

SOCIAL SCIENCE AND EDUCATION | RESEARCH ARTICLE

The Implications of Islamic Thought on Life for Biology Learning Design in Madrasah Aliyah

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Islamic thought views life as a trust from Allah, containing the values of monotheism, ethics, and human responsibility as caliphs on earth. This perspective has important implications for learning Biology in Madrasah Aliyah, which substantially studies the phenomena of life. This study aims to analyze the implications of Islamic thought on life for the design of biology learning in Madrasah Aliyah. This study used a descriptive qualitative approach with a field study type. The research subjects included biology teachers, Islamic Religious Education teachers, and 11th-grade students. Data were collected through classroom observations, in-depth interviews, and documentation studies, and then analyzed using Miles and Huberman's interactive model. The research results indicate that teachers have a normative understanding of life from an Islamic perspective, but this understanding has not yet been fully internalized systematically in the design of biology learning. The integration of Islamic values is still partial and has not been explicitly formulated in the objectives, methods, and evaluation of learning processes. This study concludes that Islamic thought on life needs to be used as a philosophical and pedagogical foundation in the development of biology learning designs so that learning is not only oriented toward mastering scientific concepts, but also toward fostering students' spiritual awareness and life ethics.

Keywords: Islamic Thought, Life, Biology Learning.

I. Introduction

Biology, as a science subject, plays a strategic role in shaping students' understanding of life, living beings, and the order of nature. At the Madrasah Aliyah level, the teaching of biology is not only aimed at developing students' cognitive competencies but is also expected to foster awareness of the meaning of life, human responsibility towards nature, and spiritual values that are in accordance with Islamic teachings. (Fajar Mahfiroh & Muhammad Munadi, 2021). From an Islamic perspective, life is understood as a trust from Allah SWT that contains purpose, meaning, and transcendent values. Life is not seen merely as a biological phenomenon but as part of Allah's creation system that is subject to divine laws (sunnatullah). The Qur'an explicitly explains the process of creating living beings, the orderliness of nature, and the signs of Allah's

power in life, indicating that the study of life is essentially a means to strengthen faith and human awareness of their responsibilities as servants and caliphs on earth (Hermawan & Ahmad, 2020). Thus, life in Islam has physical, spiritual, and moral dimensions that are interconnected and cannot be separated from one another (Gazhali, 2019).

Islamic thought on life also emphasizes that science and religion are not two opposing entities but rather two sources of knowledge that complement each other in understanding the reality of God's creation. (Syamsuddin, 2020) Science serves as an instrument to study the mechanisms and laws of nature empirically, while religion provides a framework of values, purpose, and ethics in the utilization of that knowledge. (Murdani, 2020) In this context, scientific study of life, including in the learning of Biology, needs to be placed within a framework of tawhid that integrates scientific knowledge with Islamic values. This integrative approach is expected to shape students' understanding holistically, not only intellectually but also spiritually aware and morally responsible towards life and the environment (Anna, 2018). (Ainul Yaqin, 2020) However, in the practice of teaching Biology in Madrasah Aliyah, the integration between Biology concepts and Islamic thought about life has not yet been fully realized in a systematic way. Biology teaching tends to be oriented towards mastering scientific concepts and achieving curriculum targets, while the philosophical, ethical, and spiritual dimensions of life have not been optimally integrated into the learning design.

Based on the initial observations conducted by the researcher on the biology learning process in several Islamic senior high schools, it was found that biology teachers generally deliver the material conceptually and factually, according to the textbook. The integration of Islamic values often appears incidentally, for example, by mentioning Quranic verses without delving into their meaning or their connection to the biology concepts being studied. Istikomah (2017) found that students understood the concept of life in biology only in terms of biological processes such as growth, metabolism, and reproduction, without relating it to the meaning of life from an Islamic perspective. This indicates a gap between the objectives of Islamic-oriented madrasa education and the practice of teaching biology, which remains predominantly secular and reductionistic. However, the results of a preliminary review of learning documents, such as the syllabus and lesson plans for Madrasah Aliyah Biology, indicate that the integration of Islamic thought about life has not been explicitly formulated in the learning design. The learning objectives, material, and activities focus more on cognitive aspects, while the development of spiritual awareness and Islamic values has not been structured as part of the biology learning design. This condition indicates the need for a biology learning design that accommodates the demands of the national curriculum and reflects Islamic thought on life conceptually and pedagogically. An integrative learning design is expected to help students understand biology as a science that is inseparable from values, goals, and moral responsibilities as servants and stewards of the earth (Yulaikah et al., 2016).

