



Integration of Islamic Values and Science in Islamic Primary Schools: A Philosophy of Science Approach

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Abstract: *This research aims to analyze the integration of Islamic values and science in Islamic primary schools through a philosophy of science approach. The research identifies learning models that link science concepts with Islamic values, explores implementation challenges, and evaluates their impact on students' spiritual and intellectual character development. A qualitative approach with a case study method was applied in an Islamic primary school, with data collected through in-depth interviews with 6 informants. The findings show that the thematic-integrative model, Islamic scientific approach, and STEAM application based on Islamic values effectively integrate science concepts with the teachings of tawhid, ethics, and worship. These approaches enhance students' understanding of science and strengthen their spiritual awareness and critical thinking skills. Significant challenges include limited teacher competence in integrating Islamic and science knowledge, inadequate teaching facilities, and cultural resistance to integrative approaches. As solutions, the study recommends periodic teacher training, developing a philosophy of science-based learning modules, and collaborating with other Islamic education institutions. The study concludes that the philosophy of science approach supports the development of a relevant integrative curriculum capable of producing intellectually competent and spiritually grounded students with strong Islamic character to face the challenges of globalization.*

Abstrak: *Penelitian ini bertujuan untuk menganalisis integrasi nilai-nilai Islam dan sains di sekolah dasar Islam melalui pendekatan filsafat sains. Penelitian ini mengidentifikasi model pembelajaran yang mengaitkan konsep sains dengan nilai-nilai Islam, mengeksplorasi tantangan implementasi, dan mengevaluasi dampaknya terhadap pengembangan karakter spiritual dan intelektual siswa. Pendekatan kualitatif dengan metode studi kasus diterapkan di sebuah sekolah dasar Islam, dengan data yang dikumpulkan melalui wawancara mendalam dengan 6 informan. Hasil penelitian menunjukkan bahwa model tematik-integratif, pendekatan saintifik Islam, dan aplikasi STEAM berdasarkan nilai-nilai Islam secara efektif mengintegrasikan konsep-konsep sains dengan ajaran tauhid, etika, dan ibadah. Pendekatan-pendekatan ini meningkatkan pemahaman siswa tentang sains dan memperkuat kesadaran spiritual dan keterampilan berpikir kritis mereka. Tantangan yang signifikan termasuk terbatasnya kompetensi guru dalam mengintegrasikan pengetahuan Islam dan sains, fasilitas pengajaran yang tidak memadai, dan resistensi budaya terhadap pendekatan integratif. Sebagai solusi, penelitian ini*

merekomendasikan pelatihan guru secara berkala, mengembangkan modul pembelajaran berbasis filosofi sains, dan berkolaborasi dengan lembaga pendidikan Islam lainnya. Penelitian ini menyimpulkan bahwa pendekatan filsafat sains mendukung pengembangan kurikulum integratif yang relevan yang mampu menghasilkan siswa yang kompeten secara intelektual dan berlandaskan spiritual dengan karakter Islam yang kuat untuk menghadapi tantangan globalisasi.

Keywords: *Integration, Islamic Values, Islamic Primary Schools, Philosophy, Science Approach*

Introduction

The introduction contains the background of the research problem, research objectives, and a Islamic education plays a strategic role in shaping students' character and morals. This system serves as a means of teaching religious values and as a place to instill morality, ethics, and spirituality that becomes the foundation of individual personality. Islamic education is designed to form good habits, creating a generation with integrity, responsibility, and deep social concern. Education based on faith, knowledge, and charity can produce individuals with noble morals who can contribute positively to society (Rusiani et al., 2024; Yusri et al., 2024).

Integrating Islamic values into learning in formal education is crucial to strengthening students' spiritual and moral awareness. This process helps them understand the importance of ethics in daily life while increasing their moral resilience against harmful environmental influences. According to Islamic teachings, Islamic education aims at cognitive abilities and includes forming physical, spiritual, and mental aspects (Badawi, 2019). This approach aims to produce humans with good personalities, mental toughness, and the capacity to carry out their role as caliphs on earth (Sobihah, 2020).

However, the implementation of Islamic education is not free from challenges. Problems such as limited competent teacher resources, a poorly integrated curriculum, and inadequate facilities remain significant obstacles. Nevertheless, various strategic approaches have been developed, such as habituating Islamic values in extracurricular activities and learning based on the Qur'an and Hadith (Badawi, 2019). These strategies shape individuals with good character and strengthen social harmony and community resilience (Rusiani et al., 2024).

Integrating Islamic values with science is an important element in modern Islamic education, especially in facing the challenges of globalization and the secularization of science. Modern science tends to be separated from spiritual values, resulting in a more technical and materialistic paradigm. Therefore, integrating Islamic values in science learning is a strategic step to form a generation that is intellectually intelligent and solid in moral and spiritual foundations (Ali, 2023; Yusri et al., 2024). Al-Faruqi underlined the importance of the principle of tawhid as the foundation of this integration by connecting science to ethical perspectives and divine values (Zaman & Fahrudin, 2023). With this approach, science is technically valid and a means of getting closer to God (Putri, 2019).

