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The Integration of Science and Religion in the Islamic Education Curriculum at Secondary Schools

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ABSTRACT

This study explores the models of integrating science and religion within the Islamic education curriculum at secondary schools. The objective is to understand the approaches used, the challenges encountered, and the impact on students. This integration is crucial in the context of Islamic education to foster a holistic and balanced understanding between spirituality and intellectuality. This study employs a library research method, reviewing relevant literature, including books, scholarly articles, and research reports related to the integration of science and religion in Islamic education. The study identifies three main integration models: inclusive, dialogical, and selective exclusive. The dialogical model is found to be the most effective in combining scientific and religious perspectives, despite challenges such as the lack of trained teachers and differing interpretations of religious teachings. The positive impacts of this integration model include improved student understanding of religion and science, character development, and higher learning motivation. This study provides important implications for curriculum development and teacher training in Islamic schools. However, the study's limitations lie in its reliance on secondary data without direct observation of field implementation. This study contributes to the literature on Islamic education by providing a comprehensive analysis of the integration models of science and religion. It also emphasizes the importance of a flexible and inclusive approach in addressing educational needs in the modern era.

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Introduction

In the realm of Islamic education, the integration of science and religion is an approach that is gaining increasing attention. Islamic education aims not only to impart religious values but also to cultivate a generation capable of understanding and applying scientific knowledge in everyday life. As times evolve and technology advances, the need to merge these two fields has become more pressing (Guessoum, 2020).

The separation of science and religion in educational curricula can create a dichotomous perspective that limits students' understanding of the interconnectedness between the two. argues that a non-dichotomous paradigm that integrates science and religion is key to fostering a holistic and harmonious understanding. This view aligns with the perspective that science and religion should not be seen as opposing forces, but rather as complementary aspects in the quest to understand the universe and life (Maksudin, 2013).

The integration of science and religion offers several significant benefits, especially within the context of Islamic education. Firstly, this integration helps students see the connections between religious teachings and scientific phenomena, which can deepen their understanding of both. Purwati found that integrating Islamic values into science education can enhance students' learning outcomes and contribute to better character formation. Furthermore, Guessoum emphasizes that an understanding of modern science can make an important contribution to the intellectual development of Muslim students.

Secondly, this approach also supports the development of students' character and morals. Islamic education aims to cultivate individuals of high character and ethical standards. By integrating science and religion, students can learn to apply religious values in scientific and practical contexts, enabling them to become individuals who are not only intellectually capable but also wise and ethical (Saputro, 2021).

The primary objective of this research is to examine the models of integrating science and religion within the Islamic education curriculum at secondary schools. The study will focus on how this integration is implemented, the challenges encountered, and its impact on students. Through a library research approach, this study will collect and analyze relevant literature to provide a

comprehensive overview of this topic (Creswell, 2018).

This research seeks to answer several key questions, including: How are the models of integrating science and religion implemented in the Islamic education curriculum at secondary schools? What challenges are faced in implementing these integration models? How does this integration impact students' understanding and character?

It is hoped that this research will make a significant contribution to the development of a more integrative and holistic Islamic education curriculum. By understanding effective integration models, schools can develop better strategies for teaching science and religion concurrently. Additionally, this study can serve as a reference for policymakers and educators in efforts to improve the quality of Islamic education in Indonesia (Saputro, 2021).

Through this research, it is anticipated that various approaches and best practices can be identified and applied in secondary schools to support more integrative learning. In this way, students will not only become academically intelligent individuals but also possess strong character and good ethics, in accordance with the teachings of Islam.

Methods

This study employs a qualitative approach using the library research method. A qualitative approach is chosen to deeply understand and explore the models of integrating science and religion in the Islamic education curriculum. Library research allows the researcher to collect, analyze, and interpret data from various relevant literary sources, including books, journal articles, theses, dissertations, and other official documents (Creswell, 2018).

