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Integrating Islamic Values Into Science Instruction to Improve the Scientific Attitude and Character Development of Madrasah Ibtidaiyah Students

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Abstract

Science learning in Madrasah Ibtidaiyah plays a strategic role in shaping students' scientific attitudes while fostering character development aligned with Islamic values. However, science learning in many Islamic primary schools still tends to emphasize conceptual mastery rather than integrating moral and religious dimensions. Therefore, this study aims to: (1) analyze the implementation of integrating Islamic values into science learning, (2) examine its contribution to strengthening students' scientific attitudes, and (3) describe its implications for the character development of Madrasah Ibtidaiyah students. This research employed a qualitative approach using a multi-site study design conducted at MI Miftahul Huda Mlokorejo Jember and MI Ar-Roudhoh Patrang Jember, Indonesia. Data were collected through in-depth interviews, classroom observations, and documentation studies involving ten key informants consisting of madrasah leaders, teachers, and students. The collected data were analyzed using an interactive qualitative analysis model involving data condensation, data display, and conclusion drawing, complemented by cross-site analysis. The results of the analysis reveal that the integration of Islamic values in science learning is implemented systematically through madrasah policies, instructional planning, and teachers' pedagogical practices. This integration strengthens students' scientific attitudes, particularly curiosity, scientific honesty, accuracy, and openness to evidence, while also supporting the development of religious character, discipline, responsibility, and social awareness. These findings highlight that integrating Islamic values into science learning provides a holistic pedagogical approach that connects scientific, moral, and spiritual dimensions in Islamic primary education.

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INTRODUCTION

Natural Science learning at the basic education level plays a strategic role in shaping students' ways of thinking, scientific attitudes, and value orientations (Hill et al., 2025; Kang & Teig, 2025; Kumar & Acharya, 2025). Science learning plays a fundamental role in developing students' scientific literacy and equipping them with the skills needed to understand and respond to real-life phenomena (Wahyuni et al., 2025). Madrasah Ibtidaiyah (MI) is an Islamic primary education institution in Indonesia that integrates general education with Islamic teachings. As a foundational level of education, MI plays a crucial role not only in developing students' cognitive abilities but also in shaping their moral and religious character. In the context of MI, science learning is not only expected to develop conceptual understanding of natural phenomena, but also to foster students' scientific attitudes and character in alignment with Islamic values (Bórquez-Sánchez, 2025; Morell-Mengual et al., 2025; Veckalov et al., 2025). Ideally, science education in madrasahs reflects a holistic Islamic educational approach that views knowledge, ethics, and spirituality as an integrated and inseparable whole (Jenuri et al., 2025; Marshall, 2025; Nadlir et al., 2025). However, this ideal has not yet been fully realized in classroom practice.

Theoretically, Islamic education rejects the dichotomy between religious knowledge and general knowledge by emphasizing the integration of knowledge and character formation (Falaqi et al., 2025; Karwadi et al., 2025; Wahab & Wahab, 2025). The concept of tauhid-based education asserts that science learning should cultivate curiosity, scientific honesty, openness to evidence, and moral responsibility as expressions of devotion to God (Alexander et al., 2025; Komesaroff & Kenner, 2025; Malik, 2025). Nevertheless, social realities indicate that science learning in many Madrasah Ibtidaiyah remains oriented toward content mastery and cognitive learning outcomes (Ates & Polat, 2025; Liamruk et al., 2025; Mansour et al., 2024). Learning processes often position students as passive recipients of information, while the strengthening of scientific attitudes and the internalization of Islamic values have not been systematically integrated (Kyambade et al., 2025; Mansour et al., 2024; Tuohy et al., 2025). This condition reveals a gap between the theoretical framework of Islamic education and the practical implementation of science learning in the field.

Various previous studies have reported that the integration of religious values into learning contributes positively to increased learning motivation and students' character development (Chen et al., 2025; Liu et al., 2025; Zhang & Miao, 2025). In addition, character development has been widely recognized as a fundamental goal of primary education, particularly in Islamic schooling contexts where moral and spiritual values are emphasized. Character education in Madrasah Ibtidaiyah aims to cultivate values such as discipline, responsibility, honesty, and social awareness through integrated learning experiences. Learning approaches that involve students in mini-research activities have been shown to effectively enhance both critical thinking skills and environmental awareness, indicating their strong contribution to students' character development (Izza et al., 2025).

