related to digital literacy, concerns regarding its compatibility with Islamic values, and the need for curriculum development capable of integrating AI responsibly.<sup>18</sup> Recent research by Ibrohim, Aziz, and Sahrodi indicates that learners have already begun using AI in educational settings, yet concerns have emerged regarding technological dependence, declining academic integrity, limited critical reflection, and inadequate

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<sup>16</sup> Elmahjub, "Artificial Intelligence (AI) in Islamic Ethics: Towards Pluralist Ethical Benchmarking for AI."

<sup>17</sup> Nikmah Harahap, Nina Gajah, and Apriliana Apriliana, "Ethics of Using Artificial Intelligence (AI) in Islamic Education: A Philosophical Inquiry into Responsibility, Academic Honesty, and Epistemic Authority," *Perspektif: Jurnal Pendidikan Dan Ilmu Bahasa* 4 (June 30, 2026): 148–66, <https://doi.org/10.59059/perspektif.v4i2.3339>.

<sup>18</sup> Uria Hasnan; Muhammad Eissawy Abu El Yazid; Abubaker Kashada; Mohammad Ahmad Bani Amer; Rahmat Ullah; Ahmad Faizal Syahrul Azmi, "Developing Maqasid Al-Shariah-Based Artificial Intelligence Models for Transformative Islamic Education in the Era of Technological Disruption and Knowledge Society," *AL GHAZALI: Jurnal Pendidikan Dan Pemikiran Islam*, no. Vol. 6 No. 1: Januari-Februari 2026 (2026): 363–78, [https://jurnal.staialjami.ac.id/index.php/AL\\_GHAZALI/article/view/604/263](https://jurnal.staialjami.ac.id/index.php/AL_GHAZALI/article/view/604/263).

information verification.<sup>19</sup> In response, teachers have developed ethical pedagogical approaches that integrate the values of *ṣidq*, *amānah*, *mas'ūliyyah*, and *tabayyun*.

These findings reinforce the results of the present study by demonstrating that AI literacy in Islamic education cannot be limited to technical skills. Learners need to develop the capacity to use, evaluate, verify, and take responsibility for the outputs generated by technology. Accordingly, AI should be positioned as a tool that supports the learning process rather than as a substitute for human thinking. Siti Khodijah et al., likewise demonstrate that the use of AI in Islamic education raises concerns regarding algorithmic transparency, bias, data privacy, the diminishing authority of teachers, the commodification of knowledge, and unequal access.<sup>20</sup> Their study proposes transparency, justice, responsibility, privacy, human autonomy, and social solidarity as ethical principles that can guide the integration of AI.

Accordingly, Islamic education needs to move beyond the concept of AI literacy toward AI ethical literacy. AI ethical literacy refers to the ability not only to use AI but also to understand the limits of its use, verify its outputs, maintain academic integrity, protect privacy, and consider the social consequences of technology. Within the framework of tawhid, these capacities can be strengthened through the awareness that technology is a means that must be used within the principles of trust and human welfare.

### **Islamic Education as a Pedagogical Space for Integrating Tawhid, Maqāṣid, and Science and Technology Ethics**

The findings indicate that Islamic education occupies a strategic position as a space for implementing the framework of tawhid, maqāṣid al-sharī'ah, and science and technology ethics. These values will not produce meaningful educational outcomes if they remain merely normative concepts. They must be translated into curricula, learning objectives, instructional materials, teaching methods, student

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<sup>19</sup> Wahyu Ibrohim, Abdul Aziz, and Jamali Sahrodi, "Islamic Ethical Pedagogy for Artificial Intelligence Use: Insights from Islamic Religious Education Teachers in Indonesia," *Journal of Islamic Education Research* 7 (July 19, 2026): 593–610, <https://doi.org/10.35719/jier.v7i4.589>.

<sup>20</sup> Siti Khodijah et al., "The Urgency of Islamic Education for Mental Health At the Faculty of Islamic Studies, Islamic University 45 Bekasi," *Edukasi Islami: Jurnal Pendidikan Islam* 13, no. 02 (2024): 303–28, <https://doi.org/10.30868/ei.v13i02.6310>.

activities, assessment practices, and school culture. Research on the integration of digital ethics in Islamic education demonstrates that Islamic values need to be implemented through contextual learning processes. Hatija et al., for example, demonstrate that digital transformation in Islamic Religious Education requires the integration of Islamic values to address challenges such as misinformation, hate speech, and the misuse of social media.

