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Reinventing Islamic Education Paradigms through IMTAK–IPTEK Integration in the Era of Artificial Intelligence

Author:
Arum Gati Ningsih[1], Kemas Abdui Hai[2], Anwar Sanusi[3], Neldi Harianto[4], Abdulkhaleq Al-Rawafi[5]

Affiliation:
[1,2,3,4] Universitas Jambi, Indonesia,
[5] Dhamar University, Yemen

Corresponding:
Arum Gati Ningsih, arumgatin@unja.ac.id

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Abstract

This study aims to explore and examine how lecturers integrate IMTAK (faith and piety) and IPTEK (science and technology) in Islamic higher education learning. Employing a qualitative case study approach, data were collected through semi-structured interviews, participatory classroom observations, and document analysis involving three lecturers and their students. The findings reveal that the integration of IMTAK and IPTEK fosters a holistic learning experience in which students develop academic understanding alongside spiritual awareness through structured reflection, ethical reasoning, and respectful social interaction. Digital platforms and Artificial Intelligence (AI) function as supportive tools that facilitate interactive learning, critical thinking, and responsible academic practices, ensuring that technology complements rather than replaces ethical reflection and spiritual awareness. This integrative approach enhances students' intrinsic motivation, academic responsibility, and social awareness, contributing to the development of learners who are academically competent, ethically responsible, and spiritually grounded. Overall, the study highlights a contemporary paradigm of Islamic education in which the advancement of knowledge and technology is harmonized with the cultivation of faith, piety, and student character.

Keywords: *AI integration, Digital literacy, Holistic learning, IMTAK, Islamic education, IPTEK*

Abstrak

Penelitian ini bertujuan untuk mengeksplorasi dan mengkaji bagaimana dosen mengintegrasikan IMTAK iman dan takwa serta IPTEK ilmu pengetahuan dan teknologi dalam pembelajaran di pendidikan tinggi Islam. Penelitian ini menggunakan pendekatan studi kasus kualitatif dengan pengumpulan data melalui wawancara semiterstruktur, observasi kelas partisipatif, dan analisis dokumen yang melibatkan tiga dosen dan mahasiswa. Hasil penelitian menunjukkan bahwa integrasi IMTAK dan IPTEK mendorong terciptanya pengalaman belajar yang holistik, di mana mahasiswa mengembangkan pemahaman akademik sejalan dengan meningkatnya kesadaran spiritual melalui refleksi terstruktur, penalaran etis, dan interaksi sosial yang santun. Platform digital dan kecerdasan buatan dimanfaatkan sebagai sarana pendukung pembelajaran yang memfasilitasi pembelajaran interaktif, pengembangan berpikir kritis, serta praktik akademik yang bertanggung jawab, sehingga teknologi berfungsi melengkapi dan tidak menggantikan refleksi etis serta kesadaran spiritual. Pendekatan integratif ini berkontribusi terhadap peningkatan motivasi intrinsik, tanggung jawab akademik, dan kesadaran sosial mahasiswa, serta membentuk peserta didik yang cakap secara akademik, bertanggung jawab secara etis, dan berlandaskan spiritualitas. Secara keseluruhan, penelitian ini menegaskan paradigma kontemporer pendidikan Islam, yaitu keselarasan antara kemajuan ilmu pengetahuan dan teknologi dengan pengembangan iman, takwa, dan karakter mahasiswa.

Kata Kunci:
IMTAK, IPTEK, integrasi AI, literasi digital, pembelajaran holistik, Pendidikan Islam

Introduction

The changing landscape of higher education in the era of Artificial Intelligence (AI) demands a reconstruction of the Islamic educational paradigm to maintain its relevance and meaning. Education is no longer merely a means of transferring knowledge, but also an arena for the formation of spiritual integrity, moral character, and balanced digital competency (Askin, 2025; Taufik, 2020; Yulianti et al., 2025; Riyadi et al., 2025). Universities, especially those grounded in Islamic values, face a dual challenge: how to cultivate Scientific and Technological (IPTEK) skills without losing their orientation toward Faith and Piety (IMTAK) as the foundation of ethics and humanity (Muthoharoh et al., 2024; Sauri et al., 2024). Digital transformation, if not accompanied by a framework of faith and values, risks producing a generation that is technologically savvy but spiritually arid.