Other studies emphasize that the development of scientific attitudes is a key factor in the success of science learning, as it is closely related to critical thinking skills, objectivity, and openness to empirical evidence (Alotaibi, 2025; Sánchez-García & Reyes-de-Cózar, 2025; Tong & Li, 2025). Science learning that engages students in experimentation and real-world problem solving enables them to analyze data, formulate scientific explanations, and draw conclusions based on empirical evidence, thereby strengthening their scientific thinking skills (Siswanto et al., 2025).

Studies that explicitly examine the role of science learning in supporting character development within MI contexts remain limited. In addition, most existing studies still position the integration of Islamic values and the strengthening of scientific attitudes as two separate focuses (Petrescu et al., 2025; Riwanda et al., 2025; Wu et al., 2025). Consequently, research that specifically investigates the interrelationship between these two aspects within the context of science learning in Madrasah Ibtidaiyah is still scarce, particularly at the level of Islamic primary education, which has distinctive pedagogical and cultural characteristics.

Character development is an essential aspect of Islamic primary education, as it ensures that students not only acquire knowledge but also develop moral integrity and social responsibility. Therefore, integrating character development into science learning becomes a critical educational necessity. Based on these conditions, this study aims to: (1) analyze the implementation of integrating Islamic values into science learning in Madrasah Ibtidaiyah; (2) examine the effect of this integration on the enhancement of students' scientific attitudes; and (3) describe the contribu-

tion of Islamic value-integrated science learning to the development of MI students' character. Achieving these objectives is expected to provide a comprehensive overview of the practices and implications of value-based science learning in madrasah.

This study is grounded in the argument that integrating Islamic values into science learning is a substantive pedagogical necessity rather than merely a normative complement. When science concepts are contextualized through tauhid values, ethical reflection, and spiritual meaning, students do not merely understand science as a collection of empirical facts, but as a knowledge-seeking process imbued with values and moral responsibility. This approach is believed to strengthen scientific attitudes such as honesty, perseverance, and openness to evidence, while simultaneously fostering students' religious and social character in a sustainable manner.

This study holds both theoretical and practical significance. Theoretically, it enriches the discourse on the integration of science and Islamic values in Islamic primary education by presenting a perspective that positions scientific attitudes and character as two interrelated constructs within a single science learning framework. Practically, the findings are expected to serve as a reference for Madrasah Ibtidaiyah teachers in designing meaningful, reflective science learning oriented toward the development of scientific attitudes and students' character. The novelty of this study lies in the development and analysis of science learning integrated with Islamic values that simultaneously targets the strengthening of scientific attitudes and character development among Madrasah Ibtidaiyah students an area that remains rarely examined comprehensively in the international literature.

METHOD

This study employed a qualitative approach using a multi-site study design (Yin, 2008) to obtain an in-depth understanding of the integration of Islamic values in science learning and its implications for students' scientific attitudes and character development in Madrasah Ibtidaiyah. A qualitative multi-site approach was selected because it allows researchers to explore instructional practices contextually while enabling comparisons across different research settings in order to generate more comprehensive and meaningful findings.

The research was conducted at two Madrasah Ibtidaiyah located in Jember Regency, East Java, Indonesia, namely MI Miftahul Huda Mlokorejo Jember and MI Ar-Roudhoh Patrang Jember. These madrasahs were purposively selected because both institutions consistently develop learning practices grounded in Islamic values and demonstrate science learning activities aimed at strengthening students' character and scientific attitudes. The study was conducted from November to December 2025, encompassing the stages of research preparation, field data collection, validation of preliminary findings, and reflection on the research results. To clarify the stages of the research process, the overall research flow is illustrated in Figure 1.

