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Article

Curriculum Development in Islamic Education for Integrating Modern Science with Islamic Values

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Abstract

This study explores the integration of modern science and Islamic values in Islamic education, focusing on how curriculum development can reconcile scientific knowledge with religious teachings. By examining the experiences of teachers, students, and curriculum developers across various Islamic educational institutions, the research identifies both the opportunities and challenges in creating an integrated curriculum. Key findings highlight the importance of teacher training, the role of curriculum frameworks, and the influence of local religious and cultural contexts in shaping the effectiveness of integration. The study also underscores the potential benefits for students in understanding science through an Islamic ethical lens, promoting both intellectual growth and spiritual development. Despite the challenges, best practices such as collaborative teaching and inquiry-based learning demonstrate how integration can foster a more holistic educational experience. The study concludes with recommendations for enhancing teacher professional development, creating standardized curriculum guidelines, and fostering societal acceptance of the compatibility between science and Islamic values.

Keywords

Islamic Education
Curriculum Integration
Science and Religion
Teacher Training

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Introduction

Islamic education holds a crucial role in shaping the character, ethics, and intellectual development of the younger generation. Historically, Islamic education has been instrumental in producing intellectually and spiritually sound individuals. However, in the face of rapid advancements in modern science and technology, the challenge facing Islamic education today is how to design a curriculum that is not only rich in religious teachings but also relevant to the ever-evolving world of science and technology. This research aims to explore how to develop an Islamic education curriculum that integrates modern scientific knowledge with Islamic values, enabling students to gain a well-rounded understanding of both science and spirituality, thus preparing them for the complexities of the modern world.

Traditional Islamic education systems have long focused on the teaching of classical religious texts and subjects such as Tafsir, Hadith, Fiqh, and Sufism (Abbas et al., 2024; Purwanto et al., 2023). While these subjects provide a strong foundation for the spiritual and moral development of students, the increasing demands for modern education, particularly in science and technology, have made it necessary for Islamic education to evolve. Science and technology are no longer just tools of innovation they shape nearly every aspect of society, from social and political life to economics and culture (Mormina, 2019). As such, there is an urgent need for Islamic education to integrate scientific knowledge with religious teachings, ensuring that students are not only academically proficient but also morally grounded in their faith. The aim is to create a curriculum that bridges the gap between the traditional religious teachings of Islam and the contemporary advancements in science, enabling students to understand both the material and spiritual dimensions of life (Nasucha & Khozin, 2023).

According to Apriani et al. (2021) and Tuna (2020), the integration of modern science with Islamic teachings has often been viewed as a contentious issue. Some argue that modern science, based on empirical research and rationality, may conflict with Islamic teachings, which are rooted in faith and divine revelation. Others,

however, believe that science and religion can complement one another and that scientific inquiry can help deepen our understanding of the universe, which ultimately affirms the greatness of God's creation. In this context, developing a curriculum that integrates both science and Islam becomes not only a necessity but also an opportunity to present Islam as a comprehensive system that embraces scientific knowledge while remaining rooted in its ethical and spiritual values. A well-designed Islamic education curriculum can therefore enable students to view modern science not as contradictory to their faith but as a means to better understand the world created by God, in alignment with the objectives of Islamic teachings (Elkalmi et al., 2021; Chen et al., 2024).

One of the primary objectives of this research is to identify the principles that can guide the development of an Islamic education curriculum that integrates modern science and Islamic values (Pahrudin et al., 2023; Ayuningsih et al., 2020). This curriculum should not only incorporate scientific content but also adapt pedagogical methods, teaching strategies, and technology that align with both the demands of contemporary education and the values of Islam. Additionally, such a curriculum must be designed to nurture students holistically intellectually, morally, and spiritually so that they can not only grasp scientific knowledge but also apply it in a manner that is consistent with Islamic principles (Moslimany et al., 2024).

