



Literature Study of Islamic Values Integration in Biology Subject in SMA/MA (Senior High Schools/Islamic Senior High School)

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ABSTRACT

Because science, including biology, has a tight relationship with Islamic knowledge, learning biology in schools should not be viewed as a monodisciplinary that stands alone but rather as having an axiological value system tied to other disciplines. This sort of research is literature research that refers to a previously conducted issue and tries to identify the extent to which the integration process of Islamic principles in Biology learning in SMA/MA (Senior High Schools/Islamic Senior High Schools) has been carried out. The data was collected through secondary sources such as credible national and international journal publications published in the Google Scholar database. The findings of this study indicate that the application of the integration of Islamic values in biology learning in SMA/MA can be made through several models, including (1) the Al-Qur'an integration model as a source of inspiration, namely placing the Qur'an at the beginning of learning as an umbrella of knowledge; and (2) the Qur'an integration model as a source of confirmation, namely scientific findings are to clarify what has been stated by the Qur'an.

Studi Literatur Integrasi Nilai Islam dalam Mata Pelajaran Biologi di SMA/MA

ABSTRAK: Ilmu sains termasuk Biologi mempunyai hubungan yang erat dengan pengetahuan Islam sehingga pembelajaran Biologi di sekolah semestinya tidak hanya dipandang sebagai monodisiplin ilmu yang berdiri sendiri, tetapi secara aksiologis memiliki sistem nilai yang berkaitan dengan disiplin ilmu lainnya. Jenis penelitian ini merupakan penelitian kepustakaan (literature research) yang mengacu pada suatu topik yang sebelumnya pernah dilakukan yang bertujuan untuk mengetahui sejauh mana proses integrasi nilai-nilai Islam yang telah dilakukan dalam pembelajaran Biologi di SMA/MA. Data yang diperoleh berupa data sekunder yang bersumber pada artikel jurnal nasional maupun internasional yang diterbitkan dalam database Google Scholar. Hasil penelitian ini menunjukkan integrasi nilai-nilai Islam dalam pembelajaran Biologi di SMA/MA, diantaranya adalah (1) model integrasi Al-Qur'an sebagai sumber inspirasi, yaitu meletakkan Al-Qur'an pada awal pembelajaran sebagai payung pengetahuan; (2) model integrasi Al-Qur'an sebagai sumber konfirmasi, yaitu temuan dalam sains adalah memperjelas apa yang telah dikemukakan Al-Qur'an.

INTRODUCTION

Education is critical in developing quality human resources to help establish a more evolved nation's civilization (Dirgantoro, 2016; Widiansyah, 2018). Education also plays a part in developing a generation that is not only intellectually clever (Sardiman, 2015) but also has admirable morals and morals because one of the markers of quality human resources may be seen from a religious perspective and a person's decent personality (Mualimin, 2020; Novitasari et al., 2020). In this situation, moral and character development can be accomplished in schools by integrating religious ideals into teaching and learning (Jusuf & Bahuwa, 2020; Suryaningsih, 2018).

True religious values can also be learned through family and community education, but school education also plays a vital part in developing students' excellent character, morals, and ethics (Pranata & Nurhasanah, 2020). Students' moral and character development is critical, given that education is a very essential and valuable national asset or investment (Rony & Jariyah, 2021; Sunarso, 2020). This statement is consistent with the mandate of the National Education System Law Number 20 of 2003, Chapter II Article 3, which states that national education aims to develop students' potential to become human beings who believe and fear God Almighty, have a noble character, are healthy, knowledgeable, capable, creative, independent, and become democratic and responsible citizens (Undang-Undang Republik Indonesia Nomor 20 Tahun 2003 Tentang Sistem Pendidikan Nasional, 2003).

Religious values development in schools should not only focus on Islamic religious education (PAI) subjects but also on many other subjects that can be combined with religious values, one of which is biology (Anggoro et al., 2019; Mahfiroh, 2021). However, current situations indicate that there has not yet been an application of integration between

natural science and religious principles as if they were two independent elements (Amri et al., 2017; Mulyani et al., 2018). Nonetheless, the integration of Islamic values with Biology learning can be implemented in a comprehensive (integral-holistic) learning pattern, limiting this separation by identifying a common ground between the two (Amri et al., 2017). Mahfiroh et al. (2021) state that if science and Islam are always integrated into every scientific subject, a complete comprehension of science would be attained, and a scientific dichotomy will no longer exist.