Empirical studies increasingly highlight a significant shift in how Islamic educational institutions integrate religious values with modern science and technology. While the IMTAK–IPTEK paradigm has been a normative ideal since early Islamic education reform in Indonesia, current research shows movement toward practical and empirical applications. Seminal works on the Islamization of knowledge, such as Al-Faruqi (1982), Nasr (2002), and Rahman (1995), have long emphasized the unity of revelation and reason. However, the advent of AI demands fresh approaches to this integration. Recent investigations by Ali et al. (2023), Amilusholihah & Ramadhan (2025), and Rosmaini (2025) reveal AI's potential in Islamic education for personalized learning, enhanced scientific literacy, and streamlined academic administration. Nevertheless, these studies predominantly address conceptual frameworks or system designs and lack empirical analysis on how IMTAK values are concretely internalized and operationalized within AI-driven higher education environments.

Moreover, global research on AI in religious education outlines two key trajectories. First, the deployment of AI-based learning environments in Islamic universities enhances access to digital religious resources, facilitates the processing of sacred texts, and enables adaptive learning (Ria & Yahdi, 2025; Ristianti et al., 2025). Second, there is a growing ethical and epistemological awareness that emphasizes that technology must be guided by faith and piety to safeguard humanitarian principles, advocating for human-centered AI (Fathurrohman et al., 2025; Rosada et al., 2025). Despite these developments, a critical research gap persists regarding how Islamic educators and institutions practically internalize religious values within innovative technological applications. This gap necessitates empirical field studies that examine the reshaping of the Islamic education paradigm through the dynamic integration of IMTAK and IPTEK in the AI era.

Furthermore, the shifting educational paradigm in the digital age demands a redefinition of the relationship between reason and revelation, as well as between science and spiritual ethics. Classical Islamic epistemology, which positions knowledge as a means of drawing closer to God *(al-'ilm al-nafi')*, now confronts a modern epistemology that emphasizes efficiency, data, and algorithms. The greatest challenge for Islamic higher education is how to teach science and Technology without neglecting morality and divinity. Therefore, the integration of IMTAK and IPTEK is not merely a curricular project, but rather an epistemological movement to ensure that technological progress is inseparable from the spiritual and ethical responsibilities of humans as caliphs on earth.

The urgency of this research lies in the need to build a holistic model of Islamic higher education: rooted in faith, open to science, and adaptable to artificial intelligence. AI-based education has the potential to expand access and improve the quality of learning. Still, without the guidance of IMTAK (Intelligence and Knowledge of Science and Technology), it can lose its moral direction. In the context of the Sustainable Development Goals (SDG 4: Quality Education), the integration of IMTAK and IPTEK is crucial to creating a sustainable, humanistic, and values-oriented education system. Therefore, this field research is essential to explore how this integration is actually practiced in Islamic higher education environments, both in curriculum design, teaching methods, and the ethical attitudes of lecturers and students toward Technology.

Based on this background, this research seeks to reinvent the paradigm of Islamic education in the era of artificial intelligence. The goal is to map how IMTAK values are internalized into science and technology-based learning in higher education, and how these practices reflect an epistemological synthesis between faith and knowledge. The results of this study are expected to provide theoretical contributions to the development of contemporary Islamic educational epistemology, as well as practical recommendations for higher education policymakers in formulating policies, curricula, and academic cultures that are integrative of spirituality and science.

Methods

Research Design

This research uses a descriptive, qualitative case study approach. The case study was chosen to explore in depth the practice of IMTAK-IPTEK integration in the context of Islamic higher education in the era of artificial intelligence. The qualitative approach allows researchers to understand the phenomenon holistically, including the perceptions of lecturers, students, and institutional administrators regarding the application of spiritual values in technology-based learning. The research was conducted at a state university in Jambi Province.

The primary data sources were three lecturers selected using purposive sampling based on the following criteria: (1) Actively teaching Religion courses. (2) Experience using digital Technology or AI in the learning process. (3) Willingness to participate in in-depth interviews and classroom observations. Secondary data included students enrolled in related courses, academic documents (such as module documents), and technology-based learning activities. This secondary data was used to enrich the researcher's understanding of the practice of IMTAK-IPTEK integration and validate the lecturers' findings.