The primary data sources in this research are literature relevant to the topic of study. Data is gathered from a range of academic books, scholarly journal articles, research reports, and other written works that discuss the integration of science and religion in Islamic education. Key works that serve as the main references in this research include: Paradigma Agama dan Sains Nondikotomik by Maksudin, which discusses a non-dichotomous approach to integrating science and religion; the study by Purwati, which explores the impact of integrating Islamic values in science education on students' learning outcomes; and Pembelajaran Kimia Terintegrasi Karakter Religius by Supardi, which provides insights into how religious character

can be integrated into chemistry education.

The data collection process involved the following steps. Identification of Literature Sources, The first step was to identify literature relevant to the research topic. The researcher used keywords such as "integration of science and religion," "Islamic education," "curriculum," and "secondary schools" to search for relevant sources in academic databases, digital libraries, and library catalogs. Selection of Relevant Literature: After identifying the relevant literature, the researcher conducted a selection process based on the relevance, quality, and credibility of the sources. Priority was given to journal articles indexed in reputable scientific databases, academic books published by trusted publishers, and research reports from academic institutions. Data Collection. Data was gathered from the selected literature. The researcher read and noted important information, key concepts, and findings relevant to the research topic.

The collected data was analyzed using content analysis techniques. This technique involves coding the data, grouping information based on emerging themes, and interpreting the results of the analysis. The analysis was conducted to identify the integration models applied, the challenges faced in their implementation, and their impact on students. The researcher also employed source triangulation techniques to ensure the validity and reliability of the data. This was done by comparing and confirming information obtained from various literary sources. By using multiple references, the researcher was able to build a more comprehensive and in-depth understanding of the research topic (Merriam, 2009).

Result and Discussion

1. Integration of Science and Religion

The concept of integrating science and religion has become a significant topic in academic discussions, especially among Islamic educators. This integration is not merely a merging of two disciplines, but an effort to create a holistic understanding that recognizes spiritual values in the context of scientific knowledge and vice versa. This approach emphasizes that religion and science should not be separated but can complement each other to form a more comprehensive understanding of reality. The following is a systematic theoretical explanation of the integration of science and religion.

The integration of science and religion refers to the process of connecting

and harmonizing religious principles with scientific knowledge. Maksudin describes this integration as a non-dichotomous paradigm that rejects the separation of these two domains. This paradigm emphasizes the importance of viewing science and religion as two ways to understand a single truth. Seyyed Hossein Nasr also supports this view, stating that in the Islamic tradition, science is considered one of the ways to understand God's creation and, therefore, should be respected and studied.

Theoretical Foundations of Integration

Several theorists provide a philosophical foundation for the integration of science and religion. In the Islamic tradition, the concept of tauhid (the oneness of God) is the primary foundation. Tauhid not only refers to the oneness of God but also reflects the unity of knowledge. Al-Attas states that true knowledge must be in harmony with tauhid, which means that all knowledge should lead to the recognition of God. This implies that there is no separation between "secular" knowledge and "religious" knowledge.

Moreover, the concept of fitrah in Islam, which refers to the innate nature of humans inclined towards goodness and truth, supports this integration. According to Al-Ghazali, human fitrah naturally drives them to seek knowledge and understand the world in a way that aligns with religious teachings. Therefore, true knowledge will not conflict with religion but will enrich human spiritual understanding.

Models of Science and Religion Integration

Several models of integration have been proposed by scholars, including inclusive, exclusive, and dialogical models. The inclusive model suggests that science and religion can be combined within a single curriculum while maintaining their respective autonomy. The exclusive model, on the other hand, views science and religion as two completely separate domains. However, this model is often criticized for failing to acknowledge the interaction between the two domains. The dialogical model, supported by Fazlur Rahman, emphasizes dialogue and interaction between science and religion, allowing both to learn from and enrich each other.

Concrete examples of the integration model can be found in the educational practices of pesantren and modern Islamic schools, where the curriculum includes not only religious sciences such as tafsir and hadith but also general sciences like mathematics and science. Research by Suprihatiningrum shows that this approach

can enhance students' understanding of both fields and develop a strong religious character.