There are various assumptions that support the distinction between religion and science (Abdullah, 2020; Hidayatullah, 2019), one of which is the philosophy of science, which states that religion begins with belief, whereas general science (science) begins with disbelief (Novtiar & Aripin, 2017; Wedra, 2015). This thought advances that religion and science are distinct sciences (Minarno, 2017). Science, especially biology, on the other hand, has a tight tie with Islamic knowledge. In this instance, biology education in schools should be viewed not just as a mono-discipline that stands alone but also as having an axiological value system that is related to other disciplines (Jamaludin, 2019; Setiaji et al., 2019). Natural events have the meaning as God's verses when the beliefs of Islam, science, and ethics are harmoniously combined, combining the purpose of the universe's formation and the required moral character such as optimizing the use of natural resources and being responsible for natural damage (Golsani, 2004; Hermawati, 2018).

Integrating Islamic values in Biology learning becomes a normative framework for setting educational goals, as revealed by Anshori (2021; Jamaludin, 2019). The objectives of instilling Islamic values are: (1) developing deeper spiritual insights and rational understanding of Islam in the context of life, particularly those related to the verses of *kauniyah* (nature); (2)

equipping students with various natural knowledge abilities; and (3) develop the ability in students to appreciate and justify the comparative superiority of the Islamic knowledge over all other knowledge; (4) improve emotional drive through imaginative experiences so that creative abilities can develop and function to know the right and wrong Islamic norms; and (5) helping growing children to learn to think logically and guiding their thinking processes based on the hypotheses and concepts of natural knowledge required.

Incorporating Islamic principles in educators, particularly in learning science (Biology), is not a rhetorical exercise but rather an important need that must be addressed as part of existing educational guidelines (Ikhwan, 2014). However, school-based learning has been impacted by a strong dualism between religious sciences and general or secular sciences, resulting in a scientific contradiction. According to (Muspiroh, 2016), the general and Islamic education curricula are still separate, resulting in a partial and fragmented learning process between the study of divine revelation and the natural sciences.

Integrating Islamic beliefs into learning science (Biology) helps boost students' abilities in all areas, including affective, psychomotor, and cognitive capacities (Ihsani et al., 2020; Muspiroh, 2016b). When this integration is used in learning, it produces holistic effects in terms of student learning. This will undoubtedly affect education, as the cognitive domain frequently becomes quite dominating and even becomes the primary aim of learning Biology (Rijal & Bachtiar, 2015). As a result, it is critical to incorporate Islamic principles into the Biology curriculum through models, methods, and learning approaches so that students become persons who believe in and fear God, as stipulated by national education goals (Puspita et al., 2014).

Several prior studies have looked into incorporating Islamic beliefs into secondary school curricula. First, Hidayat (2021)

conducted research titled *Integration of Islamic Values in Education: Integrative Learning at Al-Muttaqin Islamic High School, Tasikmalaya*, intending to describe the values of Islamic teachings that are integrated into the educational application. The findings of this study reveal that instilling Islamic values at Al Muttaqin Tasikmalaya Islamic High School is not only the responsibility of religious science instructors but also of teachers in all courses so that Islamic values relevant to submitted content are conveyed in each topic. Second, Shofa et al. (2020) conducted research titled *Al-Quran Integrated Science Learning and Islamic Boarding School Values*, aiming to design and implement science learning integrated with the Al-Quran and Islamic boarding school values. According to the findings of this study, all KI and KD in science disciplines have the potential to be combined with Al-Qur'an and Islamic boarding school ideals, allowing them to serve as a starting foundation for the Islamization of science through education.