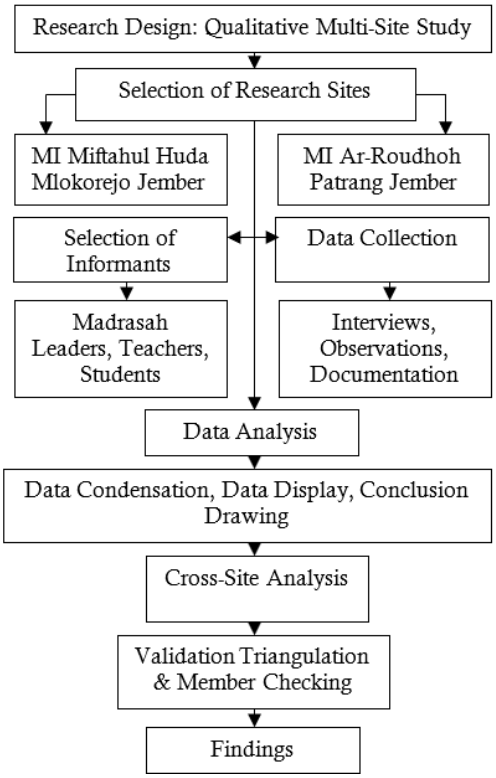

Figure 1. Research Flowchart

Research informants were selected using purposive sampling based on their involvement in the planning and implementation of science learning integrated with Islamic values. Informants consisted of madrasah leaders, teachers, and students in order to obtain comprehensive perspectives on policy, instructional practices, and learning experiences. In total, ten informants were involved, with five informants from each research site. The details of the research informants are presented in Table 1.

Table 1. Research Informants

Informant Code	Research Site	Position/ Role	Rationale for Selection
IF1	MI Miftahul Huda Mlokorejo Jember	Head of Madrasah	Holds authority in determining academic policies and strengthening the integration of Islamic values
IF2	MI Miftahul Huda Mlokorejo Jember	Science Teacher	Directly involved in planning and implementing Islamic value–integrated science learning
IF3	MI Miftahul Huda Mlokorejo Jember	Classroom Teacher	Understands the integration of Islamic values and students' character formation in thematic science learning
IF4	MI Miftahul Huda Mlokorejo Jember	Student	Directly experiences science learning and demonstrates the development of scientific attitudes
IF5	MI Miftahul Huda Mlokorejo Jember	Homeroom Teacher	Monitors the continuous development of students' character and scientific attitudes
IF6	MI Ar-Roudhoh Patrang Jember	Head of Madrasah	Determines the direction of value-based learning policies and madrasah culture
IF7	MI Ar-Roudhoh Patrang Jember	Science Teacher	Implements the integration of Islamic values in classroom science learning
IF8	MI Ar-Roudhoh Patrang Jember	Classroom Teacher	Observes the strengthening of students' character and scientific attitudes in daily learning
IF9	MI Ar-Roudhoh Patrang Jember	Student	Provides perspectives on learning experiences in Islamic value–integrated science instruction
IF10	MI Ar-Roudhoh Patrang Jember	Homeroom Teacher	Assesses the impact of science learning on students' scientific attitudes and character

The diversity of informants' backgrounds enabled the researcher to obtain rich and balanced data from the perspectives of madrasah policy, classroom instructional practices, and students' learning experiences. Consequently, the data are expected to comprehensively represent the dynamics of integrating Islamic values into science learning in both madrasahs.

Data were collected through in-depth interviews, classroom observations, and documentation studies. The interview instrument was designed in a semi-structured format to explore informants' views and experiences related to the implementation of Islamic value integration in science learning. The main interview questions covered several aspects, including: (1) the implementation of Islamic value integration in classroom practices, (2) strategies used by teachers to foster students' scientific attitudes, (3) the role of science learning in supporting students' character development, and (4) challenges encountered during the implementation process.

The observation instrument was developed in the form of an observation checklist focusing on classroom learning activities. The observed aspects included: (1) the integration of Islamic values during instruction, (2) teacher-student interactions, (3) students' scientific attitudes such as curiosity, honesty, and participation, and (4) the manifestation of students' character, including discipline, responsibility, and social awareness.

Observations were conducted to directly examine the learning process, teacher-student interactions, and the manifestation of students' scientific attitudes and character in the classroom. Documentation studies involved the analysis of lesson plans, teaching modules, syllabi, and relevant madrasah policy documents.

Data analysis was conducted interactively and continuously through the stages of data condensation, data display, and conclusion drawing. In addition, cross-site analysis was carried out to identify similarities and differences in the practices of integrating Islamic values into science learning across the two research sites.

Data trustworthiness was ensured through source triangulation, method triangulation, and time triangulation, as well as member checking

with key informants to ensure the credibility and reliability of the research findings.