Challenges and Criticisms of Integration

Despite its many benefits, the integration of science and religion also faces various challenges. One of the main challenges is finding a balance between scientific knowledge and religious principles. Some critics argue that efforts to integrate these two domains could lead to compromises in either scientific methodology or religious principles. Additionally, differing views among scholars and scientists on certain issues can also be an obstacle in the integration process (Mufid, 2013).

Another criticism comes from a secular perspective that questions the relevance of religion in the modern scientific world. For example, the concept of evolution often becomes a point of debate between scientists and theologians, with some considering that acceptance of evolution could undermine religious creation narratives. However, some Islamic scholars like Nidhal Guessoum (2020) argue that evolution can be seen as one of God's mechanisms in creating life, demonstrating that dialogue between religion and science is possible.

Implications of Integration in Education

The integration of science and religion has significant implications in the context of education. This approach not only helps students develop a balanced understanding between science and religion but also teaches important moral and ethical values for everyday life. Research by Purwati et al. (2018) shows that this integration can enhance the quality of education by teaching students to think critically and reflectively while adhering to religious principles.

In a global context, this integration can also promote intercultural and interreligious dialogue by showing that science and religion can work together for the benefit of humanity. It can also help reduce negative stereotypes about religion that often emerge in scientific and academic discourse.

The integration of science and religion is an important effort to create a more holistic understanding of the world. Despite facing various challenges, this approach offers great opportunities to develop richer and more diverse education that not only teaches science but also moral and spiritual values. Thus, this integration is not just about combining two domains of knowledge but also about

creating harmony between science and spirituality in humanity's quest for truth.

2. Islamic Education Curriculum

The Islamic education curriculum plays a crucial role in shaping students' character and understanding of religious teachings as well as scientific knowledge. This curriculum is designed to reflect Islamic values and equip students with knowledge relevant to everyday life. In this context, the Islamic education curriculum must be able to integrate religious and scientific aspects harmoniously. The following is a systematic and argumentative theoretical explanation of the Islamic education curriculum.

The Islamic education curriculum can be defined as a series of subjects, learning experiences, and values designed based on Islamic principles. This curriculum not only focuses on the transmission of religious knowledge but also includes the moral, spiritual, intellectual, and social development of students (Al-Attas, 1980). According to Hasan Langgulung, the Islamic education curriculum must reflect the values of tauhid, which emphasize the unity and interconnectedness of all aspects of life from an Islamic perspective.

Goals and Components of the Islamic Education Curriculum

The primary goal of the Islamic education curriculum is to develop the insan kamil, or the perfect human being, who maintains a balance between spiritual and intellectual aspects. This curriculum aims to develop religious knowledge, noble character, and worldly skills that can be used for the benefit of humanity. Ziauddin Sardar asserts that the goal of Islamic education is to create individuals who are faithful and pious, and who have the ability to contribute positively to society.

The Islamic education curriculum typically consists of two main components: religious knowledge and general knowledge. Religious knowledge includes the study of the Qur'an, Hadith, Fiqh, Aqidah, and Islamic history. General knowledge covers subjects such as mathematics, science, language, and social studies. The integration of these two components is a hallmark of the Islamic education curriculum, which aims to provide a holistic education.

Fazlur Rahman argues that Islamic education should encompass a balanced approach between traditional and modern education. This includes the teaching of scientific methodologies alongside religious studies so that students can understand and appreciate science as a manifestation of God's will.

Teaching Approaches in the Islamic Education Curriculum

Teaching approaches in the Islamic education curriculum vary, but generally emphasize methods that support the development of a deep understanding of religious teachings and their practical application. These approaches include direct instruction, group discussions, memorization, and problem-solving. These methods aim not only to transfer knowledge but also to internalize religious and moral values (Al-Ghazali, 2008).