Furthermore, the philosophy of science offers a relevant framework for this integration process. The philosophy of science integrates aspects of ontology, epistemology, and axiology, which help explain the relationship between science and religion. The integral paradigm combines science with religious values, culture,

and morality to create a holistic view (Sobihah, 2020). On the other hand, the interconnective-integrative approach emphasizes the importance of considering social, cultural, and ethical aspects in integrating science and religion.

Globalization brings significant challenges to Islamic education, both in building students' spiritual and intellectual foundations. Rapid technological advances, cultural integration, and increasing global competition require Islamic education to adapt to remain relevant. In this context, science and technology advances provide opportunities and challenges. Islamic education must provide modern insights without sacrificing spiritual values (Turiansyah & Hasanah, 2024). In addition, globalization also brings the threat of moral decadence that must be anticipated through strengthening Islamic character education. Through curriculum reform and learning methods, Islamic education can ensure graduates are globally competitive but still rooted in Islamic values.

Islamic education must balance the mastery of modern science and the practice of spiritual values. It is important not only to form individuals with faith and noble character but also to answer the challenges of globalization. Therefore, a philosophy of science-based approach in Islamic education can be a solution to create harmony between the intellectual and spiritual dimensions (Rusiani et al., 2024). This process aims to produce a generation that can think critically, creatively, and ethically and contribute to a better society.

Thus, this study aims to explore the relevance of the philosophy of science in supporting the integration of Islamic values and science, identify its implementation strategies in basic education, and uncover the challenges faced and solutions that can be applied. The combination of philosophical, pedagogical, and strategic approaches is expected to significantly contribute to strengthening the role of Islamic education in the modern era.

Method

This research will use a qualitative approach with a case study focusing on a deeper understanding of integrating Islamic values and science. The qualitative approach allows us to explore the perspectives of teachers, students, and school administrators on how these two areas are linked in the Islamic education curriculum. This type of research is descriptive exploratory, which aims to describe how the process of integrating science and Islamic values is carried out in Islamic schools and how this affects the character-building of students. It also aims to identify challenges and opportunities in implementing the integration.

The research will be conducted at Cendekia Muda Islamic Primary School, which implements a curriculum that integrates Islamic values and science. Data will be collected by reviewing literature on integrating Islamic values and science, such as scientific journals, books, articles, and curriculum documents relevant to the research topic. It aims to provide a theoretical framework and explore the practices implemented by Islamic schools in various places. As explained by Khoeriyah (2023), integrating Islam and science in education can help students understand religious principles while acquiring relevant scientific knowledge, thus creating a generation that is not only intelligent but also has character.

In addition, semi-structured interviews will also be conducted with 6 informants, including the school principal, curriculum waka, homeroom teacher, science teacher, Qur'an teacher, and students. The interview questions will revolve around

their experiences regarding the learning experience and the application of Islamic values in the context of science, the challenges faced and how to overcome them, and the perception of the impact of this integration on the character and attitude of students. Research by [Anwar \(2024\)](#) shows that collaboration between religious education teachers and science teachers is essential in this integration process, thus creating more holistic learning.

The instruments used in this study include a list of open-ended questions that will be used in interviews with teachers, students, and school administrators. The questions will be designed to explore information related to curriculum implementation and the challenges and impacts of the integration. In addition, direct observation in one of the related subjects is also conducted, while documentation is done by collecting data related to the curriculum on the school website.

The interview and literature review data will be analyzed qualitatively using thematic analysis techniques. This process includes transcribing the interviews to document the complete interview results and marking the emerging themes, such as teaching methods, challenges in integration, and perceptions of the impact on student character ([Anwar, 2024](#)). After that, interpretation will be done by connecting the findings with the theories and concepts in the literature review and exploring the relationship between theory and practice in the schools studied. In addition, member checking will be conducted by asking for confirmation from informants (teachers, students, and school managers) to ensure the accuracy of the findings obtained during the interviews.

Result and Discussion

Result

The results of this study will discuss in depth the integration of Islamic values in science subjects at the basic education level with a philosophy of science approach. To deepen the discussion, the author divides the sub-discussion into several parts. The division includes the integration model of Islamic values and science, the role of the philosophy of science, the impact of integration on student character, and challenges and solutions.