Table 1. Demographics of Research Participants

Lecturer Code	Gender	Age	Teaching Length
L1	M	30	3
L2	F	42	9
L3	M	37	3

The data collection techniques in this study are listed in the image below.

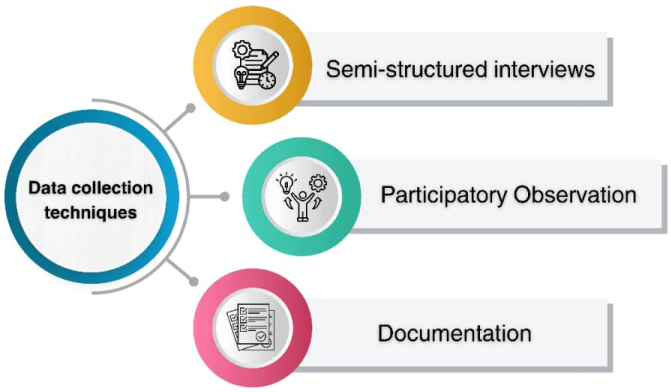

Figure 1. Data collection techniques

Data collection was conducted through (1) semi-structured interviews with lecturers, the primary source, focusing on experiences, perceptions, and strategies for integrating IMTAK-

IPTEK with AI technology. (2) Participatory observation of the learning process, including the use of AI in teaching and learning activities. (3) Documentation such as syllabi, modules, lecture notes, and relevant academic policies. The data analysis process was carried out using a thematic analysis approach, which includes the stages of data reduction, presentation, and verification through triangulation between interviews, observations, and documentation, as depicted in the following figure.

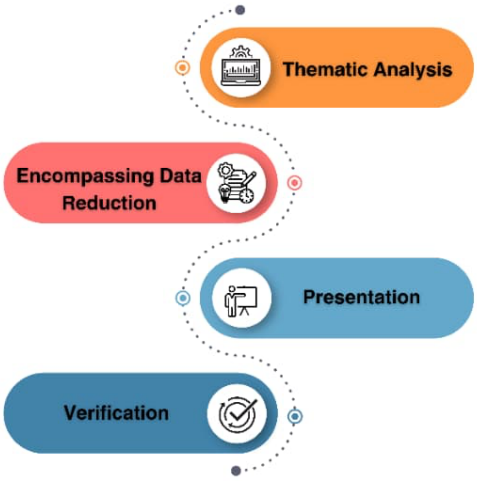

Figure 2. Data Analysis techniques

This approach enabled researchers to present findings in narrative form, tables, and diagrams that illustrate the pattern of IMTAK-IPTEK integration in a holistic manner. To examine the practice of IMTAK-IPTEK integration in the context of AI-based Islamic higher education, this study utilized several key indicators. These indicators were selected to illustrate how lecturers internalize spiritual values (IMTAK), use science and Technology (IPTEK/AI), and how these two dimensions are integrated into the learning process. Furthermore, the study also highlighted the impact of this integration on students, particularly in terms of understanding, motivation, and academic attitudes. These core indicators are formulated concisely to facilitate data collection through interviews, observations, and documentation, and to provide a clear focus for thematic analysis. The following table shows the research indicators, their focus, and examples of questions or observations.

Table 2. Indicators of IMTAQ IPTEK integration in Islamic Religious Learning

Number	Indicators	Research focus
1	Internalization of IMTAK values	Lecturers integrate the values of faith and piety in religious learning
2	Utilization of science and Technology in learning	Lecturers use Technology and AI to support the teaching and learning process
3	Dampak integrasi terhadap mahasiswa	Impact of integration on students

The indicators formulated in the table above will serve as a guide for data collection and analysis. Thus, this study not only assesses the practice of IMTAK-IPTEK integration descriptively but also explores the strategies, challenges, and tangible impacts of implementing spiritual values in the context of AI-based learning. This approach enables researchers to develop

a holistic, comprehensive understanding of how the Islamic education paradigm is being reinvented in the AI era.