According to Al-Syaibany, Islamic education should combine traditional educational methods with modern educational techniques, such as the use of information and communication technology (ICT) in teaching. This is important to ensure that students not only understand religious teachings theoretically but also can apply them in the context of modern life.

Challenges and Issues in Developing the Islamic Education Curriculum

One of the main challenges in developing the Islamic education curriculum is ensuring the relevance of the material to the needs of the times. Often, there is an imbalance between the emphasis on religious studies and general knowledge, which can result in students being unprepared to face modern challenges. Hasan Langgulung highlights the importance of adapting the curriculum to developments in science and technology without neglecting the fundamental principles of religion.

Another issue is the differing interpretations of religious teachings, which can influence curriculum development. In a pluralistic society, differences in views among various Islamic schools of thought and traditions can be obstacles in designing an inclusive curriculum. Therefore, it is important to develop a flexible and adaptive curriculum that can encompass diverse perspectives within Islam (Mufid, 2013).

Implications of the Islamic Education Curriculum in Character Formation

The Islamic education curriculum plays a significant role in the character formation of students. With an emphasis on morality and ethics, this curriculum seeks to shape students into individuals who are not only academically intelligent but also morally upright. Research by Supriatna shows that students who receive education based on the Islamic curriculum tend to have a better understanding of morality and ethics and display more positive attitudes towards life.

Additionally, the Islamic education curriculum also aims to develop social

skills and community involvement. The education provided focuses not only on the individual but also on the broader community. In this regard, the curriculum functions as a tool to shape a generation that is socially responsible and contributes positively to society (Aminuddin, 2010).

The Islamic education curriculum is a vital instrument in shaping students' character and knowledge. By integrating religious and general knowledge, this curriculum aims to create insan kamil who can actively participate in modern society. Despite facing various challenges, including relevance and differences in religious interpretation, the Islamic education curriculum remains relevant and necessary in shaping a generation that is faithful, knowledgeable, and morally upright. Therefore, the development and implementation of an effective and adaptive curriculum are essential to achieving this goal.

3. Models of Integration Between Science and Religion

Research findings indicate that several integration models are applied in secondary education within the context of Islamic education. These models reflect various approaches used by educational institutions to combine religious and scientific aspects in the curriculum.

The Inclusive Model in the Integration of Science and Religion

The inclusive model is an approach that integrates science and religion into a single curriculum without separating the two domains. In this model, subjects are designed so that religious principles can be found in a scientific context, and vice versa. This means that the teaching of science can include spiritual and moral values, while religious instruction can integrate scientific understanding. This approach seeks to demonstrate that science and religion are not mutually exclusive but rather complementary in providing a more comprehensive understanding of the world (Maksudin, 2013).

The implementation of the inclusive model in secondary school curricula can be achieved by incorporating material that emphasizes the interconnection between science and religion. For example, in science lessons, teachers can discuss the wonders of nature and scientific phenomena as evidence of God's greatness. Discussions about the creation of the universe, the complexity of living beings, and the beauty of natural laws can be used to illustrate how science and faith can coexist. Conversely, in religious lessons, students can be encouraged to understand

scientific concepts mentioned in religious texts. For instance, in Islam, the Qur'an includes many verses that refer to the universe and natural phenomena, which can serve as a starting point for scientific discussion (Fazlur Rahman, 1982).

One of the main advantages of the inclusive model is its ability to shape students with a holistic understanding of the world, where science and religion are not seen as separate entities. This model can also help reduce conflicts between scientific knowledge and religious beliefs, which often become a source of tension in education. Additionally, this approach can encourage students to develop critical and reflective thinking, as they are invited to view issues from multiple perspectives. However, the inclusive model also faces several challenges. One of them is the need for teachers who are skilled and knowledgeable in both fields, science and religion. Teachers must be able to integrate the content in a meaningful and relevant way for students. Furthermore, differences in religious interpretations can also be a barrier, as different groups or individuals may have varying views on how religion should be understood and taught (Guessoum, 2020).