1. Model of Integration of Islamic Values and Science

Islamic elementary schools have various learning models to integrate Islamic values with science. An analysis of these learning models shows an approach focusing on collaboration between religious and modern science to create holistic learning. The data shows that Islamic primary schools implement several integrative learning models to connect Islamic values with science, as shown in the following table:

Table 1. Learning Models and Implementation Examples

Learning Model	Implementation Example
Tematik-Integratif	Thematic teaching is linked to the Qur'an and Hadiths
Islamic Science	Science observation is linked to the Qur'an and Hadiths
Islamic-based STEAM	Technology projects/simple experiments are linked to the Qur'an and Hadiths

The thematic-integrative model carried out by the Islamic Primary Schools studied is that science learning is not taught as a separate discipline but is integrated with the themes of the Qur'an and Hadith. For example, when studying the solar system,

students are also invited to understand Qur'anic verses such as QS. Yunus: 101 encourages humans to contemplate the signs of Allah's greatness in the universe (Nasution et al., 2023). Another example in science lessons is the water cycle concept (evaporation, condensation, and precipitation), which is often taught in the final grade. In the context of Islamic value integration, the teacher starts the lesson by reciting:

"Do you not see that Allah sends down water from the sky, then He makes it a source of water on earth?" (QS. Az-Zumar: 21)

After that, the teacher connects this natural phenomenon with the greatness of Allah, who created the water cycle to maintain life and then discusses the importance of protecting water resources as a form of worship to Allah.

The Islamic scientific model uses a scientific approach (observing, questioning, trying, reasoning, and communicating) within the framework of Islamic values. For example, when teaching about photosynthesis, students see this phenomenon as part of Allah's grace in maintaining the balance of life on earth. When teaching about leaf structure and photosynthesis, the teacher starts with the verse QS. An-Nur: 45, which states that Allah created all living things from water (Mar'ah, 2022). The teacher relates the process of photosynthesis as a sign of the greatness of Allah, who regulates the process of life on earth. Students are then asked to make a simple paper that illustrates the relationship between the function of leaves and faith in Allah.

The Islamic-based STEAM approach integrates Islamic values into learning. In this approach, students are encouraged to create simple technology projects, such as portable water filters. The project begins with a discussion of QS. Al-Baqarah: 164 emphasizes the miracle of the creation of the heavens, earth, and water. The project improves students' understanding of science concepts and reinforces Islamic values about the responsibility of taking care of God's creation.

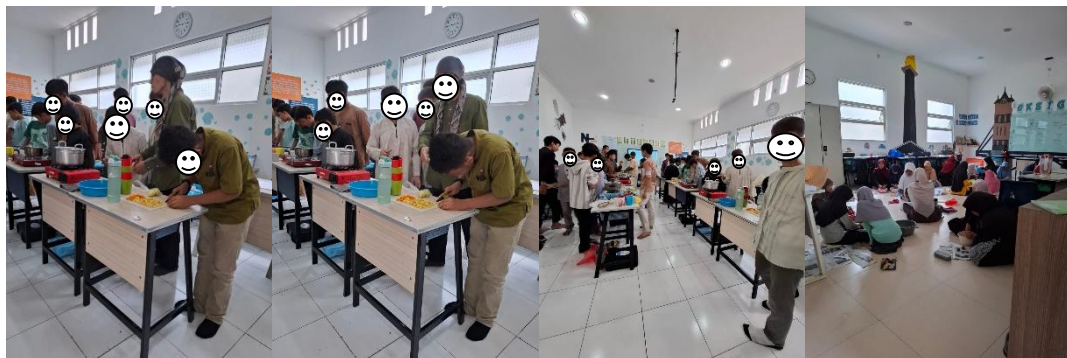


Figure 1: Atmosphere of Science Learning Space (Making Herbs and Paper Porridge)

Another example observed during the research is the project of making herbal medicine in the 6th grade boys in the material classification, mixture while studying the verses related to herbal plants. In addition, during the research, the 6th-grade girls were doing a practicum to make paper pulp in an environmentally friendly technology project while discussing Islamic principles about preserving the earth (QS. Al-A'raf: 56) (Muspiroh, 2013), which, of course, began with the reading of Al-Qur'an verses as an effort to integrate Islamic values with science. The results show that students understand scientific concepts more easily with this approach because of its spiritual relevance and application in everyday life.

2. The Role of Philosophy of Science in the Curriculum

Based on the interviews and case studies at Cendekia Muda Bandung Islamic Primary School, the principal's view of the philosophy of science approach is a strong foundation for creating an integrated curriculum. The principal believes combining Islamic values and science will produce students with strong character who can compete globally. The challenge faced is the lack of teacher training in understanding the philosophy of science and how to apply it in learning. The principal and teacher stated that:

The philosophy of science approach bridges us to integrate our Islamic-based curriculum with the national curriculum (e.g., the independent curriculum) to become relevant to the needs of the times, but its application requires further support and training. Therefore, we always conduct regular training for educators, one of which is in the form of studies (Interview KS and G1))

