

## Article

# Integration of Tauhidic Elements for Environmental Education from the Teachers' Perspectives

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**Abstract:** Serious environmental damage calls for the need of complementary approaches in applying tauhidic elements for environmental education. Hence, this study examined how the practices of integrating tauhidic elements for environmental education are carried out in two Islamic science boarding schools. A qualitative study was conducted by interviewing two science teachers and two Islamic education teachers from each school and an environmental education coordinator for data triangulation. The participants of this study were sampled using purposive sampling. The interview data transcribed were analyzed using thematic analysis. Findings show that the integration of tauhidic elements in the school curriculum takes place with the support of the teachers and school administrators. However, the integration of tauhidic elements for environmental education only takes place through two approaches, namely through the inculcation of values from the teachers' advice and actions as role models, as well as through the activities of seeking the meaning of the verses in the al-Quran or the Hadith that are related to environmental concepts. The findings also demonstrate that the students already have good environmental knowledge, awareness, and interest in nature, but require enhancements concerning their practices of environmental conservation. In sum, integrating tauhidic elements for environmental education requires the cooperation of science teachers and Islamic education teachers as well as strong support from other subject teachers and environmental clubs in schools.

**Keywords:** environmental education; environmental values; integration; Islamic values; tauhidic elements

## 1. Introduction

The destruction of the environment as a result of development is alarming in the wake of natural disasters such as global warming, landslides, flash floods, air pollution, water pollution, land pollution, as well as the extinction of flora and fauna species. Environmental damage occurring in many Muslim countries, including Malaysia, calls upon the attention to emphasize ethical behavior toward the environment (Yaacob et al. 2017). The initiative in changing toward a more ethical behavior is necessary to transform the perspective of others toward Muslims, as Islam also has concerns about environmental care similar to other religions. Islam forms a framework for many aspects of a Muslim's life (Al-Hadabi 2016). As mentioned by Einstein, science without religion is lame, while religion without science is blind (Othman 2016). However, modern science has been rather silent about Allah (Abdullah 2015). The abandonment of Islamic values and the rapid adoption of western science and technologies have led to social and educational conflicts as well as environmental problems in many Islamic countries (Othman 2016; Faruqi 2007). Examples of values related to environmental education advocated by Islam are: (a) *qana'ah*, which means being moderate, thrift and thankful to Allah; (b) *mahabbah*, which means love and appreciation of the environment; (c) *ihsan*, which means wise choices, refraining from harmful

acts toward the environment, being accountable for one's actions; (d) *ta'awun*, which means teaching one's family to conserve the environment, reducing the use of natural resources, reducing waste and participating in campaigns on environmental conservation (Yaacob et al. 2017).

Recent studies have found that environmental management based on Islam is increasingly gaining attention at national and international levels (Rahman 2016; McKay et al. 2013). Osman Bakar, in his book entitled *Environmental Wisdom for Planet Earth: The Islamic Heritage*, also noted that environmental issues that are increasingly becoming serious in Islamic countries, including Malaysia, require an Islamic approach for environmental conservation (Aung 2016). The need for this Islamic approach is indispensable based on the results of a previous study by Emari et al. (2017), which found that Islamic environmental awareness contributes 39% to general environmental awareness, while Islamic environmental awareness and general environmental awareness contribute 47.8% to environmental conservation. This finding suggests a need for the integration of tauhidic elements in environmental education as a complement for enhancing public awareness of the environment and subsequently changing the public behavior toward environmental conservation.

In this regard, the integration of tauhidic elements for environmental education can be defined as an education where moral values toward environmental care behavior are infused based on the al-Quran, the Hadith and the teachings of Islamic values to create awareness of the environment by maintaining the relationship with Allah, fellow human beings and the environment, as well as demonstrating responsible behavior toward the environment (Djainudin and Sirait 2016; Othman 2016; Othman 2014). Based on this definition, it is understood that in integrating tauhidic elements for environmental education, the three main references referred to are the al-Quran, the Hadith and the teachings of Islamic values about environmental conservation, which can be discerned and perceived through nature. Fakhruddin et al. (2018) suggested that environmental conservation based on the al-Quran should include the concepts of the existence of humans as guardians of nature, knowledge about environmental sustainability as a life system, development of responsibility, respect, a caring attitude toward nature and the wisdom in exploiting natural resources.