RESULT AND DISCUSSION

This section presents the main findings of the study regarding the integration of Islamic values into science learning in Madrasah Ibtidaiyah and its implications for students' scientific attitudes and character development. The findings are derived from the qualitative analysis of data obtained through interviews, classroom observations, and documentation studies conducted at two research sites. The analysis reveals patterns of implementation, learning practices, and students' experiences related to Islamic value–integrated science learning. To facilitate systematic discussion, the results are organized into three main themes: (1) the implementation of integrating Islamic values in science learning, (2) the strengthening of students' scientific attitudes through value-based science learning, and (3) the contribution of Islamic value-integrated science learning to students' character development. These themes are further interpreted and discussed in relation to relevant theories and previous research in science education and Islamic education.

Results

1. Implementation of the Integration of Islamic Values in Science Learning

Science *(IPA)* learning at MI Miftahul Huda Mlokorejo Jember and MI Ar-Roudhoh Patrang Jember demonstrates systematic efforts to integrate Islamic values into the learning process. This integration is not understood merely as the insertion of Qur'anic verses, but rather as a pedagogical process aimed at fostering tauhid awareness, scientific ethics, and students' moral responsibility in understanding natural phenomena.

The heads of madrasah at both sites emphasized that the integration of Islamic values is an integral part of institutional policy. IF1 stated, *"We direct science learning so that students understand this knowledge as part of the signs of Allah's greatness, not as knowledge that stands alone."* This view was reinforced by IF6, who stressed that science learning must directly contribute to the formation of students' religious character from an early age.

Science teachers play a key role in implementing this policy. IF2 explained, *"Every science topic is always connected to Islamic values, for example, environmental topics are linked to humans' mandate as khalifah."* A similar perspective was conveyed by IF7, who noted that reflections on Islamic values are usually conducted at the beginning or end of lessons so that students can simultaneously grasp scientific and moral meanings.

Classroom teachers further strengthen integration through a thematic approach. IF3 revealed, *"Science does not stand alone; I connect it with honesty, discipline, and gratitude."* IF8 added that this approach makes science learning more contextual and closer to students' everyday lives.

From the students' perspective, the integration of Islamic values is experienced directly. IF4 stated, *"When learning science, the teacher often says that this is Allah's creation, so we have to be serious and not take it lightly."* IF9 also expressed that science learning becomes more meaningful because it is connected to Islamic teachings.

Observation results indicate that teachers consistently relate scientific phenomena to Islamic values through classroom discussions, reflective questions, and assignments. Documentation in the form of lesson plans (RPP) and teaching modules shows learning indicators that explicitly include the strengthening of religious values, such as trustworthiness *(amanah)*, honesty, and responsibility.

Based on the convergence of interview, observation, and documentation data, the implementation of integrating Islamic values in science learning forms a systemic pattern involving madrasah policies, teachers' roles, and students' learning experiences.

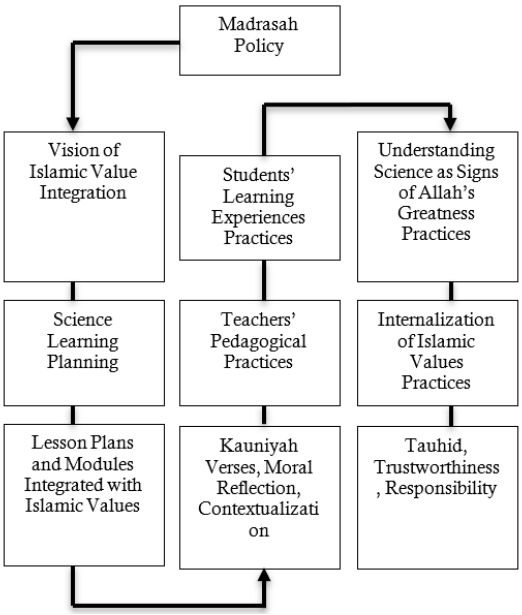

Figure 2. Implementation of the Integration of Islamic Values in Science Learning

The integration of Islamic values in science learning at both madrasahs occurs consciously, systematically, and contextually. These findings indicate that the integration is not symbolic in nature, but is constructed through a learning system that connects institutional policy, teachers' pedagogical practices, and students' learning experiences.

2. Strengthening Students' Scientific Attitudes through Islamic Value-Integrated Science Learning

The research findings indicate that the integration of Islamic values into science *(IPA)* learning contributes significantly to the strengthening of students' scientific attitudes, particularly in terms of curiosity, scientific honesty, openness to evidence, and perseverance in learning. These scientific attitudes develop not only through experimental activities, but also through the internalization of moral values embedded in the learning process.