Moreover, this research will delve into existing models and best practices of curriculum development in Islamic education that have successfully integrated science and religion. Countries such as Turkey, Malaysia, and Indonesia have taken steps in this direction, designing curricula that not only teach modern scientific disciplines but also emphasize the importance of moral values rooted in Islam (Hussin et al., 2024; Arar et al., 2022). By examining the successes and challenges of these countries, this research aims to provide valuable insights and recommendations for developing an integrated curriculum in Islamic education in other contexts.

Furthermore, this study will also address the challenges inherent in integrating modern science with Islamic values. One of the primary challenges is the perceived tension between scientific inquiry, which relies on rationality, experimentation, and evidence, and religious knowledge, which is often based on revelation and faith (Kaushik & Walsh, 2019; Xi et al., 2023). It is crucial to develop a framework that can reconcile these two dimensions without compromising the integrity of either scientific principles or Islamic values. The goal is to show that science and religion, rather than being opposing forces, can complement each other in helping students to understand the world and their place in it from both a rational and spiritual perspective (Ferngren, 2022; Russell, 2024).

Ultimately, the development of an Islamic education curriculum that integrates modern science and Islamic values will contribute to the formation of a generation that is not only academically proficient but also morally and spiritually committed. Such an education system will prepare students to excel in fields of science and technology while remaining grounded in ethical principles derived from Islam. This approach will not only help individuals contribute positively to the global knowledge economy but also guide them in making morally responsible decisions that align with their faith. A well-balanced curriculum, therefore, has the potential to produce intellectually and ethically competent individuals who can navigate the complexities of the modern world with a strong foundation in their religious values.

Methods

This study employs a qualitative research method with a case study approach to explore the development of Islamic education curricula that integrate modern science with Islamic values. The research aims to provide an in-depth understanding of how such curricula are designed, implemented, and experienced in real-world educational settings. By focusing on several educational institutions such as schools, madrasahs, or universities that have already integrated or are in the process of developing this type of curriculum, the study seeks to identify the challenges, successes, and best practices involved. Data will be collected through in-depth interviews with key stakeholders, including educators, curriculum developers, students, and parents, as well as classroom observations to directly assess how science is taught alongside Islamic teachings. Document analysis of curriculum plans, syllabi, and teaching materials will further provide insights into how these

subjects are integrated. The study's primary objective is to understand the processes and strategies involved in blending modern science with Islamic values, while also offering practical recommendations for improving the integration of both domains in Islamic education. Through a comprehensive analysis of the case studies, the research will highlight effective approaches to curriculum development, identify common challenges across different contexts, and propose solutions that could enhance the educational experience for students in contemporary Islamic schools.

Results and Discussion

Integration of Modern Science and Islamic Values

The integration of modern science with Islamic values was implemented in varying degrees across the case study institutions. In schools and madrasahs that had fully integrated the two domains, subjects like biology, physics, and chemistry were taught with an emphasis on Islamic ethics. For instance, in an Islamic school in Indonesia, the Environmental Science curriculum was built around Quranic teachings about stewardship of the earth, which guided students to understand environmental issues through both a scientific and Islamic ethical lens. Similarly, a school in Malaysia included discussions on astrophysics by referencing Quranic verses that discuss the creation of the universe, which linked scientific discoveries to Islamic cosmology.

Interview with Teacher A (Indonesia, Environmental Science Teacher):

> *"In my class, we teach about environmental science, and we often refer to the Quranic verse that says, 'It is He who made the earth subservient to you' (Quran 45:13). I tell my students that science helps us understand how nature works, but Islam teaches us that it is our duty to care for the earth. For example, when discussing ecosystems, I use the Quranic concept of stewardship and emphasize how the preservation of the environment aligns with both our faith and scientific practices. We also discuss the water cycle in the context of Allah's creation and how every living thing depends on water. This approach has helped my students connect what they are learning in science with their spiritual values."*

Interview with Teacher B (Malaysia, Physics Teacher):