Results

Internalization of IMTAK Values in Learning

L1 emphasizes the value of faith through personal reflection and regular prayer as part of the learning process. In planning, L1 developed a syllabus that combined religious theory with daily introspection sessions. For example, students were asked to write reflective notes on their worship practices, self-control, and understanding of Quranic verses relevant to their daily lives. In an interview, L1 stated:

> *"I want students to see faith not just as knowledge, but as a daily life experience. By writing daily reflections, they learn to evaluate their actions and grow in spiritual awareness."*

In the implementation phase, L1 guided students to express their spiritual experiences, such as difficulties in practicing worship or in helping others, through small-group discussions.

Figure 3. Discussion Activities by L1

Meanwhile, learning evaluation is conducted by assessing students' reflective journals and their involvement in discussions and project-based learning related to religious practices such as ablution, prayer, and reading the Quran, which are uploaded to the YouTube channel. This condition allows for a tangible demonstration of the depth of faith and the application of the values of piety.

However, L1 also faced several challenges in implementing this reflective approach. One of the main difficulties was the varying levels of students' sincerity and honesty in writing reflective journals. Some students tended to produce normative or repetitive reflections that reflected compliance rather than genuine self-awareness. In addition, limited instructional time made it challenging for L1 to provide in-depth feedback on each student's reflection, which is crucial for strengthening the internalization process. These constraints required L1 to balance between maintaining the depth of spiritual reflection and managing practical classroom limitations.

Furthermore, L2 emphasizes the internalization of piety through ethical practices and social responsibility. In planning, L2 designs projects based on real-life case studies, requiring students to analyze moral dilemmas such as honesty in managing campus organization funds or fairness in distributing group tasks. A L2 interview revealed:

> *"My main goal is for students to be able to connect the principles of faith with concrete actions. Piety is not just a prayer, but is reflected in fair, honest, and responsible decisions."*

During implementation, students engage in group discussions and present ethical solutions grounded in the values of the Quran and Hadith.

Figure 4. Discussion Activities by L2

Evaluations included assessing the quality of decisions, honesty in discussions, and the project's social contribution. Students who suggested dividing tasks based on group members' abilities while still respecting their peers' rights demonstrated a clear understanding of piety.

Despite its strengths, L2 faced challenges related to unequal student participation and ethical maturity. Some students showed difficulty translating abstract moral principles into concrete, actionable decisions, particularly when faced with complex or ambiguous dilemmas. Additionally, group-based projects occasionally led to domination by sure students, which risked reducing the ethical learning experience for less active participants. These challenges indicate that ethical internalization requires continuous guidance and careful facilitation to ensure meaningful engagement from all students.

Meanwhile, L3 focused on developing faith and piety through daily reflection and polite social interactions. In planning, L3 prepared a reflection module that encouraged students to assess their daily actions and write notes about self-control, patience, and empathy. A L3 interviewer stated:

> *"The process of internalizing IMTAK is a consistent habit. I want students to realize that faith and piety are reflected in their behavior, including how they respect the opinions of their peers and show patience."*

Implementation involves group discussions in which students provide polite feedback and write daily reflections on their interactions, such as experiences helping friends in difficulty or refraining from harsh words.

Figure 2. Discussion Activities by L3

Evaluation was conducted by assessing the depth of reflection, the quality of social interactions, and the consistency of the practice of the values of faith and piety. For example, a student wrote about his experience restraining himself during a discussion, demonstrating the concrete application of patience and respect for the values of piety.

Nevertheless, L3 also faced challenges in ensuring consistency between reflective writing and actual student behavior. While students were able to articulate values such as patience and empathy in written reflections, these values were not always consistently observable in spontaneous classroom interactions. Moreover, cultivating polite communication required continuous reinforcement, as students came from diverse social and cultural backgrounds with varying communication norms. This highlights the difficulty of sustaining behavioral change as part of IMTAK internalization.