Third, Muhlisin & Syaifuddin (2020) researched *The Implementation of an Integrated Islamic Education Model at MAN Insan Cendekia Pekalongan* to describe the implementation of learning based on the integration of Islamic studies, science, and technology. The study's findings indicate that the integration in learning science is an instrumentalist model, which implies that science material is regarded as a neutral field of knowledge that anybody, including the Islamic approach, can study. As a result, the integration of Islamic studies, science, and technology in the learning process occurs in an interdisciplinary dialogical manner using the Instrumentalist Justification Integration (IJI) model, with the teacher attempting to reconcile religious material with science and technology in practice.

Since the establishment of the 2013 Curriculum, efforts to integrate character qualities into all courses, including science, have been strengthened. Core Competency

1, spiritual competence, demonstrates a desire to incorporate religion (spiritual) into every class instruction. This demonstrates that integrating Islamic religious values in Biology learning is not a new phenomenon in the world of education. However, there is still little research investigating the application of Islamic values in Biology topics in schools in general. To remedy this gap, this study aims to investigate the extent to which Islamic values have been integrated into the Biology curriculum in SMA/MA (Senior high School/Islamic Senior High School).

METHOD

This research is a form of literature review that pertains to a previously conducted topic. This study was carried out by examining journal publications on integrating Islamic principles in Biology disciplines at SMA/MA that have been approved nationally and internationally. The Narrative Literature Review (NLR) approach is used in this literature study research, which is a review method that identifies, analyzes, and examines previously published literature to gain an overview of a topic (**Grant & Booth, 2009**). The data used in this study is secondary data acquired from academic papers published in the Google Scholar database. Due to the authors' inability to conduct research directly in the field due to limited circumstances, conditions, and time, research data was collected as article reviews.

RESULTS AND DISCUSSION

Integration of Islamic values in learning, particularly in Biology subjects, has been widely implemented, as evidenced by several studies conducted by researchers or educational practitioners who incorporate Islamic values or teachings into subjects and create media or teaching materials that incorporate Islamic values. Table 1 lists several previous articles that the author has reviewed.

Table 1. The Literature Review of the Previous Studies

No.	Article Code	Title	Year
1.	A1	Integration of Islamic Values in Biology Learning at Al Ulum Integrated Islamic High School, Medan	2017
2.	A2	The Effect of Integrating Islamic Values through the Faith and Taqwa Approach (IMTAQ) on Learning Outcomes of the Human Reproductive System at MAN 2 Bandung City	2018
3.	A3	Development of Islamic Values for Students through the Integration of Al-Quran and Hadith in Biology Learning	2020
4.	A4	The Key to Tadabbur and the Integration of the Qur'an in Biology Learning	2020
5.	A5	Science-Islamic Integration and Its Implementation in Biology Learning	2017
6.	A6	The Integration of Religion Values in Biology Subject in Asy-Syafi'iyah Senior High School, Medan	2019
7.	A7	The Integration of Al-Qur'an and Hadith Studies on Biology	2018

Based on the analysis of article data concerning the incorporation of Islamic values in Biology learning, it is known that the incorporation of Islamic values is very relevant when integrated into Biology learning because Biology is one of the natural sciences that explains everything in the universe. In contrast, Al-Qur'an also explained nature and its contents. As a result, delivering the noble principles of the Islamic religion is not only the responsibility of the religious teacher but also of all teachers, even Biology subject educators.

According to data analysis in related articles, it is recognized that incorporating Islamic values into Biology learning can be accomplished using a variety of methods. Data analysis in the A1 study conducted by

Amri et al. (2017) reveals that the incorporation of Islamic values in Biology learning utilizes Amin Abdullah's theory of interconnection integration, where the framework of this interconnection integration does not only pertain to the realm of concepts, so several models are required to realize this concept. The models required are (1) informative, namely a science that requires to be enriched with information owned by other disciplines to gain a broader perspective; (2) confirmative, namely a science that needs to obtain verification from other scientific fields to build a strong theory; and (3) corrective, namely a scientific theory that must be confronted with religious knowledge or vice versa. Furthermore, it was said that incorporating Islamic principles in Biology learning is currently limited to the verseization of existing information employing a verification model using an inductive thinking method.