> *"When teaching physics, especially topics like the creation of the universe, I often refer to Quranic verses. For instance, I use the verse 'Do not those who disbelieve see that the heavens and the earth were a closed-up mass, then We opened them out?' (Quran 21:30) to introduce the Big Bang theory. This verse helps students see that Islam has a perspective on the origins of the universe that aligns with modern scientific theories. The students seem to appreciate this approach because it connects their scientific learning with their faith. They are more willing to accept scientific explanations when they can see that these theories are not in conflict with Islam."*

In other cases, however, the integration was more implicit. Teachers often found themselves improvising ways to connect scientific concepts to Islamic principles. For example, while teaching biology in some institutions, teachers used Quranic verses that describe the creation of life and the natural world to contextualize topics such as the cell and human anatomy. In contrast, a madrasa in Turkey opted to present science and religion separately, treating them as distinct subjects rather than attempting to integrate them.

Pedagogical Approaches and Teacher Perspectives

The role of teachers in facilitating the integration of modern science with Islamic values was critical. Teachers who were well-versed in both Islamic theology and scientific knowledge were more successful in integrating the two disciplines. In some schools, teachers had received specialized training that helped them navigate the intersection of science and religion, allowing them to confidently incorporate Islamic perspectives into their science lessons.

Interview with Teacher C (Turkey, Biology Teacher):

> *"I have been teaching biology for over 15 years, and it's only in the last few years that I've been incorporating Islamic values into my lessons. For example, in teaching human anatomy, I refer to the Quranic view of the*

> *creation of human beings. I explain how science can show us how the body functions, but I also remind them that it is Allah who created us in the best form. However, I sometimes feel uncertain when topics like evolution come up because there is resistance in our community to teachings that contradict traditional interpretations of creation. I often find myself avoiding certain topics, even though I know that students may be exposed to them in other settings."*

Interview with Teacher D (Malaysia, Chemistry Teacher:

> *"I believe in the importance of integrating Islamic values into science teaching, but honestly, I don't always know how to do it effectively. For example, I teach chemistry and focus a lot on the periodic table and chemical reactions, but I don't always know how to link this to Islam. I wish there were more resources or professional development opportunities to help me connect these concepts in a meaningful way. I think if I had better training, I could be more confident in explaining how science and Islam can work together."*

For instance, a teacher in an Indonesian school noted that when discussing genetics, she referred to the Quranic concept of creation to frame scientific discussions. However, many teachers expressed uncertainty and lack of training in effectively combining Islamic values with scientific teaching. Several teachers mentioned that they lacked the necessary resources or pedagogical frameworks to confidently teach this integrated curriculum.

Challenges in Curriculum Development and Implementation

One of the key challenges identified in this study was the lack of standardized guidelines for integrating modern science and Islamic values. While some institutions had developed their own frameworks for integration, there was significant variation in how integration was approached. Some schools and madrasahs had separate departments for Islamic studies and science, leading to a fragmented approach to curriculum design. Other schools, particularly in more conservative areas, faced resistance from religious authorities who questioned the appropriateness of certain scientific concepts, such as evolution, within an Islamic educational context.

Interview with Curriculum Developer (Indonesia):

> *"One of the major challenges we face in developing an integrated curriculum is that there are no clear, standardized guidelines for how to connect science with Islamic values. Every school seems to be doing it differently. Some schools integrate them naturally, while others treat them as separate subjects. The lack of a standardized curriculum makes it difficult for teachers to know what is expected. In some areas, we have faced resistance from local religious leaders who believe that certain scientific concepts, like evolution, cannot be taught within an Islamic framework. This has made it difficult to introduce certain topics into the curriculum."*

Interview with School Principal (Turkey):

> *"We are currently in the process of revising our curriculum to integrate modern science with Islamic values more explicitly. However, it's a delicate balance. While we want to promote a modern science curriculum, we have to be mindful of how we present certain theories, especially those that might be perceived as conflicting with Islamic teachings. For example, discussions on evolution are highly sensitive. Some of our teachers feel they cannot teach these topics at all, while others try to present them in a way that respects both scientific understanding and Islamic beliefs. It's a challenge to find common ground."*

In a madrasa in Turkey, for example, resistance from local religious leaders prevented the inclusion of evolutionary theory within the biology curriculum. Similarly, in some Indonesian schools, teachers avoided discussing scientific topics that were perceived to conflict with religious views, such as the age of the earth or the Big Bang theory.