Several previous studies have shown that integrating Islamic values into science learning can enhance the meaning of learning and shape students' religious character. However, most of these studies have focused on value integration in general and have not specifically examined the implications of Islamic thought on life for the systematic design of biology learning (Ayunda Siregar & Rahadian, 2025). Thus, there is a research gap regarding how Islamic thought about life can be used as a conceptual basis for designing biology learning in Madrasah Aliyah. This study is important for addressing the challenges of madrasah education in developing science learning that is holistic, integrative, and of transcendental value. Therefore, this research aims to examine the implications of Islamic thought about life on the design of Biology learning in Madrasah Aliyah. This study is expected to provide theoretical contributions to the development of the paradigm of integration between Islam and science, as well as practical contributions in formulating biology learning designs that are aligned with Islamic values and the educational goals of madrasahs.

II. Literature Review and Hypothesis Development

2.1. Islamic Thought on Life

In Islam, life is understood as part of Allah SWT's creation system, full of purpose and value. The Qur'an describes life as a sign of Allah's greatness (ayat kauniyah), inviting humans to think, reflect, and learn. The concept of life in Islam does not stop at the biological aspect but encompasses spiritual, moral, and social dimensions integrated within the framework of monotheism. This understanding places humans as both biological and spiritual beings with ethical responsibilities toward others and the environment (Termizi & Supratama, 2025). Islamic thinkers such as Al-Ghazali and Ibn Khaldun emphasized that knowledge, including the science of life, should be directed towards the recognition of the Creator and the welfare of humanity (Agustini & Sofa, 2024). Life is viewed as a trust that must be safeguarded and managed wisely, not exploited destructively. This view asserts that studying life always carries moral and spiritual implications. In the context of education, Islamic thought on life provides a philosophical foundation for the notion that science learning should not be value-neutral. Science, including biology, must be understood as a means of fostering awareness of divinity, ecological responsibility, and life ethics. Therefore, Islamic thought on life is relevant to be used as a conceptual basis in designing biology learning in madrasahs (Sari et al., 2025).

2.2. Biology as the Science of Life in the Perspective of Education

Biology is a branch of science that specifically studies life and living organisms, including their structure, function, growth, evolution, and interactions with the environment. In formal education, biology plays an important role in building students' scientific understanding of life and fostering scientific attitudes such as curiosity, critical thinking, and environmental awareness. However, Biology learning is often presented in a reductionist manner, limited to mechanistic and empirical aspects. Several studies in science education indicate that biology learning that only emphasizes the cognitive aspect has the potential to overlook the dimensions of values and the meaning of life. Consequently, students understand life merely as an object of scientific study, without any connection to moral and spiritual values. This presents a particular challenge for madrasahs, which institutionally have a mandate to integrate scientific knowledge and Islamic values. (Rusmalinda & Hamatun, 2025) Therefore, Biology learning in Madrasah Aliyah needs to be designed with a more holistic approach, which not only emphasizes the mastery of scientific concepts but also relates them to the meaning of life from an Islamic perspective. This approach aligns with the goals of Islamic education, which integrates intellectual, spiritual, and moral aspects into the learning process.

2.3. Integration of Islam and Science in Learning

The integration of Islam and science is an educational paradigm that rejects the dichotomy between religious and general knowledge. This paradigm emphasizes that all knowledge originates from Allah SWT and aims to promote the welfare of humanity. In the context of learning, Islam and science are integrated by linking scientific concepts with the values of Tawhid, Islamic ethics, and universal verses. Previous research has shown that integrating Islamic values into science learning can enhance the meaningfulness of learning and shape students' religious character. Effective integration does not merely add Qur'anic verses as reinforcement but involves mapping values, learning objectives, and learning activities that reflect the unity between science and Islam. Thus, students not only understand how a phenomenon occurs, but also why the phenomenon is important from a faith perspective. (Awardin et al., 2024) However, some studies have revealed that the integration of Islam and science in madrasahs is still sporadic and not yet structured in the learning design. This indicates the need for a more in-depth study on how Islamic thought about life can be

operationalized pedagogically in biology learning. Learning design is a systematic plan that includes learning objectives, materials, methods, media, and evaluation. In the context of Madrasah Aliyah, an ideal biology learning design should not only refer to national curriculum standards but also reflect the characteristics and goals of Islamic education. A good learning design can integrate academic competence with the formation of attitudes and Islamic values (Setiawan, 2019a).