At the curricular level, the integration of tawhid can be achieved by formulating learning outcomes that assess not only knowledge and technological skills but also ethical responsibility. Science and technology learning can incorporate real-world problems that encourage learners to consider issues of benefit, risk, justice, and human welfare. This approach is consistent with Mawloud Mohadi and Yasser Tarshany, who propose the integration of the values of tawhid, maqāṣid al-sharī'ah, and akhlāq into AI literacy curricula.<sup>21</sup> They emphasize that AI literacy in Islamic education should not merely produce technical competence but should also cultivate critical awareness, digital ethics, and social responsibility.

At the instructional level, teachers can adopt problem-based approaches by presenting cases involving technology ethics. Learners may be asked to analyze the use of AI in education, the misuse of personal data, information manipulation, deepfakes, or issues of algorithmic justice. Such activities enable learners to develop critical thinking while using Islamic values as a foundation for decision-making. Within this framework, teachers function not only as providers of information but also as moral and intellectual guides. Al-Kautsar and Ansori emphasize that the integration of AI into Islamic teacher education must preserve the teacher's role as a moral educator while integrating AI with the principles of amānah, justice, ihsan, maslahah, and hikmah. Accordingly, Islamic education performs a dual function. First, it equips learners with the capacity to understand and use science and technology. Second, it develops their ability to direct the use of science and technology according to moral and spiritual values. This second function constitutes

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<sup>21</sup> Mawloud Mohadi and Yasser Tarshany, "Maqasid Al-Shari'ah and the Ethics of Artificial Intelligence: Contemporary Challenges," *Journal of Contemporary Maqasid Studies* 2 (July 15, 2023): 79–102, <https://doi.org/10.52100/jcms.v2i2.107>.

an important distinction between instrumental technology education and value-based science and technology education.

### **Transforming Educational Orientation: From Science and Technology Mastery toward Responsible Science and Technology Use**

One of the primary implications of the findings is the need to transform the orientation of science and technology education. Education that focuses exclusively on technological mastery may produce individuals who are technically skilled but not necessarily capable of considering the social and moral consequences of technology. Therefore, Islamic education needs to develop a balance among scientific competence, technological capability, and moral responsibility. This framework may be described as value-based technological competence, referring to technological capability grounded in a coherent system of values. Within this framework, competence is demonstrated not only through the ability to operate technological devices or applications but also through the capacity to make responsible decisions.

Anggun Rizqia and Triono Mustofa, in their study of Islamic education policy in the digital era, demonstrate that technological integration requires more than infrastructure readiness. Teacher capacity, curriculum development, value-based governance, and ethical evaluation are also essential components of technology integration. Their study recommends an approach that combines digital innovation, value-based design, and ethical governance.<sup>22</sup> Accordingly, the success of science and technology education cannot be assessed solely on the basis of learners' ability to operate technology. Learners must also be able to reflect on the purposes of technological use, its benefits for humanity, its potential harms, and the responsibilities arising from its application. Such an orientation makes education more reflective and prevents it from becoming trapped in technological determinism.

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<sup>22</sup> Anggun Rizqia and Triono Mustofa, "Islamic Ethics-by-Design for Artificial Intelligence: A Conceptual Framework for Digital Ethics in Islamic Education.," *Proceeding ISETH (International Summit on Science, Technology, and Humanity)*, February 5, 2026, 674–82, <https://doi.org/10.23917/iseth.6865>.

## **A Tawhid-Based Conceptual Framework for Science and Technology Education**

Based on the synthesis of previous studies and the findings of the SLR, this study formulates a conceptual relationship among tawhid, maqāṣid al-sharī'ah, science and technology ethics, and Islamic education as a unified value-based framework. The framework can be formulated as follows:

Tawhid → Islamic Worldview → Maqāṣid al-Sharī'ah → Science and Technology Ethics → Islamic Education → Scientific and Technological Competence + Faith and Moral Character + Social Responsibility.