In addition, homeroom and science teachers generally welcomed this approach as it allowed them to teach the material holistically. For example, when teaching material about the water cycle, teachers relate this scientific process to the greatness of Allah (QS. Ar-Rum: 48). However, some teachers find it challenging to align complex scientific concepts with Islamic values, especially without clear guidance. Teachers also emphasized the importance of an environment that can help *upgrade skills* in understanding the values of tawhid and tawhid-based modules or textbooks as a philosophy of science approach to help them. The following table summarizes how the philosophy of science paradigm is implemented in the education process at the Islamic primary schools studied:

Table. 2 The Role of Philosophy of Science in the Curriculum

Aspects of Philosophy of Science	Implementation in the Curriculum	Impact on Students
Ontology (Nature of Science)	Tawhid as the foundation for the integration of science and religion	Students understand science as a sign of God's greatness
Epistemology (Source of Science)	Utilization of Al-Qur'an verses as a source of scientific reflection	Students can relate scientific phenomena to revelation
Axiology (Use Value of Science)	Learning that instills moral responsibility in the application of science	Students are motivated to utilize science ethically

Interviews with teachers and principals revealed that the philosophy of science is used as a conceptual framework to develop an integrative curriculum. With the philosophy of science, tawhid is used as the primary foundation to connect science with Islamic values. Teachers reported that this approach helps students see the harmony between religion and science.

3. Impact of Integration on Student Character

The integration of Islamic values at Cendekia Muda Islamic Primary School is expected to provide introductory provisions for the formation of the spiritual and intellectual character of the students, whose impact will be felt in the future. Observation data shows an increase in students' spiritual and intellectual character:

Table 3. Impact of Integration on Student Character

Character Dimension	Observation of Student Behavior	Result
Spiritual	Increased student awareness of kauniyah verses that are relevant to what is learned	Students are more grateful and pious (independence in worship)
Intellectual	Analytical skills increase through activities such as Islam-based STEAM projects	Students are more creative and innovative
Social	Environmental awareness increases, for example, through environmentally friendly projects	Students care more about the environment

One of the students' spiritual characteristics is a greater awareness of the greatness of Allah through observation of scientific phenomena. One of the intellectual characteristics of students is that their critical and analytical thinking skills increase, especially in understanding the relationship between science and Islam. It also builds students' social concern for the surrounding environment.

4. Challenges in Implementation

The main findings related to challenges in the integration of Islamic values and science are:

Table 4. Implementation Challenges and Proposed Solutions

Challenge	Explanation	Proposed Solution
Teacher Competence	Teachers have difficulty integrating scientific concepts with Islamic values	Training based on Islamic STEAM and philosophy of science
Cultural Resistance	Views that separate science and religion in specific communities	Educate parents through seminars on the importance of integration
Limited Facilities	Modules and laboratories that do not support integration-based learning	Provision of integrative modules and collaboration with Islamic education institutions

Most teachers at Cendekia Muda Islamic Primary School have backgrounds in general disciplines (not Islamic), so teachers are constrained in integrating scientific concepts with Islamic teachings. However, at Cendekia Muda Islamic Primary School, periodic training has been conducted to strengthen understanding and build a paradigm with a strong Islamic base. In addition, there is cultural resistance, as some communities separate science and religion, thus hindering the implementation of an integrative approach. In this case, Cendekia Muda Islamic Elementary School is actively conducting programs to provide education on the importance of the integrative concept. The availability of facilities in the form of modules and laboratories based on Islamic values has been completed at Cendekia Muda Islamic Elementary School.

Discussion

This research confirms the importance of integrating Islamic values and science in Islamic education, particularly at the Islamic primary school level, with the philosophy of science approach as the main framework. This discussion explores

the implications of the research in theoretical and empirical contexts and compares it with previous findings.

1. Analysis of the Model of Integration of Islamic Values and Science

The research findings show that the thematic-integrative model, Islamic scientific approach, and Islamic-based STEAM provide a strong foundation for connecting Islamic values with scientific concepts. Teachers link the scientific process with Islamic concepts such as tawhid and piety (Maisaroh & Yanto, 2024). Therefore, science and Islamic values cannot be separated; they are interrelated in producing progress for knowledgeable humans because of Islamic direction or guidance (Yulanda, 2020). It means that approaches that emphasize the integration of science with Islamic values through the principle of tawhid can provide spiritual meaning to science learning.

These models have high relevance because they provide a spiritual foundation in science learning so that students understand scientific concepts and internalize Islamic values that strengthen their faith and character (Muspiroh, 2013; Nasution et al., 2023). This model of integrating Islamic values and science has proven effective in improving the following:

- a. Understanding scientific concepts, where students can understand science concepts more deeply because they are taught in a meaningful spiritual context.
- b. Faith and piety, where learning that links science with the greatness of Allah, encourages students to be more grateful for Allah's blessings and strengthen their faith.
- c. Critical and creative thinking skills: With an Islamic-based STEAM approach, students are trained to think critically when solving problems while upholding Islamic principles.