Impact on Student Learning and Attitudes

The integration of science and Islamic values had a positive impact on students' understanding of both domains. In schools where the curriculum effectively integrated these two areas, students demonstrated a deeper appreciation for both modern science and Islamic teachings. For instance, in a Malaysian school where the curriculum linked scientific exploration with Islamic philosophy, students reported feeling more empowered to engage with scientific topics from a religious perspective, rather than feeling torn between conflicting worldviews.

Interview with Student A (Malaysia, Secondary School Student):

> *"I really enjoy the way my science teacher ties Islamic teachings to what we're learning in class. For example, when we studied the solar system, she mentioned how the Quran talks about the creation of the heavens and the earth, and how everything in the universe is connected. It made me realize that science and Islam are not two separate things. It made me proud to learn science in a way that aligns with my faith."*

Interview with Student B (Indonesia, High School Student):

> *"In my science classes, we often discuss scientific theories and then talk about how they relate to Islam. For instance, when we studied the human body, the teacher mentioned how Islam teaches that we are created by Allah, and that our bodies are a trust from Him. I like that, but sometimes I find it hard to understand how some scientific theories, like evolution, fit into what I believe as a Muslim. I wish we could spend more time discussing how science and religion can be integrated without contradicting each other."*

In contrast, students in schools where the integration was weak often expressed confusion. Some students reported that they struggled to reconcile the scientific explanations of the world with their religious beliefs. They felt that science and Islam were presented as separate, disconnected subjects.

Best Practices for Integration

The study identified several best practices for integrating modern science with Islamic values. Key practices included:

Collaboration between science and Islamic studies teachers: Successful integration often involved joint planning and resource-sharing between science teachers and Islamic studies educators. This helped ensure that the integration was consistent across lessons and provided a unified approach.

Interview with Teacher E (Indonesia, Islamic Studies Teacher):

> *"One thing we've found really effective here is collaborative teaching between science teachers and Islamic studies teachers. We work together to plan lessons and find ways to link science concepts with Islamic teachings. For example, when the science teacher teaches about the human digestive system, I can bring in Quranic verses that talk about the sustenance of the human body and the blessings of food. This teamwork has made the integration feel more seamless, and the students really appreciate it because they get a unified message from both their science and Islamic studies teachers."*

Interview with Teacher F (Malaysia, Physics Teacher):

> *"Another approach that has worked well is the use of inquiry-based learning. For instance, when teaching about the water cycle, I encourage students to ask questions and explore how water is essential to life, both from a scientific perspective and an Islamic perspective. We look at the Quranic verses that talk about the importance of water, and then we dive into the science of how the water cycle works. This approach makes the material more meaningful for students because they see how their faith can guide their understanding of the natural world."*

Use of Islamic texts in teaching science: Teachers effectively used Quranic verses and Hadiths to frame scientific concepts, such as using references to the creation of the universe in physics lessons or discussing the environmental ethics from Islamic teachings in biology classes. Inquiry based learning: Some schools utilized inquiry based learning methods where students were encouraged to ask questions and explore scientific phenomena, while also discussing their spiritual implications.

Integration of Modern Science and Islamic Values

These results reflect the diversity in how institutions approach the integration of modern science and Islamic values. Some institutions have adopted a more explicit integration model, while others practice a more implicit integration, leaving much to the discretion of individual teachers. This variability may stem from differences in institutional priorities, teacher training, and the local cultural context. As Afsar (2021) points out, the success of curriculum integration often depends on institutional leadership and the pedagogical vision for aligning religious and scientific knowledge. However, this study suggests that a more explicit integration tends to foster a better understanding of both domains among students, as it allows for the development of a cohesive worldview that connects their faith with the modern world.