Science teachers observed that the reinforcement of scientific attitudes becomes more effective when linked to Islamic values. IF2 stated, *"Students are more honest during experiments because I emphasize that honesty is part of Islamic teachings."* IF7 added that students become more careful and responsible when conducting observations.

Classroom teachers also observed changes in students' learning behavior. IF3 revealed, *"The students are now more confident in asking questions and do not simply copy answers."* Meanwhile, IF8 noted that students are more open to their peers' opinions and are willing to engage in scientific discussions.

Students' perspectives further strengthen these findings. IF4 stated, *"If I record experimental results incorrectly, the teacher reminds us to be honest because Allah sees everything."* IF9 also emphasized that science learning has made them more careful and less hasty in drawing conclusions.

Homeroom teachers observed the impact of strengthened scientific attitudes in students' daily behavior. IF5 explained, *"Students are more patient and responsible when working in groups."* Similarly, IF10 noted that students are beginning to demonstrate objectivity and are less likely to blame their peers.

Classroom observations show that students follow experimental procedures in an orderly manner, record observation results systematically, and demonstrate a high level of curiosity. Documentation of attitude assessments also indicates the presence of scientific attitude indicators integrated with character values.

The research data reveal that students' scientific attitudes develop through a layered process that links scientific activities with Islamic values.

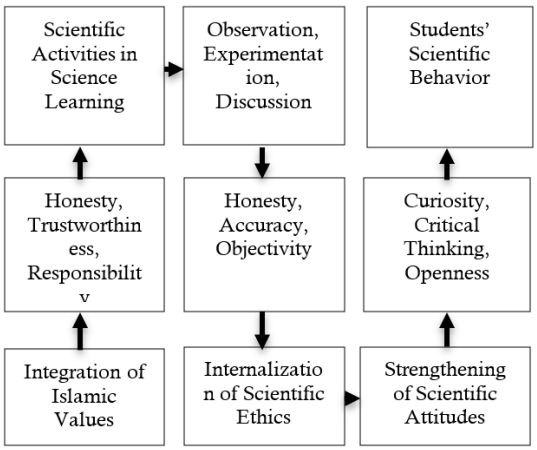

Figure 3. Strengthening Students' Scientific Attitudes

Islamic value-integrated science learning has been proven to strengthen students' scientific attitudes holistically, whereby scientific attitudes develop alongside the internalization of moral and faith-based values.

3. Contribution of Islamic Value-Integrated Science Learning to Students' Character Development

In addition to its impact on scientific attitudes, the integration of Islamic values into science (IPA) learning also makes a tangible contribution to the character development of Madrasah Ibtidaiyah students. Religious character, discipline, responsibility, and social awareness emerge as the most prominent values.

The heads of madrasah viewed science learning as playing an important role in building a culture of character. IF1 stated, *"Science helps students learn discipline and responsibility through concrete practices."* IF6 emphasized that character cannot be taught merely through verbal instruction, but must be developed through meaningful learning experiences.

Science teachers observed students' character development alongside the integration of Islamic values. IF2 noted, *"Students become more disciplined because they understand that learning science is also an act of worship."* IF7 added that students show greater concern for the environment after understanding the relationship between science and Islamic teachings.

Classroom teachers and homeroom teachers observed changes in students' character in

their daily activities. IF3 mentioned that students are more responsible in completing assignments, while IF5 observed that group work has become more orderly and respectful.

Students themselves also recognized changes within their behavior. IF4 expressed, *"Now I do not litter carelessly because it is prohibited in Islam."* IF9 stated that science learning has made them more concerned about cleanliness and the school environment.

Observations indicate an increased level of students' awareness of classroom cleanliness and the madrasah environment. Documentation of madrasah programs also reveals a strong alignment between science learning and character-strengthening activities.

The research findings indicate that students' character development through science learning occurs gradually and sustainably.