Integrating Islamic values and science in learning at Islamic elementary schools provides a strong educational foundation to form intellectually and spiritually intelligent students. By applying various learning models, such as thematic-integrative, Islamic scientific, and Islamic-based STEAM, students learn to understand the world from a scientific perspective and relate the knowledge to the greatness of Allah through verses of the Qur'an. It is in line with the research of (Adiyono et al., 2024), who stated that learning not only science concepts but also relating them to Islamic values according to the relevant Al-Qur'an and Hadith and conducting simple experiments in proving these theories makes students more enthusiastic and interactive in the learning process. Implementing this integration practice requires a holistic curriculum, teacher training, and institutional support to create an effective learning environment.

2. Strategies for Implementing Philosophy of Science in the Curriculum

Philosophy of science provides a conceptual framework for developing an integration-based curriculum (Humaidi, 2022). Philosophy of science not only discusses aspects of epistemology (the origin of knowledge) but also ontology (the nature of science) and axiology (the use value of science), which are very relevant in integrating Islamic values and science (Pramono, 2022). In Islamic education, philosophy of science helps connect revelation and reason (Az-Zuhaili, 2013; Shihab, 1999; Zaman & Fahrudin, 2023). In Islam, revelation (the Qur'an and Hadith) is the primary basis for interpreting science. This integration ensures that science develops students' intellect and strengthens faith.

In addition, the philosophy of science guides the development of a holistic curriculum (Mulyawan & Mahmudi, 2024). An example is an integration-based curriculum that links modern science concepts such as ecosystems with the principle of tawhid (QS. Al-An'am: 141). With the philosophy of science approach, science is not seen as a neutral entity. However, it is related to moral and spiritual values so that students learn science with an awareness of their responsibility as caliphs on earth (QS. Al-Baqarah: 30). Such studies have been implemented at Cendekia Muda Islamic Elementary School in Bandung and Makassar where philosophy of science is used to bridge the Islamic education curriculum and modern science. The findings emphasize that the philosophy of science can overcome the fragmentation between science and religion by introducing moral values in learning.

The philosophy of the science-based approach in integrated curriculum development shows several benefits. Firstly, students can understand science deeply within the framework of tawhid, so they not only learn to pass exams but also understand its connection to faith. Secondly, teachers trained on the foundation of tawhid as a philosophy of science approach are more confident in teaching integrated materials. This approach makes Islamic education relevant to global needs without losing Islamic identity (Samudi et al., 2022; Siahaan et al., 2023; Yusri et al., 2024).

Philosophy of science is an important foundation in developing integration-based curricula in Islamic schools. This approach helps to create holistic and meaningful learning by linking revelation and rationality. However, its success largely depends on teacher training, principal support, and the availability of adequate teaching materials.

3. Significance of Impact on Student Character

The positive impact of integrating Islamic values in science learning on students' character building, both spiritual and intellectual, is in line with Schreiber et al., (2024), which states that this integrative concept makes it easier for teachers to help develop knowledge supported by students' daily ethical and spiritual attitudes. The increase in students' spiritual awareness of understanding kauniyah verses and scientific phenomena shows that integration-based learning educates academically and strengthens students' faith.

Understanding that natural phenomena are part of the signs of Allah's greatness (ayat kauniyah) helps students develop gratitude, faith, and responsibility as caliphs on earth (QS. Al-Baqarah: 30). For example, when studying the water cycle, students not only understand the scientific process but also reflect on how Allah maintains the balance of nature. Studies show that this spiritual reinforcement creates students who are more disciplined, honest, and care for the environment (Yusni, 2021).

One of the intellectual characteristics is the improvement of students' critical and analytical thinking skills. For example, in Islamic-based STEAM learning, students are trained to design scientific projects reflecting Islamic values, such as environmentally friendly technology. This approach encourages students to solve problems creatively while considering their ethical and spiritual implications. By integrating Islamic values and science, students can better connect scientific concepts with spiritual values, ultimately forming individuals who think holistically and act with high morality.

Teachers play a central role in successfully integrating Islamic values and science. Teachers' leading roles include facilitators, role models, and designers of integrated

learning modules. As facilitators, teachers help students connect science concepts with Islamic teachings. For example, when teaching a topic such as gravity, teachers can relate it to verses that show the greatness of Allah in creating the laws of nature (QS. Ar-Rahman: 7-8). This makes learning more meaningful and relevant to students' lives.

As role models, teachers' characters and behaviors that reflect Islamic values greatly influence students. Teachers who demonstrate faith and concern for science encourage students to emulate the same attitude. Studies show that teachers who successfully integrate spiritual values into learning can increase students' confidence in connecting religious and general knowledge (Golshani, 2003).