The inclusive model offers a promising approach to integrating science and religion in Islamic education. By teaching these two domains together, students can develop a more comprehensive understanding of the world and their place within it. Despite facing challenges in its implementation, this model has the potential to change students' perspectives on science and religion, as well as prepare them to become critical, reflective, and tolerant individuals (Supriatna, 2017).

The Dialogical Model in the Integration of Science and Religion

The dialogical model emphasizes the idea that science and religion should not be seen as two conflicting entities but as two sources of truth that can complement each other. This approach encourages dynamic interaction between the two fields, where both engage in deep and critical conversations to explore a richer and more comprehensive understanding of the world and human existence (Guessoum, 2020).

Key characteristics of this model include. Balanced and Open Dialogue: In this model, dialogue between science and religion is conducted with openness and mutual respect. No perspective dominates, and both are viewed as having significant contributions to understanding the truth (Smith, 2021). Acceptance of the Multidimensionality of Truth: Truth is seen as a complex and multidimensional

entity. Science provides empirical and rational explanations of natural phenomena, while religion offers deeper meanings and purposes related to human existence and morality (Gould, 1997). Critical Questions and Reflection, Teachers and students are encouraged to pose critical questions that delve deeper into the relationship between science and religion. These questions focus not only on technical or factual aspects but also on the ethical and philosophical implications of the knowledge acquired (Guessoum, 2020).

Mutual Enrichment, Through dialogue, science and religion can inform and enrich each other. For example, scientific knowledge about the universe can deepen religious appreciation of creation, while religious views on human values can influence how science is used for ethical and moral purposes (Barbour, 1997).

In the educational context, the dialogical model is implemented by encouraging discussions that involve both scientific and religious topics. Teachers play a crucial role in facilitating this dialogue by providing space for students to explore questions that may not have clear or easy answers (Lovat, 2007; Guessoum, 2020). For example, in teaching the theory of evolution, teachers can engage students in a dialogue about how this scientific view can be understood in the context of their religious beliefs (Evans, 2008). Although the dialogical model offers a promising approach, some challenges need to be addressed. One of these is the potential for conflict if the dialogue is not facilitated well, especially if one perspective attempts to dominate the other (Smith, 2021). Additionally, fundamental differences in methods and objectives between science and religion can also be a barrier to achieving harmonious understanding (Haught, 2010).

The dialogical model in the integration of science and religion emphasizes the importance of respectful and open dialogue to understand truth more comprehensively (Guessoum, 2020). By acknowledging the contributions of each field, this model opens up opportunities for the development of more profound and integrative thinking, which can provide new insights and creative solutions to the complex problems faced by humanity (Sharan, 2019). The dialogical model is not a static approach but a process that continuously evolves alongside scientific progress and the development of religious thought. Therefore, applying this model in education requires a commitment to continuous learning and adapting to the dynamic changes occurring in both fields (Guessoum, 2020).

The Selective Exclusive Model in the Integration of Science and Religion

Among the various models of integrating science and religion, the selective exclusive model offers a unique approach to addressing the relationship between the two fields. This model recognizes the fundamental differences between science and religion while still considering both as contextually relevant and potentially complementary.

The selective exclusive model is an approach in which science and religion are taught separately in educational institutions, but there remains recognition of their relevance to each other. Religious education focuses on theological, spiritual, and ethical aspects, while science education focuses on empirical and rational knowledge (Langgulung, 1998). However, in some cases, efforts are made to create cross-references that allow the two fields to interact minimally but significantly.