Tawhid occupies the first position because it constitutes the foundation of the worldview. From tawhid emerges the understanding that science and technology form part of humanity's entrusted responsibility. Subsequently, maqāṣid al-sharī'ah provides an orientation to ensure that scientific development is directed toward human welfare and the prevention of harm. Science and technology ethics then function as normative guidelines that translate this orientation into action. Islamic education serves as the pedagogical space through which these values are internalized through curricula, learning processes, teachers' role modeling, school culture, and technology literacy. This framework is consistent with the study of Aulia et al., which positions the tawhid paradigm as an epistemological foundation for the integration of science and technology in Islamic education. The framework is also supported by research on AI that positions maqāṣid al-sharī'ah as a basis for the ethical evaluation of technology.<sup>23</sup> However, the contribution of the present study lies in its effort to connect these four components systematically. Tawhid does not stand alone as a theological concept; maqāṣid is not positioned solely as a theory of Islamic law; ethics is not understood merely as a collection of moral principles; and Islamic education is not treated merely as a user of technology. Instead, these four components are positioned within a functional relationship that forms a value-based framework for science and technology education.

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<sup>23</sup> Faizin, "Integrating Science and Technology in Islamic Education through the Tawhid Paradigm."

### **Theoretical Contribution of the Study**

Theoretically, this study contributes to the development of Islamic educational thought by expanding the position of tawhid from a subject of religious doctrine into a worldview framework for science and technology education. The findings demonstrate that tawhid can provide a foundation for connecting the ontological, epistemological, axiological, and pedagogical dimensions of education. A further contribution lies in establishing the relationship between tawhid and maqāṣid al-sharī'ah. Tawhid provides the spiritual and theological foundation, whereas maqāṣid al-sharī'ah provides an orientation toward human welfare. Their combination offers a stronger basis for developing science and technology ethics within Islamic education. These findings are relevant to the study of Prabowo, Ervani, and Archningtia, which demonstrates that AI ethics discourse remains largely influenced by Western paradigms and requires an evaluative framework capable of incorporating Islamic perspectives through maqāṣid al-sharī'ah. The present study extends this discussion by positioning education as the space for implementation. Consequently, issues related to science and technology ethics are addressed not only at the levels of law and policy but also at the level of human development through education.

### **Practical Contributions to Islamic Education**

Practically, the framework developed in this study can be applied to the development of Islamic education curricula. Curricula can be designed to integrate science, technology, and AI literacy with Islamic values simultaneously. Learning materials should not merely explain the benefits of technology but should also encourage learners to analyze the risks and consequences of its use. The framework can also be applied to teacher competency development. Teachers need technological competence as well as ethical capacity to guide learners. Research on AI integration in Islamic education demonstrates that teacher capacity is an important factor because teachers continue to serve as moral and pedagogical guides. At the institutional level, schools and madrasahs can develop technology-use policies oriented toward academic integrity, privacy, data security, responsibility,

and human welfare. In this way, technology ethics is not taught exclusively in classrooms but becomes part of the institutional culture.

The novelty of this study lies in the development of an integrative framework that connects tawhid, maqāṣid al-sharī'ah, science and technology ethics, and Islamic education within a single conceptual construction. Previous studies have examined the relationship between Islam and science, the tawhid paradigm, digital ethics, AI ethics, and maqāṣid al-sharī'ah; however, these discussions have generally focused on individual dimensions. Aulia et al., for example, emphasize the tawhid paradigm as a foundation for integrating science and technology into Islamic education. Meanwhile, the studies of Elmahjub, Mustapha, and Wahyunisa and Aminullah focus more specifically on AI ethics and the use of maqāṣid al-sharī'ah as an evaluative framework for technology. The studies of Muksin and Afandi and Ibrohim et al., on the other hand, focus more directly on digital ethics and the use of AI in Islamic education. The present study integrates these different strands of scholarship into a single conceptual pathway: Tawhid as the foundation → Maqāṣid al-Sharī'ah as the orientation → Science and Technology Ethics as the guideline → Islamic Education as the space for implementation → Learners as competent, ethical, and responsible human beings.

Thus, the contribution of this study goes beyond merely asserting that Islam and science and technology can be integrated. It explains how the values of tawhid can be transformed into a framework for science and technology education with ethical and human-welfare orientations. The framework developed in this study has important implications for the future direction of Islamic education. Islamic education needs to move beyond models focused solely on the transmission of religious knowledge toward approaches capable of integrating faith, knowledge, technology, and social responsibility. Technological development should not be positioned as a threat to Islamic education but rather as a reality that requires ethical direction through values.