As learning module designers, teachers are often tasked with customizing the curriculum to make it relevant to the school's local context. For example, teachers can design science learning modules that combine scientific experiments with spiritual reflection, such as planting plants while understanding the concept of Allah's mercy in maintaining life on earth (QS. An-Nahl: 10-11). As a tangible impact in schools, students taught with this approach show improvement in awareness of worship, discipline, responsibility, in-depth understanding of the relationship between scientific phenomena and Islamic values, and the ability to think analytically while upholding Islamic principles.

The integration of Islamic values and science contributes significantly to the formation of students' spiritual and intellectual character (Adiyono et al., 2024; Fahrudin, 2023; Harahap, 2021; Muzaini et al., 2024; Suryana et al., 2024; Yusuf, 2021). Teachers play a vital role as facilitators, role models, and learning designers in ensuring the success of this approach. With this integration, students understand science concepts technically and internalize Islamic values that strengthen their faith and morals. This study expands the practical implications of the integration approach in producing a generation capable of competing at the global level without losing their Islamic identity.

4. Solutions to Implementation Challenges

Integrating Islamic values and science in education faces several technical, pedagogical, and cultural obstacles. Most teachers at Cendekia Muda Islamic Primary School have a background in general science (not Islamic). This means that most teachers do not fully understand the concept of integration. This is especially the case for science teachers who may not have a strong background in Islamic studies or vice versa for religious teachers who are less versed in modern science. The curriculum available at Cendekia Muda Islamic Primary School has implemented the integration of Islamic values as a whole (not only science), but in some other schools, it may still be partial, so it does not fully reflect integration. This may result in the presentation of material in textbooks and learning resources not combining both aspects comprehensively.

Another challenge is related to cultural resistance, where some parties still view science and religion as separate entities, so both parents and the education community challenge the implementation of this integration. In addition, implementing integration requires more time to design effective learning and supporting facilities such as Islamic value-based laboratories. Therefore, schools that implement this integration must have a strategy to face these challenges.

Various solutions have been implemented by Cendekia Muda Islamic Primary School to overcome these challenges, including:

- a. Teacher competency development with periodic training for teachers in understanding the concept of integrating Islamic values and science is needed. The research of [Sholeh et al., \(2021\)](#) explained the importance of pedagogical competence in designing and structuring meaningful learning through a methodological approach that pays attention to theoretical aspects and supports knowledge formation. This program can be conducted through workshops or collaborative training between science experts and scholars. For example, *Islamic STEAM*-based training to improve teacher competence in integrating the two disciplines. Schools can also use technology by providing *e-learning* platforms with integration materials to support teachers' independent learning.
- b. Curriculum development that links science competencies such as analysis, experimentation, and problem-solving with Islamic values such as tawhid, morals, and worship. An example is the insertion of kauniyah verses in learning biology to show the greatness of Allah in the process of photosynthesis (QS. Al-An'am: 99).
- c. Collaboration with related institutions such as Islamic universities, research institutions, or educational organizations to develop integration-based learning modules.
- d. Building cultural awareness where schools must educate parents and communities about the benefits of integrating Islamic values and science. Seminars, *parenting* studies, and discussions with parents can help eliminate any cultural resistance.

Improving educational facilities by providing laboratories, libraries, and other resources that support integration-based learning should be a priority. An example is an *eco-Islamic* laboratory that teaches scientific concepts with Islamic values, such as environmental awareness based on the teachings of tawhid. Challenges such as limited teacher competence and cultural resistance require a planned strategy. This research proposes a philosophy of science-based training to improve teachers' ability to build an integrative interconnection paradigm. In addition, educating the community, including parents, about the importance of this integration is also one of the keys to reducing resistance to the integrative approach. This solution is likely to be implemented in Islamic schools in Indonesia to increase the success of implementation.

The results of this study reinforce the relevance of the philosophy of science approach in integrating Islamic values and science in basic education. The findings support previous theories and offer practical solutions to overcome implementation challenges. With a holistic approach and support from all parties, this integration can create students who excel intellectually and spiritually.

Conclusion

Integrating Islamic values and science in education is important in shaping a generation with intellectual intelligence while being firm in spiritual character. This approach not only teaches modern science but also instills values such as tawhid, noble character, and awareness of the greatness of Allah. In this process, the philosophy of science acts as an epistemological foundation to connect revelation and rationality, making this integration more relevant in the context of Islamic education in the era of globalization.

Despite challenges such as limited teacher competence, cultural resistance, and lack of facilities, targeted strategies such as integration-based curriculum

development, teacher training, and collaboration with related institutions have proven effective solutions. This implementation has been successfully applied in several Islamic schools through interactive approaches such as natural phenomenon-based learning linked to Islamic values.

The positive impact of this integration is seen in the formation of students who excel in science and have high spiritual awareness. They can think critically, understand science holistically, and make science a means to worship Allah (QS. Al-Mulk: 2). By continuing to develop this approach, Islamic education has the potential to become a relevant holistic education model that can answer the challenges of globalization without losing its Islamic identity.