Incorporating Islamic values into Biology learning has also increased student learning outcomes and attitudes. According to the findings of the analysis by Yusuf et al. (2018) (article A2), incorporating Islamic values through the IMTAQ approach can greatly improve student learning outcomes and processes. The attainment of student learning outcomes has increased, as indicated by an increase in the average grade of the eleventh-grade science students from the pretest (36) and posttest (74) results, with an N-Gain of 0.58 in the medium category. The average posttest score indicates that 80% (20 students) have attained minimum mastery criteria (70), while 4.24% of the data belongs to the high category. This study demonstrates that incorporating Islamic values into Biology learning through faith and piety approaches can result in more meaningful learning (Hidayat, 2021).

The use of Science-Islamic integration in Biology subjects can be accomplished in several steps, with the Al-Qur'an and Hadith serving as a reference for

Islamic ideals. According to the findings of the analysis in article A3 written by (Mualimin, 2020), the integration of the Al-Quran and Hadith in Biology learning can be accomplished in three steps: (1) collecting data and analyzing the verses of the Al-Quran and Hadith that are appropriate with the subject matter or Biology material either implicitly (referring to verses whose texts are following the subject matter of Biology) or explicitly (deepening the understanding of the verses with implied meaning); (2) executing the integration of Qur'anic verses and Hadith discovered in the Biology learning process by selecting the suitable specialized learning model; and (3) evaluating the integration process discovered in the Biology learning process.

Ahmad et al. (2019) provide numerous methods that can be used to incorporate Islamic principles into Biology disciplines in article A4. This study demonstrates that three strategies can be used to integrate Islamic principles into Biology learning. First, the Al-Qur'an as a source of inspiration integration model, which places the Al-Qur'an at the beginning of learning as a framework of knowledge or a source of inspiration for science or the main source of reference, which is then explained by diverse phenomena in science. Second, the Al-Qur'an integration model is a source of confirmation, namely undertaking critical analysis or discussing phenomena in science that is then confirmed with the Al-Qur'an, in the sense that scientific findings clarify what has been expressed in the Al-Qur'an. Third, the Al-Qur'an integration model is a source of empirical dogma, namely to see the mysteries of science's future in the future when people have not been able to develop empirical explanations without being directed by revelation (Al-Qur'an). In Biology, these three models can be utilized concurrently and synergistically.

In conjunction with article A4, the analysis findings in article A5 by Minarno (2017) suggest models that can be used in learning to teach these ideals. This paper

uses two methods to explain how to integrate Science-Islam into the Biology curriculum. The first model is the incorporation of the Al-Qur'an as a source of inspiration, in which the Qur'an is placed at the start of learning and serves as an umbrella of knowledge or a source of inspiration for knowledge, which is subsequently explained by diverse phenomena in science. One source of inspiration for forming the law of structure following function in biology is the Al-Qur'an Surat Ali Imron verse 191. The second model is the incorporation of the Al-Qur'an as a source of confirmation, which consists of conducting critical analysis or discussion of phenomena in science, which is then confirmed with the Al-Qur'an, in the sense that analysis and synthesis in Biology are never separated from what has been conveyed in the Al-Qur'an. One example is collecting data on trichomes (hair on the epidermis of plants, such as soybean leaves) and then confirming or analyzing the relationship with Al-Qur'an Surah Al-Mulk verses 3-4 or verses Al- another Koran.

The application of Islamic values integration in Biology learning can also be seen in article A6 by Harahap (2019), which demonstrates that the SMA Syafi'iyah curriculum refers to the national curriculum and is enhanced with an Islamic approach system that incorporates Islam into the general learning process by implicating the role of teachers, parents, and society or the environment (Ali et al., n.d.; Cahyati & Kusumah, 2020). The instructor's role in incorporating Islamic values in Biology learning is categorized into four types in this article A6, namely in the scope of material, strategy, methodology, and supports and obstacles. The activities of religious teachers who assist in interpreting verses connected to the content are related to enough carrying capacity. However, the obstructing power is that the teacher does not truly comprehend the material that will be merged with Islamic values.