The fundamental principles of the selective exclusive model include the following. Separate Instruction, In this model, science and religion are treated as two separate domains within the curriculum structure. Science and religion lessons are delivered independently, with different methodologies and objectives. Science uses empirical methods and experiments to understand the natural world, while religion uses theological and spiritual approaches to explore meaning, purpose, and morality (Langgulung, 1998). Contextual Relevance, Although taught separately, science and religion are not viewed as opposing entities. Instead, both are seen as having contextual relevance that can provide different but complementary insights into reality. For example, science can explain natural processes, while religion can provide an understanding of the purpose and values behind those processes (Nasr, 2006). Cross-Referencing, The selective exclusive model allows for cross-referencing between science and religion where relevant. For instance, in discussions about the origin of the universe, science lessons may discuss the Big Bang theory, while religious lessons may refer to the concept of creation from a theological perspective. These cross-references are done carefully and selectively to ensure that each discipline remains true to its methodology and objectives (Langgulung, 1998).

Applying the selective exclusive model in education requires careful planning and sensitivity to the methodological differences between science and religion. Institutions implementing this model often have a clearly structured curriculum,

where each discipline is given the appropriate space to develop without excessive overlap (Kalkan, 2013). Teachers in this model are encouraged to stay within the boundaries of their respective disciplines but also to acknowledge and appreciate the contributions of the other field to a more comprehensive understanding.

The selective exclusive model faces several challenges, particularly regarding how to address the potential fragmentation of knowledge. Since science and religion are taught separately, there is a risk that students may develop a fragmented and even contradictory understanding of the world (Al-Attas, 1995). Additionally, minimal cross-referencing may make it difficult for students to see the connection between empirical knowledge and spiritual values.

The selective exclusive model in the integration of science and religion offers an approach that emphasizes the importance of methodological separation while still acknowledging the contextual relevance between the two fields. This model provides flexibility for educational institutions to develop curricula that respect the uniqueness of science and religion while opening the door for limited dialogue between them (Langgulung, 1998). Although not without its weaknesses, for many institutions, this approach provides the necessary balance between respecting scientific and spiritual traditions while allowing students to explore and understand each field's contribution to their understanding of the world and human existence.

4. Challenges in Implementing Models of Science and Religion Integration

This study identifies various challenges in implementing models of integrating science and religion, which include pedagogical, philosophical, and institutional aspects. One of the main challenges is the lack of teachers who are competent in both fields—science and religion. Teachers without a strong background in both areas may struggle to effectively integrate these perspectives in teaching (Purwati, 2018).

Another challenge is the differing interpretations of religious teachings, which can influence how religion is taught in schools. Some scholars or institutions may have varying views on how religion should be integrated with science, leading to inconsistencies in curriculum implementation (Mufid, 2013). Additionally, resistance from society and institutions poses another challenge. Some schools face opposition from communities or institutions that are skeptical of the idea of integration. Some may argue that science and religion should be kept separate to

preserve the purity of each domain, which can hinder the implementation of integration models (Langgulung, 1998).

Integrating science and religion within the Islamic education curriculum has several positive impacts on students. This study finds that effective integration models can enhance students' understanding and appreciation of both fields. Students exposed to an integrated curriculum show a better understanding of how religious teachings relate to scientific knowledge. They are able to see the connections between scientific phenomena and religious teachings, helping them develop a more holistic worldview (Supardi, 2017).

A curriculum that integrates religious values with scientific knowledge can also contribute to the character and moral development of students. By understanding that science and religion complement each other, students can develop a more positive outlook on life, demonstrate greater tolerance, and maintain strong ethics in their interactions with others (Al-Attas, 1980). The study also finds that this integration can increase students' motivation to learn. Students who perceive a connection between what they learn in school and their religious beliefs tend to be more motivated to study and engage in the learning process (Purwati et al., 2018).

Despite the challenges in implementation, effective integration models can have a significant positive impact on the intellectual and moral development of students. By combining these aspects, schools can help students develop a more holistic understanding of the world and their place within it. The study also emphasizes the need for greater support in teacher training and the development of flexible curricula to address the existing challenges.

5. Discussion

The findings of this study indicate that several integration models, such as inclusive, dialogical, and selective exclusive models, have been implemented in secondary schools with varying degrees of success. The inclusive model, which merges science and religion into a single curriculum without clear separation, aligns with Nasr's view that all knowledge is part of the same pursuit of truth. However, the challenge in this model lies in finding the right balance between religious and scientific content, often creating tension between the two domains (Mufid, 2013).