Previous research results indicate that biology learning design in madrasahs is still dominated by conventional approaches and is oriented towards completing the material. The integration of Islamic values is often not explicitly formulated in learning objectives or activities. This causes biology learning to not fully reflect the identity of madrasahs as Islamic educational institutions. (Setiawan, 2019b) Therefore, a study on the implications of Islamic thought on life for Biology learning design becomes important in formulating a more integrative learning model. This study is expected to contribute to the development of biology learning designs that are not only academically scientific but also spiritually and ethically meaningful for Madrasah Aliyah students.

III. Research Method

This study used a descriptive qualitative approach with a type of field research (field research) (Sugiyono, 2017). The qualitative approach was chosen because this study aims to gain a deep understanding of the implications of Islamic thought on life for biology learning design, particularly in the context of meaning, perception, and learning practices in Madrasah Aliyah. This study used a descriptive qualitative approach with a type of field research (field research) (Sugiyono, 2017). The qualitative approach was chosen because this study aims to gain a deep understanding of the implications of Islamic thought on life for Biology learning design, particularly in the context of meaning, perception, and learning practices in Madrasah Aliyah. Data collection techniques were conducted through classroom observations, in-depth interviews, and documentation studies. Observation was used to observe the implementation of biology learning in the classroom, interviews to explore the views and experiences of research subjects, and documentation to analyze learning tools such as syllabi, lesson plans, and teaching materials. Data validity was maintained through source and technique triangulations. Data analysis was carried out using the interactive model of Miles and Huberman (Miles, M and Huberman, 1994), which includes data reduction, data display, and conclusion drawing. The analysis process was conducted continuously from data collection until a comprehensive picture was obtained regarding the implications of Islamic thought on life for the design of biology learning in Madrasah Aliyah.

IV. Results and Discussion

4.1. Analysis Result

The interview results show that biology and Islamic Religious Education teachers generally understand life as a creation of Allah SWT, which has order and a specific purpose. Life is seen not only as an object of scientific study but also as a sign of Allah's power, containing the values of monotheism and trustworthiness. This understanding serves as a normative basis for teachers to interpret biology material, particularly on topics related to living beings, ecosystems, and the environment. However, this depth of understanding remains conceptual and has not been fully internalized in pedagogical practice. Some teachers admitted that their understanding of the concept of life in Islam has not been systematically translated into the objectives and activities of biology learning. This indicates a gap between the philosophical understanding and classroom implementation of learning. Based on the analysis of learning documents, the biology learning design used by teachers generally meets the demands of the national curriculum, both in

terms of basic competencies, indicators, and assessments. However, the integration of Islamic values into learning design remains implicit and unstructured. Islamic values were not explicitly formulated in the learning objectives or in the steps of learning activities.

The results indicate that biology learning is more focused on the mastery of concepts and completion of material. The integration of Islamic perspectives on life is usually conducted verbally through brief explanations or moral reinforcement without being supported by specially designed learning activities. This shows that the design of biology learning does not yet fully reflect the characteristics of madrasah as an Islamic educational institution. The research findings revealed that the integration of Islamic thought about life into biology learning was carried out in several forms, such as relating the material to verses of the Qur'an, instilling values of environmental care, and emphasizing human responsibility as caliphs on earth. This integration most often appears in topics related to ecosystems, biodiversity, and environmental conservation. Nevertheless, this integration is still partial and not yet supported by a comprehensive learning design framework. Teachers have not consistently linked biological concepts to the theological and ethical dimensions of life at every stage of learning. This indicates the need to develop a biology learning design that consciously and intentionally integrates Islamic thought about life.

The results of interviews with students show that they feel that biology learning becomes more meaningful when connected with Islamic values. The students stated that relating biology material to life concepts in Islam helps them understand the purpose of studying biology and fosters a sense of responsibility towards the environment. However, students also expressed that the integration of Islamic values in biology learning was inconsistent in each session. This has led to the understanding that the concept of life is not formed deeply and sustainably. This finding reinforces the results of observations and document analyses, which show that the integration of Islamic thought on life still requires strengthening in the learning design. Based on the research findings, the implications of Islamic thought on life for the design of biology learning can be seen in the need to formulate learning objectives that integrate cognitive, affective, and spiritual aspects. The developed learning design should explicitly include Islamic values relevant to the concept of life, as well as relate them to the learning activities and evaluation. The results also indicate that biology learning designs that integrate Islamic thinking about life have the potential to enhance students' meaning-making in learning. Therefore, Biology learning designs in Madrasah Aliyah need to be developed systematically so that learning is not only oriented towards concept mastery, but also towards the formation of spiritual awareness and life ethics.