Biology teachers have an important role in accomplishing national education goals, according to the mandate of Article 3 of Law Number 23 of 2003 governing the National Education System. Teachers play an important role in helping pupils realize their full potential as individuals who believe and fear God Almighty, have a noble character, and are capable, creative, independent, healthy, democratic, and responsible (Ananda & Fadhilaturrahmi, 2018). However, according to the investigation findings in article A7, produced by Mualimin and Subali (2018), only a few teachers have adopted the integration of Biology learning with verses from the Qur'an and Hadith in general in transmitting knowledge. There are 32% of tenth-grade teachers and 35% of eleventh-grade teachers exclusively integrate Al-Qur'an studies into Biology classes. However, 19% of tenth-grade and 21% of eleventh-grade teachers only integrate Hadith studies into Biology courses. According to the findings of this study, most Biology teachers have never integrated Biology with Qur'anic and Hadith verses in classroom learning, and their implementation for those who have is deemed inadequate.

Based on the data obtained from the analysis of articles related to the integration of Islamic values in Biology learning, it is known that it improves not only the cognitive aspects but also the attitude (affective) competence of students, as demonstrated by article A3, which shows data of 4.24% for student attitudes (high category). This is consistent with Jamaludin's (2019) assertion that biology instruction integrated with Islam can provide Islamic ideals that can help develop a better personality or morality. According to Jelen and Lockett (2014), religious variables such as religious perspectives and texts are closely associated with changes in student's attitudes toward a better course. Thus, the production of religious attitudes in Biology studies based on the integration of Islamic scholarship can be accomplished

through prayer and the development of religiously based attitudes such as thankfulness, amazement, and motivation.

In essence, religious and scientific learning materials, particularly biology, have a strong link and, when successfully integrated, will result in more meaningful learning (Mualimin & Subali, 2018). Biology is strongly tied to the systematic discovery and understanding of oneself, the universe, and life. On the other hand, religion strives to develop students' belief (faith), appreciation, comprehension, and behavior toward religion, which is believed to make them more devout and pious to their followers. Allah SWT has a wonderful character in everyday life and as a nation (Diani et al., 2021; Kristanto et al., 2019).

Religion is meant to protect students from bad environmental influences while acting as a social agent toward a more civilized community (Kurniawan et al., 2022). Mansour (2011) states that most science teachers (46 out of 75) believe science and religion are inextricably linked. These teachers believe that there must be an integrated manner of comprehending the universe and a coherent synthesis of scientific and religious approaches to living. Thus, science disciplines in schools, particularly Biology, can be used to develop a variety of elements such as knowledge, skills, attitudes, values, and a sense of duty to the environment, community, nation, and state, as well as faith and piety to Allah the Almighty.

Biology study based on the integration of science and Islamic principles reinforces the teacher's ability to give educational ideals and Islamic insights in addition to conceptual understanding (transfer of values). Students who participate in learning that integrates Biology science with Islamic values are expected to have good conceptual knowledge, good processing skills, as well as good spiritual-social attitudes, and more meaningful insight into Islamic knowledge so that learning is more than just concepts

and memorization. Furthermore, biology instruction incorporating Islamic principles can be a distinguishing characteristic of the learning process in an educational institution.

CONCLUSIONS AND SUGGESTIONS

Several strategies exist for incorporating Islamic principles into biology education. The most prevalent model is the incorporation of the Al-Qur'an as a source of inspiration. The Qur'an is placed at the start of learning and acts as a framework of knowledge or a source of inspiration for knowledge. Numerous scientific phenomena then explain it. By undertaking critical analysis or debate of phenomena in science, which the Qur'an then validates, the Al-Qur'an integration model can serve as a source of confirmation. The teacher can take the following steps to integrate Islamic values into Biology learning: (1) collecting data and analyzing verses of the Qur'an and Hadith that are relevant to Biology material; (2) implementing integration into the learning process; and (3) evaluating the integration process. This integration process must be continued to create good personality and morality in students so that not only the cognitive but also the affective components of students improve.

This study is limited to giving a broad description of the integration of Islamic values in Biology learning in senior high schools, with secondary data from existing research publications utilized as sources. As a result, additional research on the precise description of the execution of the integration of Islamic values in Biology subjects at all levels of education and other science subjects is required.

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