All three lecturers demonstrated similarities in positioning IMTAK as the foundation of learning, but had unique approaches that reflected their individual styles and strategies for internalization: L1 emphasized in-depth personal reflection, with students directed to assess their behavior through daily journals. This approach emphasized introspection as a means of internalizing faith, so students learned to understand faith as a lived experience, not just a theory. L2 focused on ethical practice and social responsibility, emphasizing that piety is evident in students' concrete decisions and contributions to society. This strategy connected the values of faith with daily actions, so that the internalization of IMTAK was visible in concrete behavior and social impact. L3, on the other hand, emphasized daily reflection combined with polite social interactions, fostering an awareness that faith and piety are not only personal but also reflected in how students behave towards others. This strategy emphasizes cultivating ethical, patient, and empathetic behavior to internalize IMTAK.

Overall, these findings demonstrate that internalizing the values of faith and piety can be achieved through a combination of personal reflection, ethical decision-making, and polite social interactions. The uniqueness of each lecturer underscores that IMTAK is not only taught theoretically but also internalized in students' daily experiences, attitudes, and behaviors, making religious learning livelier, more reflective, and more applicable.

Utilization of Science and Technology in Learning

This study found that the three lecturers consistently utilized science and Technology, including digital Technology and AI, to support the learning process in Islamic religion courses, with an emphasis on developing students' academic skills and moral responsibility. From the planning stage, L1 designed lecture modules that integrated digital platforms to facilitate student discussion and reflection. In an interview, L1 stated:

> *"Technology allows me to deliver material interactively and encourage students to think critically. However, the most important thing is teaching them how to use Technology responsibly, especially in writing papers and producing scientific work."*

In practice, L1 utilized online learning systems to distribute teaching materials, conduct interactive quizzes, and provide online discussion spaces. Students were encouraged to use generative AI as a reference tool or to organize ideas, but L1 emphasized that each paper or assignment should be developed with their own thoughts, avoid copying and pasting, and be checked for content similarity. Evaluation included the quality of students' analysis, the depth of their understanding of the material, and their ability to use Technology ethically. These findings indicate that L1 not only uses Technology to facilitate access to information but also as a means to instill academic responsibility and scientific integrity.

However, L1 encountered several challenges in implementing this approach. One significant difficulty was students' varying levels of digital literacy and critical awareness when using generative AI. Some students initially relied excessively on AI-generated content, necessitating ongoing guidance and explicit instruction on ethical boundaries, originality, and citation practices. In addition, monitoring students' independent work in online environments demanded additional time and effort, particularly in detecting subtle forms of paraphrased plagiarism. These challenges highlight that integrating AI into learning requires strong pedagogical control and sustained supervision.

L2 utilizes Technology and AI in project-based learning. In planning, L2 prepares case simulations or group projects that require data retrieval, analysis, and report preparation based on digital Technology. In an interview, L2 explained:

> *"AI and digital Technology are invaluable tools for students to gather information and develop projects. However, I always emphasize that students must be critical and responsible for their own work. AI is only a tool, not a substitute for personal thought or analysis."*

Project implementation is collaborative, with students accessing various sources through digital platforms and utilizing generative AI for brainstorming or formulating frameworks. However, each student is required to write their own interpretation and analysis. Evaluation emphasizes the originality of the work, the quality of the argument, and the students' ability to utilize Technology without violating academic principles. These findings confirm that L2 combines science and Technology with active learning, enabling students to learn critical and responsible thinking while simultaneously developing digital literacy skills.

Despite its effectiveness, L2 faced challenges related to unequal participation and accountability within group-based projects. Some students tended to depend on more technologically skilled peers, which risked reducing individual engagement and critical contribution. Furthermore, ensuring that each student's work remained original and reflective of personal understanding required careful assessment design and individual verification. These challenges indicate that Technology-based collaborative learning must be accompanied by clear role distribution and individual accountability mechanisms.

The L3 utilizes digital Technology and AI to enhance academic reflection and discussion. During its planning, the program established an online platform to facilitate peer review and group discussions. L3 interviewee stated:

> *"Technology allows students to share ideas and receive feedback from peers quickly. However, I always emphasize that they must verify information, develop their own arguments, and maintain academic integrity. AI can help with reference retrieval, but the final work must remain original and reflect the student's thinking."*

During implementation, students conduct online peer reviews to assess the originality, quality of arguments, and relevance of the material. The program combines AI to develop an outline or find literature with critical discussions to ensure students understand concepts and avoid plagiarism. Evaluations assess not only academic accuracy but also students' ethical awareness in the use of technology. These findings indicate that the L3 program emphasizes responsible digital literacy, teaching students how to use science and technology as a moral and reflective learning tool.