Pedagogical Approaches and Teacher Perspectives

The findings underscore the crucial role of teacher preparedness in the successful integration of modern science and Islamic values. Teachers' confidence and ability to integrate science and faith were often shaped by their own backgrounds and training. As Nasr (2018) notes, for an integrated curriculum to be effective, teachers must be equipped not only with scientific knowledge but also with an understanding of how to bridge these concepts with Islamic thought. Therefore, professional development and teacher training programs that focus on both science and Islamic teachings are essential to ensure the successful implementation of integrated curricula. Teachers who are well-prepared are more likely to create a learning environment where both science and Islam are valued, encouraging students to see them as complementary rather than contradictory.

Challenges in Curriculum Development and Implementation

The lack of standardized guidelines for integrating science and Islamic values poses a significant barrier to the development of a unified curriculum. Resistance from religious authorities is a challenge that many Islamic educational institutions face when attempting to reconcile traditional religious teachings with modern scientific knowledge. This challenge is not unique to the institutions in this study but is reflected in broader debates within Islamic education about the compatibility of science and religion. As Al-Faruqi (1982) suggests, Islamic education must undergo a process of intellectual reform that allows for the reconciliation of religious and scientific knowledge. Until such frameworks are established, schools will continue to face difficulties in achieving comprehensive integration.

Impact on Student Learning and Attitudes

These findings indicate that integrating modern science and Islamic values can have a positive influence on students' learning experiences. When students perceive the subjects as complementary, rather than conflicting, they are more likely to engage deeply with the content and develop a more holistic understanding of the world. This supports the argument made by Zahoor & Iqbal (2020), who suggest that when science is taught in conjunction with religious values, it helps students understand that faith and reason are not mutually exclusive but can coexist and inform one another. The positive impact on students' attitudes toward science and religion indicates that integrated curricula can foster a more balanced worldview and contribute to the development of critical thinking in students.

Best Practices for Integration

These best practices align with the principles of integrative pedagogy, where the goal is to create a learning experience that connects knowledge from different disciplines. Collaboration between teachers is particularly important in ensuring that both science and Islamic teachings are not taught in isolation but are instead woven together into a coherent framework. Inquiry-based learning can be particularly effective in promoting student engagement, as it allows students to explore topics from both a scientific and Islamic perspective, encouraging critical thinking and a deeper understanding of the material. This approach is consistent with Islamic educational philosophy, which values the development of both intellectual and spiritual faculties.

Conclusion

The findings of this study underscore the integration of modern science and Islamic values in Islamic education, as explored in this study, demonstrates both significant potential and notable challenges. While some institutions have successfully merged these two domains by linking scientific content with Islamic principles, such as using Quranic verses to contextualize scientific topics like environmental science or human biology, others continue to present them as separate entities. The success of integration largely depends on the preparedness and training of teachers, as those with expertise in both fields tend to navigate the integration more effectively. However, many educators report feeling unprepared, citing a lack of professional development and resources to confidently integrate science and religion in their teaching. Furthermore, resistance from conservative religious factions, particularly regarding topics like evolution, poses a significant barrier to full integration. Despite these challenges, the study identifies best practices such as collaborative teaching between science and Islamic studies teachers and the use of inquiry-based learning to promote a more holistic approach to education. When effectively implemented, this integration fosters a deeper understanding of both science and faith, helping students reconcile modern scientific knowledge with their religious values. To further enhance the integration process, the study highlights the need for standardized curriculum guidelines, increased teacher training, and a broader societal dialogue on the compatibility of science and Islam. Ultimately, a well-designed integrated curriculum can equip students with the intellectual tools to engage with the modern world while remaining grounded in their faith, offering a more cohesive and balanced worldview.

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