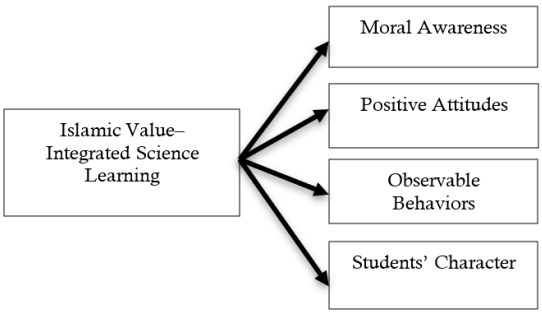

Figure 4. Students' Character Development

Islamic value-integrated science learning contributes significantly to students' character development through the internalization of values that are manifested in concrete and sustainable behaviors.

Discussion

1. Integration of Islamic Values in Science Learning as a Value-Based Educational Practice

The research findings indicate that the integration of Islamic values in science (IPA) learning at MI Miftahul Huda Mlokorejo Jember and MI Ar-Roudhoh Patrang Jember is implemented systematically through institutional policies, instructional planning, and teachers' pedagogical practices. This integration is not perceived as a symbolic activity, but rather as a pedagogical process aimed at fostering tauhid awareness and scientific ethics in students' understanding of natural phenomena (Lumineau et al., 2025; Ye et al., 2025; Zul et al., 2026). These findings affirm that science learning can serve as a medium for internalizing faith-based values while simultaneously strengthening scientific understanding.

Within the grand theory framework of value-based education, values are viewed as foundational elements that shape students' learning orientations and must be internalized through meaningful learning experiences (Germani et al., 2025; Li & Lyu, 2025; Nussbaum et al., 2025). The integration of Islamic values in science learning identified in this study demonstrates a strong alignment between normative values and instructional practices, ensuring that values are not merely taught but lived through learning activities (Ates & Gündüzalp, 2025; Ates & Kölemen, 2025; Shen et al., 2025).

From the perspective of Islamic education, these findings align with the concept of epistemological tauhid, which positions knowledge as an inseparable unity with faith (Albahli, 2025; Hayes et al., 2025; Naseer et al., 2025). Science is understood as a means of reading the ayat kauniyah (signs of God in nature), such that science learning is not merely a rational-empirical activity, but also a reflective process for recognizing the greatness of Allah SWT (Connolly, 2025; Steffen & Anderson, 2025; Yeganeh, 2025). This integration reinforces the awareness that knowledge and faith are complementary entities.

The study also reveals that the integration of Islamic values is carried out through contextual pedagogical strategies, such as moral reflection, habituation of positive attitudes, and the reinforcement of ethical meaning at every stage of learning (Dahlgren Lindström et al., 2025; Barman et al., 2025; Papakostas, 2025). This differs from several previous studies that have limited value integration to the insertion of Qur'anic verses. Thus, this research enriches models of knowledge integration by presenting a transformative form of integration.

The synergy between madrasah policies, teachers' roles, and students' learning experiences creates a learning ecosystem that supports the internalization of Islamic values. Science learning becomes not only a means of mastering concepts, but also a vehicle for shaping religious learning orientations (Cortese & Falletta, 2025; Hunegnaw et al., 2025; Ragadhita et al., 2026). This condition demonstrates that the integration of Islamic values can function as a pedagogical framework that simultaneously strengthens national education goals and the objectives of Islamic education.

Conceptually, this study highlights a novel contribution by asserting that the integration of Islamic values in science learning is not merely curricular in nature, but epistemological and pedagogical. The experiential learning-based integ-

ration model identified in this study expands the discourse on value-based science education and offers a new framework for the development of science learning in Madrasah Ibtidaiyah.

2. Strengthening Scientific Attitudes through the Internalization of Moral and Faith-Based Values

The findings indicate that Islamic value-integrated science learning contributes significantly to strengthening students' scientific attitudes, particularly curiosity, scientific honesty, accuracy, and openness to evidence. These scientific attitudes develop alongside students' engagement in observation, experimentation, and reflective learning activities enriched with moral values.

Within science education theory, scientific attitude is regarded as an affective dimension that supports students' scientific thinking abilities (Craig & Karabas, 2025; Kolomuç & Demir Saglam, 2025; Li et al., 2025). This study demonstrates that the reinforcement of scientific attitudes depends not only on laboratory activities, but also on the internalization of values that shape students' cognitive orientations.

Notably, the findings reveal that the integration of Islamic values actually strengthens scientific thinking practices. Values such as honesty, trustworthiness *(amanah),* and responsibility are understood by students as religious obligations, thereby encouraging objectivity in data recording and conclusion drawing. This supports the perspective of science as a moral practice, which emphasizes that scientific activity is never value-neutral (Ologeanu-Taddei & Ologeanu-Taddei, 2025; Onstad, 2026; Penders et al., 2025).