Overall, the three lecturers demonstrated several interesting patterns. First, although the methods and contexts of technology use differed, all three emphasized the use of science and Technology as a facilitator of educational learning, not simply a productivity tool. Second, all three stressed academic responsibility consistently, mainly when students used generative AI to prepare papers or assignments. This emphasis was evident in the planning, implementation, and evaluation strategies, in which students were taught to use technology for critical thinking, originality, and personal analysis. Third, each lecturer emphasized a unique approach: L1 emphasized individual reflection through online platforms, L2 emphasized active practice and technology-based projects, and L3 emphasized peer review and critical academic discussion.

Thus, these findings confirm that the use of science, Technology, and AI in Islamic religious education not only improves access to and the quality of learning but also serves as an essential tool for instilling the values of academic responsibility, integrity, and digital literacy in students. The unique strategies of each lecturer demonstrate that Technology can be adapted to suit teaching styles, student characteristics, and learning objectives, while still emphasizing academic ethics and originality as the core of the teaching and learning process. The L3 program utilizes digital Technology and AI to enhance academic reflection and discussion. During its planning, the program established an online platform to facilitate peer review and group discussions. A L3 interviewee stated:

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Nevertheless, L3 also encountered challenges in maintaining the quality and depth of peer feedback. Some students provided superficial comments that focused more on form than substance, indicating limited critical engagement. Additionally, students' trust in AI-generated references sometimes led to insufficient verification of sources. These issues required L3 to repeatedly reinforce essential skills of evaluation and information literacy to ensure that Technology use genuinely enhanced learning rather than encouraging passive acceptance.

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An in-depth analysis of these findings reveals that the integration of science, Technology, and AI in Islamic religious education presents both pedagogical opportunities and practical challenges. Key challenges include students' uneven digital competence, the risk of overreliance on AI, difficulties in ensuring originality, and the need for continuous ethical guidance. These challenges suggest that effective Technology integration requires not only technical infrastructure but also strong instructional design, clear ethical frameworks, and sustained lecturer involvement.

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Impact of IMTAK-IPTEK Integration on Students

Research results indicate that integrating IMTAK and IPTEK into Islamic religious learning significantly impacts students' understanding, motivation, and attitudes. Students involved in a learning process that combines spiritual reflection, technology-based projects, and critical discussions demonstrated an increased ability to understand religious material in greater depth and context. They were able not only to memorize or explain theory but also to relate the principles of faith and piety to everyday experiences and academic and social decision-making.

This impact was clearly evident in students' motivation to learn. Students reported feeling more motivated to participate actively in discussions, complete assignments more thoroughly, and write reflections regularly because these activities combined Technology with real-life spiritual practices. For example, developing an AI-based project made students realize that academic and spiritual abilities can go hand in hand; they were encouraged to learn not only for grades but also for character building and personal ethical development.

Furthermore, this integration also impacted students' attitudes toward social interactions and academic responsibility. Students involved in technology-based collaborative projects demonstrated an increased awareness of the importance of honesty, fairness, and accountability in working together. They learn to divide tasks according to their abilities, value their peers' contributions, and use AI or digital resources as tools, not shortcuts. This attitude reflects the internalization of the value of piety in a tangible and measurable academic context, where integrity and morality become part of the competencies being developed.

The impact of the IMTAK-IPTEK integration is not limited to cognitive or academic aspects but also fosters intrinsic motivation, ethical awareness, and spiritual discipline. Students become more reflective about their own behavior, more responsible in their use of Technology, and better able to connect knowledge with moral values. In other words, this integration produces holistic students, those who are not only academically intelligent but also possess faith-based character and can use Technology wisely.

Overall, these findings indicate that the IMTAK-IPTEK integration simultaneously influences students' understanding, motivation, and attitudes, creating a comprehensive, reflective, and applicable learning experience and presenting an Islamic educational paradigm relevant to today's digital era.