4.2. Discussion

Research findings indicate that Biology and Islamic Religious Education teachers already have a normative understanding of life as a creation of Allah SWT, filled with purpose and values. This understanding aligns with Al-Ghazali's view, who emphasized that knowledge, including science, should lead humans to recognize the greatness of Allah and their moral responsibility as His servants. However, the research also revealed that this understanding has not yet been fully internalized in the practice of biology lesson design. The gap between philosophical understanding and pedagogical implementation found in this study reinforces previous research findings, suggesting that the integration of Islam and science in madrasahs is often conceptual and not yet systematic. For example, Purwati et al. (2018) showed that science teachers in madrasahs tend to understand the importance of integrating Islamic values but experience difficulties in translating them into concrete lesson plans and teaching strategies. This indicates the need for a more operational and instructional design framework.

The results of the analysis of learning documents show that the design of biology learning is still dominated by a cognitive orientation and the demands of the national curriculum. This finding aligns with Tyler's view, which emphasizes that learning objectives are often formulated technically and measurably but

pay less attention to value dimensions. In the context of madrasahs, this condition becomes problematic because, ideally, learning should integrate mastery of knowledge with the formation of religious attitudes and life ethics. The integration of Islamic thought about life in biology learning is still limited to linking Qur'anic verses or verbally reinforcing moral values. This pattern of integration aligns with previous research findings, which state that the integration of Islam and science is often additive, not integrative. According to Hidayat (2015), additive integration only adds religious elements without changing the learning structure; therefore, its impact on students' understanding of learning is relatively limited.

From the perspective of Islamic education theory, ideal learning should be holistic and touch on the cognitive, affective, and spiritual aspects in a balanced manner. The tauhidic worldview concept places all life phenomena in a meaningful unity within the framework of divinity. The findings of this study indicate that biology learning in Madrasah Aliyah has not fully reflected this tauhidic worldview, as life values have not been explicitly integrated into the learning objectives, methods, and assessments. Findings related to students' perceptions indicate that the integration of Islamic values in biology learning enhances the meaningfulness of learning and ethical awareness of life. These results support Ausubel's meaningful learning theory, which emphasizes the importance of the connection between new knowledge and the cognitive structures and values already held by students. When biological concepts are associated with Islamic values, students understand the concepts scientifically and existentially. However, the inconsistency in integrating Islamic values into each learning session has resulted in the meaning not developing optimally. This finding aligns with previous research, which asserts that the integration of values requires consistency and systematic planning to impact character formation. Without a structured learning design, the integration of values tends to be incidental and dependent on teachers' initiative.

The implications of Islamic thought on life for the design of biology learning, as found in this study, require the formulation of learning objectives that are not only oriented towards academic competence, but also towards spiritual and ethical awareness of life. This aligns with Bloom's view, which places the affective domain as an important part of educational goals, especially in the context of value-based education. Thus, this discussion emphasizes that Islamic thought on life is highly relevant to the development of biology learning design in Madrasah Aliyah. This study reinforces previous findings while also highlighting a practical gap, namely, the need for a biology learning design model that systematically integrates the concept of life from an Islamic perspective. This integration is expected to make biology learning not only scientific and contextual but also meaningful and transformative for students.

V. Conclusion

This study concludes that Islamic thought on life has strong relevance to the design of biology learning in Madrasah Aliyah. Teachers have essentially understood life as Allah's creation, filled with the values of monotheism, trustworthiness, and ecological responsibility. However, this understanding has not yet been fully internalized systematically in the design of biology learning. The integration of Islamic values in learning is still partial, implicit, and has not been explicitly formulated in the objectives, learning steps, and evaluation. The main implication of this research finding is that the design of Biology learning in Madrasah Aliyah needs to be developed in a more planned and integrative manner, using Islamic thought about life as the philosophical and pedagogical foundation. A learning design that balances cognitive, affective, and spiritual aspects has the potential to enhance students' understanding of learning and foster ethical awareness towards life and the environment. Thus, Biology learning serves not only as a means of mastering scientific concepts but also as a vehicle for character building and fostering students' religious awareness.

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