References

- [1] Adiyono, A., Fitri, A. Z., & Al Matari, A. S. (2024). Uniting Science and Faith: A Re-STEAM Interdisciplinary Approach in Islamic Education Learning. *International Journal of Social Learning (IJS�)*, 4(3), 332–355. <https://doi.org/10.47134/ijsl.v4i3.281>
- [2] Ali, A. (2023). Pendidikan Akhlak Dan Karakter Sebagai Landasan Teori Pendidikan Karakter Bangsa Indonesia. *HAWARI: Jurnal Pendidikan Agama Dan Keagamaan Islam*, 2(1), 38–47. <https://doi.org/10.35706/hw.v2i1.5310>
- [3] Anwar, M. M. (2024). Integrasi Islam dan Sains di Lembaga Pendidikan Islam : Studi Atas Pesatnya Arus Modernisasi. *Sosaintek: Jurnal Ilmu Sosial Sains Dan Teknologi*, 1(1), 1–10. <https://doi.org/https://doi.org/10.33367/sosaintek.v1i1.5235>
- [4] Az-Zuhaili, W. (2013). *Tafsir Al-Munir* (A. Y. Lchsan & M. B. H (eds.); pp. xx–630). Gema Insani.
- [5] Badawi. (2019). Pendidikan Karakter Dalam Pembentukan Akhlak Mulia Di Sekolah. *Seminar Nasional Pendidikan*, 207–218. <https://jurnal.umj.ac.id/index.php/SEMNASFIP/index>
- [6] Fahrudin, M. (2023). *Pola Pendidikan Karakter Religius Melalui Islamic Boarding School di Indonesia*. Malang: CV. Pustaka Peradaban.
- [7] Golshani, M. (2003). *The Holy Qur'an and The Science of Nature*. Iran: Islamic Propagation Organization.
- [8] Harahap, H. (2021). Pengintegrasian Nilai-Nilai Agama Islam Pada Pembelajaran Di Sekolah. *Jurnal Literasiologi*, 7(1), 1–26. <https://doi.org/10.47783/literasiologi.v7i1.270>
- [9] Humaidi, H. (2022). Filsafat Ilmu Dalam Islam: Sebagai Basis Integrasi. *Ushuluna: Jurnal Ilmu Ushuluddin*, 8(1), 1–18. <https://doi.org/10.15408/ushuluna.v8i1.24266>
- [10] Khoeriyah, I. N. (2019). *Integrasi Islam Dan Sains Dalam Pembelajaran Pendidikan Agama Islam Sma Sains Al-Qur'an Yogyakarta* [UIN Sunan Kalijaga Yogyakarta]. <http://digilib.uin-suka.ac.id/id/eprint/34437>
- [11] Maisaroh, H. A., & Yanto, M. (2024). Pembelajaran Pendidikan Agama Islam (PAI) di Sekolah Dasar. *At-Tarbiyah: Jurnal Penelitian Dan Pendidikan Agama Islam*, 2(1), 354–363. <https://journal.staittd.ac.id/index.php/at/article/view/148>
- [12] Muzaini, M. C., Khoiriyah, Z. ., Khabib, M. A., & Kuncoro, R. (2024). Effectiveness of STEAM-Integrated Project-Based Learning to Improve Creative and Collaborative Thinking Skills of Elementary School Students. *Al-Adzka: Jurnal Ilmiah Pendidikan Guru Madrasah Ibtidaiyah*, 14(1), 106–120. <https://doi.org/10.18592/aladzkapgmi.v14i1.13749>
- [13] Mulyawan, H., & Mahmudi. (2024). Ayat dan Hadis Tentang Tauhid Hubungannya dengan Konsep Pendidikan Islam Holistik. *Reslaj: Religion*