In the context of AI, for example, learners need to develop three interconnected capacities: technical competence, critical competence, and ethical competence. Technical competence enables learners to use AI; critical competence enables them to evaluate information and AI-generated outputs; while ethical

competence ensures that technology is used honestly, responsibly, and in accordance with the principles of human welfare. Research on ethical frameworks for AI in Islamic education also indicates that *maqāṣid al-sharī'ah* can be used to protect intellect, religion, human dignity, and academic integrity in the use of AI. Recent studies on Islamic Ethics-by-Design even propose that Islamic ethical principles should be considered from the initial stages of technological design and use rather than only after ethical problems have emerged. The implication is that Islamic education needs to develop a paradigm of technology with values, rather than merely technology in education. Technology should not be regarded solely as a tool for improving the efficiency of learning but as part of the educational environment that must be guided by the values of *tawhid*, *akhlāq*, human welfare, and responsibility.

Overall, the findings demonstrate that *tawhid* can be developed into a value-based framework for science and technology education. *Tawhid* provides a worldview foundation through which knowledge is understood as a trust and technology as a means that must be used responsibly. *Maqāṣid al-sharī'ah* provides an orientation to ensure that scientific and technological development is directed toward human welfare and the prevention of harm. Science and technology ethics subsequently translates this orientation into principles of conduct, while Islamic education serves as the space for internalizing these values among learners. This framework produces the understanding that the success of science and technology education cannot be measured solely through the mastery of knowledge and technological skills. Success must also be evaluated according to learners' capacity to use knowledge ethically, consider the consequences of technology, maintain integrity, and assume responsibility toward society and the environment.

Accordingly, this study emphasizes that Islamic education occupies a strategic position in bridging scientific and technological development with Islamic values. Islamic education does not need to adopt a defensive position toward technological development; instead, it can adopt a critical and constructive role by providing moral direction for the use of technology. Within this context, *tawhid* serves as the principal foundation connecting knowledge with responsibility,

maqāṣid al-sharī'ah connects innovation with human welfare, and Islamic education connects both dimensions with the development of the human person.

## Conclusion

Based on the results of the Systematic Literature Review of relevant literature, this study demonstrates that tawhid can be positioned as a value-based framework for the development and education of science and technology. Tawhid functions not only as a theological principle but also as an Islamic worldview that provides epistemological and axiological direction for acquiring, developing, and utilizing knowledge. From this perspective, science and technology are not understood as value-neutral activities but as forms of human responsibility and trust (amānah) that should be directed toward goodness, public benefit, justice, and responsibility for human life. The synthesis further demonstrates a strong conceptual relationship among tawhid, maqāṣid al-sharī'ah, science and technology ethics, and Islamic education. Tawhid serves as the foundation of Islamic values and worldview, while maqāṣid al-sharī'ah provides an orientation toward public benefit (maṣlaḥah) in the development and application of science and technology. Science and technology ethics then function as normative guidelines to ensure that technological development and utilization uphold justice, trustworthiness, academic integrity, human dignity, privacy, environmental sustainability, and the prevention of harm. Islamic education provides the pedagogical space through which these values can be integrated and internalized into curricula, learning processes, scientific and technological literacy, and character formation.

In the context of the rapid development of artificial intelligence and digital technologies, a tawhid-based framework has become increasingly relevant because technological innovation generates ethical challenges, including algorithmic bias, data privacy, technological dependency, academic integrity, misinformation, and the potential reduction of human responsibility in decision-making. Therefore, Islamic education needs to move beyond an orientation that emphasizes technological competence alone toward an educational framework that develops the ability to use technology critically, ethically, responsibly, and for the public good. Technological

literacy in Islamic education should consequently be accompanied by moral, spiritual, and ethical literacy.

The main contribution of this study lies in developing a conceptual synthesis that connects tawhid → Islamic worldview → maqāṣid al-sharī'ah → science and technology ethics → Islamic education → competent, morally grounded, and responsible learners. This framework extends the discourse on the integration of Islam and science by positioning tawhid not merely as religious content but as a value-based framework that can guide the development and utilization of science and technology. Practically, the framework may serve as a foundation for curriculum development, science and technology learning, digital ethics education, and artificial intelligence literacy within Islamic educational institutions.

Thus, tawhid-based science and technology education is not intended to restrict scientific and technological advancement but to provide moral, spiritual, and humanistic direction for such development. Islamic education has a strategic role in cultivating a generation that possesses not only scientific and technological competence but also faith, ethical awareness, critical thinking, moral character, and social responsibility. Future research should empirically examine this conceptual framework at the school, madrasah, higher education, and other Islamic educational levels and develop operational indicators for assessing the implementation of tawhid-based science and technology education.

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