From the standpoint of Islamic education, scientific attitudes are considered part of the adab of seeking knowledge. Faith encourages students to maintain humility toward facts and openness to empirical truth (Lee et al., 2025; Lehmann et al., 2025; Rios et al., 2025). The findings illustrate a constructive synergy between scientific rationality and religious spirituality within the learning process.

The integration of scientific activities with Islamic value reflection produces a holistic form of scientific attitude encompassing cognitive, affective, and spiritual dimensions (Chambon & Rutjens, 2026; Mo et al., 2025; Söylev et al., 2025). Consequently, science learning not only develops science process skills, but also shapes an ethic of scientific thinking grounded in faith.

The theoretical contribution of this study lies in reinforcing the paradigm that scientific attitudes can be developed through an integrative approach that combines science and religious values. These findings broaden the perspective of modern science education, which has often tended to separate scientific and moral dimensions.

3. Science Learning as a Medium for Students' Character Development

The research findings demonstrate that Islamic value-integrated science learning makes a tangible contribution to students' character development, particularly religious character, discipline, responsibility, and social awareness. These character traits develop through contextual learning that connects scientific concepts with students' daily lives (Kim et al., 2025; Melesse et al., 2025; Wijayanti et al., 2025).

Within the grand theory of character education, character formation is viewed as a process of value internalization through habituation and authentic experience (X. Chen et al., 2025; J. Li et al., 2025; Zheng et al., 2025). This study confirms that science learning can serve as a strategic medium for character development when it is intentionally integrated with Islamic values.

The experiential learning approach explains that character is formed through direct interaction with the learning environment (Arda Tuncdemir, 2025; Goslen et al., 2024; Zhou, 2025). Science activities such as maintaining environmental cleanliness, observing ecosystems, and conducting experiments function as media for internalizing values of responsibility and social care (Maleknia et al., 2025; Nopas & Ueangchokchai, 2025; L. Wu et al., 2025). The findings also indicate that the integration of Islamic values strengthens students' intrinsic motivation to exhibit positive behaviors. Students perceive discipline and environmental care as forms of worship, resulting in character development that is intrinsic rather than driven by external pressure.

The synergy among science learning, madrasah culture, and teachers' exemplarity creates a sustainable character education ecosystem. Religious and social character traits are not confined to classroom activities, but are internalized in students' daily lives within madrasah environment.

The novelty of this study lies in its assertion that science learning can serve as a strategic medium for faith-based character development. This integration model offers a holistic pedagogical approach that connects scientific, moral, and spiritual dimensions in Madrasah Ibtidaiyah learning contexts.

CONCLUSION

This study confirms that the integration of Islamic values into science *(IPA)* learning in Madrasah Ibtidaiyah constitutes a systemic and meaningful pedagogical practice, manifested through institutional policies, instructional planning, and classroom teaching practices. The main findings indicate that such integration simultaneously contributes to strengthening students' scientific attitudes and character development, positioning science learning not merely as a process of transmitting scientific knowledge, but also as a medium for the internalization of moral and faith-based values.

Substantively, the study demonstrates that scientific attitudes encompassing curiosity, scientific honesty, accuracy, and openness to evidence develop through the internalization of Islamic values embedded in scientific activities. Scientific attitudes do not emerge solely as cognitive competencies, but as ethical dispositions rooted in religious awareness. These findings broaden the theoretical understanding of science education by showing that moral and spiritual dimensions can function as reinforcements rather than obstacles to scientific rationality.

The primary strength of this article lies in its conceptual contribution to the development of a value-based science education paradigm. Through a triangulative qualitative approach, this study proposes an experiential learning–based model for integrating Islamic values that connects scientific activities, moral reflection, and the habituation of positive attitudes within a unified pedagogical framework. This model offers a theoretical alternative to integration approaches that have traditionally been symbolic and normative in nature.

The limitations of this study include its empirical scope, which is confined to two madrasahs, thereby limiting the representation of the broader diversity of Islamic education contexts. In addition, this research does not examine the quantitative causal relationships between the integration of Islamic values and improvements in scientific attitudes. These limitations highlight the need for future studies employing cross-contextual and mixed-method approaches to strengthen the theoretical validity and generalizability of the findings.

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