- Education Social Laa Roiba Journal*, 6(4), 2065–2080.
<https://doi.org/10.47476/reslaj.v6i4.1205>
- [14] Muspiroh, N. (2013). Integrasi nilai Islam dalam Pembelajaran IPA. *Jurnal Pendidikan Islam*, 28(3), 484–498. <https://doi.org/10.15575/jpi.v28i3.560>
- [15] Nasution, J. S., Fatonah, S., Sapri, S., & Sakdah, M. S. (2023). Analisis Integrasi Nilai- Nilai Islam Dalam Pembelajaran Di SD Islam Terpadu Al-Fityan Medan Sumatera Utara. *Al-Madrasah: Jurnal Pendidikan Madrasah Ibtidaiyah*, 7(2), 654–671. <https://doi.org/10.35931/am.v7i2.2052>
- [16] Pramono, J. (2022). *Integrasi Nilai-Nilai Islam Dalam Pembelajaran IPA di SD Alam Perwira Purbalingga*. Universitas Islam Negeri Prof . K . H . Syaifuddin Zuhri Purwokerto Tahun 2022. 45.
- [17] Putri, F. R. (2019). Integrasi Ilmu Pengetahuan (Sains) dan Agama islam. *Wahana Akademika: Jurnal Studi Dan Sosial*, 6(1), 13–24. <https://doi.org/10.21580/wa.v6i1.4848>
- [18] Rusiani, I., Jannah, R., & Rahayu, S. P. (2024). Peran Pendidikan Islam Dalam Membentuk Karakter Generasi Muda. *Religion: Jurnal Agama, Sosial, Dan Budaya*, 3(2), 462–480. <https://doi.org/10.23969/wistara.v1i2.11236>
- [19] Samudi, Rahmianti, S., & Nurdin, A. (2022). *Manajemen Pendidikan Islam: Teori dan Implementasi Pemanfaatan Teknologi Informasi* (R. Ardyanto (ed.)). Bintang Semesta Media.
- [20] Schreiber, A., Wagner, Y., & Becker, L. (2024). Integrating Islamic Values In Science Education: A Case Study In Indonesian islamic Schools. *World Journal of Islamic Learning and Teaching*, 1(1), 18–22. <https://doi.org/10.61132/wjilt.v1i1.99>
- [21] Shihab, M. Q. (1999). *Tafsir Al-Mishbah*. Lentera Hati.
- [22] Sholeh, M., Jannah, R., Mahmudah, M., & Khairunnisa, K. (2021). Pengembangan Model Pembelajaran Efektif Dan Bermakna Di MI Perwanida Blitar. *Muallimuna: Jurnal Madrasah Ibtidaiyah*, 6(2), 16. <https://doi.org/10.31602/muallimuna.v6i2.4301>
- [23] Siahaan, A., Sembiring, A. W., Rafsanjani, A., Yunita, E., Salamah, I. A., & Sibarani, L. A. (2023). Strategi Manajemen Lembaga Pendidikan Islam Untuk Meningkatkan Kualitas Pembelajaran di SMP Swasta It Al-Munadi Marelان. *JIMPS: Jurnal Ilmiah Mahasiswa Pendidikan Sejarah*, 8(3), 1232–1238. <https://doi.org/https://doi.org/10.24815/jimps.v8i3.25061>
- [24] Sobihah, Z. (2020). Pendidikan Karakter (Akhlak) Menurut Perspektif Islam. *Tarbawiyah Jurnal Ilmiah Pendidikan*, 4(1), 78. <https://doi.org/10.32332/tarbawiyah.v4i1.1743>
- [25] Suryana, E., Alimron, A., & Sofyan, S. (2024). Nilai-Nilai Pendidikan Tauhid Dalam Al-Quran Surat Al-Ikhlان Ayat 1 Sampai 4 Menurut Tafsir Ibnu Katsir. *Al-Idaroh: Media Pemikiran Manajemen Dakwah*, 4(2). <https://e-journal.uin-al-azhaar.ac.id/index.php/idaroh/article/view/700>
- [26] Turiansyah, M., & Hasanah, S. M. (2024). Makna Kurikulum dalam Perspektif Islam: Implikasinya terhadap Pendidikan dan Pengajaran. *Religion: Jurnal Agama, Sosial dan Agama*, 3(3). 698-711. <https://doi.org/10.55606/religion.v3i3.1088>
- [27] Yulanda, A. (2020). Epistemologi Keilmuan Integratif-Interkonektif M. Amin Abdullah Dan Implementasinya Dalam Keilmuan Islam. *TAJDID: Jurnal Ilmu Ushuluddin*, 18(1), 79–104. <https://doi.org/10.30631/tjd.v18i1.87>
- [28] Yusni, I. (2021). *Motivasi Kerja Seorang Muslim Perspektif Al-Qur'an* (Vol. 4, Issue 1). Institut Perguruan Tinggi Ilmu Al-Qur'an Jakarta.
- [29] Yusri, N., Ananta, M. A., Handayani, W., & Haura, N. (2024). Peran Penting Pendidikan Agama Islam dalam Membentuk Karakter Pribadi yang Islami. *PJPI: Jurnal Pendidikan Islam*, 1(2), 12. <https://doi.org/10.47134/pjpi.v1i2.115>

- [30] Yusuf, A. (2021). *Pesantren Multikultural Model Pendidikan Karakter Humanis-Religius Di Pesantren Ngalah Pasuruan*. Rajawali Pers.
- [31] Zaman, M. K., & Fahrudin, M. M. (2023). Integrasi Pendidikan Islam dan sains Perspektif Ismail Raji Al-Faruqi. *Es-Syajar: Journal of Islam, Science and Technology Integration*, 1(1), 27–42. <https://doi.org/10.18860/es.v1i1.19840>