This research demonstrates that integrating IMTAK-IPTEK into Islamic religious learning creates a holistic learning experience in which students develop not only spiritual awareness and

ethical responsibility but also digital literacy. Through digital reflection, technology-based collaborative projects, and guided discussions, lecturers use AI and digital tools not merely as learning media but also to strengthen students' moral values, discipline, and academic responsibility. These findings confirm that such an integrative strategy can shape students who can apply religious principles in real-life situations while also using Technology wisely, presenting a new paradigm in contemporary Islamic education.

Discussion

Internalization of IMTAK Values in Learning

IMTAK in Islamic religious learning can be realized through personal reflection, ethical practice, and polite social interactions. L1 emphasizes the development of faith through individual reflection and regular prayer, combining theoretical material with daily introspection. This strategy aligns with Kolb's (1984) theory of experiential learning, which emphasizes that effective learning occurs when concrete experiences are processed through reflection to build understanding and change behavior. Students who write reflective notes about their worship practices or self-control actively connect religious knowledge with their real-life experiences. L1 interviews reinforce this finding, where daily reflection is seen as a means of cultivating real and ongoing spiritual awareness. However, from a critical perspective, this approach also poses challenges for students' reflective authenticity. Some reflections tended to be descriptive rather than analytical, indicating the need for structured reflective guidance to deepen spiritual meaning and avoid superficial engagement.

L2 emphasizes the internalization of piety through ethical practice and social responsibility, using case study-based projects. This strategy supports Bandura's (1977) theory of social learning, which states that ethical behavior can be learned through observation, discussion, and application in real-life situations. Students who analyze moral dilemmas and make decisions based on the values of the Quran and Hadith internalize piety as concrete behavior, not merely as a theoretical understanding. Previous research by Andika et al. (2025), Sarip et al. (2024), and Al-Qoyyim & Kurniawan (2025) also confirmed that project-based learning that integrates moral values can enhance students' internalization of ethics and social responsibility. Nevertheless, ethical case-based learning requires intensive facilitation. Without continuous lecturer intervention, students may simplify moral dilemmas or focus more on completing technical tasks than on ethical reasoning, reducing the depth of value internalization.

Meanwhile, L3 emphasizes daily reflection and polite social interactions, fostering awareness that faith and piety are reflected in one's behavior toward others. This statement aligns with the principle of character education, according to Lickona (1991), which states that the best character and moral development occurs through habituating ethical behavior in social contexts. Students who write reflections on restraint when disagreeing with or helping a friend internalize the values of patience, empathy, and respect, core values in developing piety.

A challenge in this approach lies in ensuring consistency between written reflection and spontaneous behavior. While students could articulate ethical values well, these were not always immediately observable in unstructured interactions, indicating the complexity of transforming moral awareness into sustained behavior.

Overall, although the three lecturers have unique approaches, L1 focuses on personal reflection, L2 on ethical practices and social responsibility, and L3 on polite social reflection, all strategies confirm that the internalization of IMTAK is not merely theoretical but is manifested in students' daily experiences, behaviors, and attitudes. These findings align with previous research by Wang & Liu (2025) and Khan et al. (2025), which stated that daily reflection, ethical decision-making, and social interaction are practical tools for fostering faith and piety among students.

Utilization of Science and Technology in Learning

The use of science and Technology, including digital Technology and AI, not only supports access to information but also serves to instill academic responsibility and scientific integrity. L1 uses

online platforms for distributing materials, interactive quizzes, and discussion forums, where students use AI as a reference tool but still develop their own analyses. This strategy supports the principles of digital literacy, according to Sauri et al. (2021) and Ibrahim et al. (2024), which emphasize the importance of using Technology critically, ethically, and creatively.

L2 implements science and Technology in technology-based projects, using AI for brainstorming and literature discovery. Students are required to write their own analyses, ensure originality, and take responsibility for their work. This condition aligns with research by Shapira et al. (2020), which found that integrating AI into project-based learning enhances critical thinking, collaborative skills, and individual responsibility.

L3 emphasizes online peer review and critical academic discussion, combining AI to frame literature with an evaluation of the quality of students' arguments. Students learn to verify information, construct original arguments, and maintain academic integrity. This strategy aligns with Vygotsky's (1978) constructivist learning theory, which posits that social interaction and problem-based learning support deep understanding and critical thinking.