The dialogical model, which encourages interaction between scientific and

religious perspectives, reflects Fazlur Rahman's idea of the need for open and critical dialogue between these two fields. This study found that this model can enhance students' understanding of how science and religion can enrich each other. However, it also notes that implementing the dialogical model requires well-trained teachers with deep knowledge of both fields, which remains a significant challenge (Purwati, 2018).

The selective exclusive model, where science and religion are taught separately but remain relevant to each other, seems to reflect the views of some scholars who see the two domains as complementary but distinct. This approach is supported by groups concerned that too close a mixture could compromise the essence of each field. However, this study shows that this model tends to be less effective in helping students understand the relationship between religion and science holistically (Langgulung, 1998).

This research identifies several challenges in implementing integration models, including a lack of trained teachers, differences in religious interpretation, and resistance from the community. These challenges echo findings from previous studies, such as those by Hasan Langgulung, who emphasized the importance of adapting the curriculum to contemporary developments while adhering to fundamental religious principles. The lack of teachers proficient in both fields is a major obstacle to ensuring effective integration, consistent with Supriatna's findings that teacher qualifications are a key factor in the success of an integrated curriculum.

Differences in the interpretation of religious teachings also present significant challenges. As Al-Ghazali suggested, differing interpretations can influence how religion is taught, particularly in the context of sectarian pluralism. This study highlights the need for an inclusive and adaptive approach to address these differences, allowing for various perspectives to be accommodated within the curriculum.

The positive impacts of integrating science and religion on students include increased understanding of both religion and science, character development, and higher learning motivation. These findings align with Al-Attas' theory on the importance of Islamic education in shaping a balanced character between spirituality and intellectuality. The study found that students exposed to an

integrated curriculum showed a deeper understanding of how science can enrich their religious beliefs and vice versa. This is consistent with research by Suprihatiningrum, which showed that this integration can help students develop critical and reflective thinking skills.

However, the study also notes that these positive impacts are highly dependent on the quality of curriculum implementation. Ineffective teaching or unbalanced content between religious and scientific aspects can reduce the expected benefits. In this context, it is important to focus on teacher training and professional development, as well as flexible and responsive curriculum design to meet the needs of students and society.

The discussion of these research findings shows that integrating science and religion into the Islamic education curriculum in secondary schools has great potential to improve the quality of education and student character formation. However, effective implementation requires careful planning, adequate teacher training, and thoughtful handling of differences in religious interpretation.

This research strengthens the argument that Islamic education aims not only to transmit religious knowledge but also to develop a holistic understanding of the world, encompassing both scientific and spiritual dimensions. Thus, this integration is not just about harmonizing two fields of knowledge, but also about creating a more inclusive and comprehensive educational approach.

Conclusion

Based on the literature analysis and research findings, it can be concluded that several integration models, such as the inclusive, dialogical, and selective exclusive models, have been successfully implemented. Each model has its own strengths and challenges in harmoniously combining scientific knowledge with religious values in the learning process.

This study reveals that the dialogical model, which involves critical interaction between scientific and religious perspectives, can enhance students' understanding of the connections between science and religious teachings. However, the main challenges in implementing this model are the lack of teachers with competencies in both fields and the differences in the interpretation of religious teachings that can affect coherence in instruction.

To achieve effective integration, deeper teacher training and the

development of a flexible curriculum are needed, which can accommodate various perspectives within Islam. Moreover, it is crucial for educational institutions to continuously encourage open dialogue between science and religion so that students can develop a holistic and tolerant understanding of different viewpoints. Overall, this study emphasizes the importance of an Islamic educational approach that not only transmits religious knowledge but also enriches students' understanding of the world through the integration of scientific knowledge. In this way, it is hoped that Islamic education can shape a generation that is not only faithful and knowledgeable but also capable of making positive contributions in a complex and diverse global society.

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