Overall, the three lecturers demonstrated that technology and AI act as facilitators of educational learning, not simply productivity tools. Students learn digital literacy, critical thinking, and academic responsibility, thus aligning the use of science and Technology with character development and academic integrity. These findings support a previous study by Syukri & Rosyad (2025), which found that integrating AI into Islamic religious learning can improve students' understanding and ethical awareness.

Impact of IMTAK-IPTEK Integration on Students

The integration of IMTAK and science and Technology significantly impacts student understanding, motivation, and attitudes. Students involved in digital reflection, technology-based projects, and critical discussions demonstrated an improved contextual understanding of religious material. They were able to relate the principles of faith and piety to everyday experiences and academic and social decision-making. Students' intrinsic motivation also increased because learning activities combined spiritual practices with Technology. Students felt motivated to actively participate in discussions, complete assignments on time, and write daily reflections, ensuring that learning is not solely about grades but also about character building and personal ethical development. This situation aligns with Ryan & Deci's (2000) self-determination theory, which states that intrinsic motivation grows when individuals experience meaning, autonomy, and competence in learning activities.

Furthermore, the integration of IMTAK-IPTEK influences students' attitudes toward social and academic responsibility. Students involved in technology-based collaborative projects demonstrate an increased awareness of honesty, fairness, and cooperation. They learn to divide tasks fairly, value peers' contributions, and use AI as a tool, not a shortcut. This phenomenon indicates a concrete internalization of the value of piety, where morality and integrity become part of the competencies being developed. Previous research by Juwairiyah & Fanani (2025) and Surbakti et al. (2024) also shows that the integration of spiritual values with Technology supports the development of students' holistic character, encompassing cognitive, affective, and ethical aspects.

Thus, the integration of IMTAK-IPTEK not only improves students' academic abilities and digital literacy but also fosters spiritual awareness, intrinsic motivation, ethics, and discipline, enabling students to become holistic individuals who are academically intelligent, have character, and use Technology wisely. These findings affirm the new paradigm of contemporary Islamic education, which emphasizes that mastery of science and Technology must be aligned with the internalization of faith and piety and the development of students' character.

Conclusion

This study demonstrates that integrating IMTAK (faith and piety) with IPTEK (Technology and AI) in Islamic religious learning creates a holistic, reflective learning experience in which students not only understand religious material cognitively but also internalize spiritual and ethical values through personal reflection, ethical practice, and polite social interactions. Technology and AI function as learning facilitators that strengthen digital literacy, academic responsibility, integrity, intrinsic motivation, and moral awareness, showing that mastery of IPTEK and the internalization of IMTAK are mutually reinforcing rather than separate processes. In practice, these findings imply that policymakers and educators should establish clear institutional guidelines for the ethical use of AI, integrate structured, reflective, and technology-based activities into the curriculum, and provide ongoing professional development for lecturers in digital pedagogy and academic ethics. Although this study is limited to Islamic religious courses and does not fully account for institutional and cultural variations, future research should examine the implementation of IMTAK–IPTEK integration across disciplines and contexts to assess its long-term impact. Overall, this integrative approach represents a contemporary paradigm of Islamic education that aligns scientific and technological mastery with the development of students' spirituality, morality, and character.

Despite these contributions, this study has several limitations that should be acknowledged. First, the research is confined to Islamic religious courses, which may limit the generalizability of the findings to other academic disciplines with different learning objectives and pedagogical traditions. Second, the study does not fully capture variations in institutional policies, cultural contexts, and technological infrastructure that may influence the effectiveness of IMTAK–IPTEK integration. Additionally, the reliance on qualitative data and a specific educational setting may introduce subjective interpretations and restrict the ability to measure long-term outcomes related to students' character development and ethical behavior.

Based on these limitations, future research is recommended to explore the integration of IMTAK and IPTEK across diverse disciplines and educational contexts, including non-religious courses and institutions with varying cultural and technological environments. Longitudinal studies are also needed to examine the sustained impact of this integrative approach on students' moral character, academic integrity, and professional ethics over time. Furthermore, comparative and mixed-methods research could provide deeper insights into best practices, challenges, and policy implications, thereby contributing to the development of a more comprehensive and adaptable model of integrative Islamic education in the digital era.

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