The Malaysian school curriculum is committed to developing its students holistically along intellectual, spiritual, emotional, and physical dimensions, as reflected in the National Education Philosophy (Ministry of Education 2013). In line with the National Education Philosophy, the philosophy of environmental education in Malaysia focuses on three (3) components, which are acknowledging the existence of the environment that is subject to God's will, pursuing the knowledge of environmental education needs and fostering the spirit of love for the environment by focusing on ethical, moral and aesthetic values (Hassan 2006; Ministry of Education 1998). Reflecting on the philosophy of environmental education, it can be observed that the integration of tauhidic elements and environmental education is indeed internalized in the philosophy.

Palmer (1998) argues that environmental education must include three elements, namely education *about* the environment, education *in* the environment and education *for* the environment. These three elements of environmental education in learning propose that education *about* the environment involves the cognitive aspects of the individual's understanding and knowledge of the environment, while education *in* the environment is about the aspects of appreciation and emotion that help individuals to become more environmentally sensitive. Additionally, education *for* the environment is about the individual's involvement in the environment, developing attitudes toward the environment, and caring about the environment (Palmer 1998; Palmer and Neal 1994; Aarnio-Linnanvuori 2013). The link between these three elements in environmental education has often been employed in curriculum planning for teaching and learning activities at the school level (Ahmad @ Shaari 2009).

Accordingly, various efforts have been undertaken to strengthen the implementation of tauhidic element integration in the school curriculum, while at the same time, rejecting secularism in the education system. Secularism in education is overemphasized in scientific approaches and rejects all other arguments based on religion and culture (Othman 2014). Among these efforts are the formation of schools that incorporate the elements of science and Islam, such as the Ulul Albab Mara Junior

Science College, Imtiaz schools, integrated boarding schools and federal religious schools. These schools are different from other boarding schools because the emphasis is on strengthening tauhidic elements and science through the al-Quran and the Hadith memorization subjects, as well as specific Islamic subjects such as *Shari'ah Islamiah* and the Arabic language. The ultimate goal of setting up these schools is to produce students with a solid foundation of the al-Quran, a diverse and wide knowledge, a capability of thinking and observing God's creation through sharp eyes and mind (MARA 2018). However, the extent of the effectiveness of the education system that integrates science and Islam in being capable of producing *huffaz* scientists who also love nature should be further explored.

The effectiveness of the educational system in producing students who are balanced physically, emotionally, spiritually, and intellectually is certainly dependent on the application of tauhidic elements in school, either through formal or informal teaching and learning by the teachers. School is also a place for students to acquire the knowledge, skills and various norms that must be followed, as well as the ethics that are the basis for human beings to achieve well-being in life (Hidayat 2015). However, previous studies have shown some constraints in the application of environmental education in schools. Among them are the conceptual barriers of environmental education, logistical barriers (large class size, risk of bringing students out, compact curriculum and time constraints), teachers' competency and teachers' commitment to environmental education (Rahman 2017; Ham and Sewing 1998; Ahmad @ Shaari 2009; Rahman et al. 2018). Rahman (2017) stated that the goal of environmental education has not been fully achieved due to the lack of emphasis on three aspects; namely, moral values, decision-making skills and problem-solving skills related to environmental issues. Therefore, there is a need to examine the extent to which the tauhidic elements for environmental education are applied and practiced in Islamic science boarding schools.

Many previous studies have examined the practices of environmental conservation from the perspective of individuals via self-report where there is a tendency for the individuals to provide positive remarks or responses. Hence, it is important to examine this phenomenon from the perspective of science teachers since the topics or concepts in science are more related to the environment than any other subjects. Similarly, there is a need to pursue the views of Islamic education teachers and environmental club coordinator teachers as they complement the integration of tauhidic elements for environmental conservation in environmental education at schools. The views of these teachers would help in comprehensively understanding the practices of integrating the elements of tauhid for environmental education that take place in the selected Islamic science boarding schools. Subsequently, the findings from this research can further help to facilitate the intervention that could be implemented to improve the practices of environmental education based on Islamic values.

## 2. Literature Review

Tauhid is one of the fundamental terms of Islamic teaching that refers to the conviction that "there is no God but Allah" (Akhter et al. 2010; Tamuri 2015; Salehudin and Iksan 2017), which is part of a Muslim's belief as well as *aqidah* (belief in Allah) (Djainudin and Sirait 2016). Thus, tauhid can be said as the main source of values and ethics in environmental management theology (Djainudin and Sirait 2016). A combination of tauhidic elements that emphasize Islamic values and environmental education would be more effective in environmental conservation efforts (Aung 2016; Rahman 2016; McKay et al. 2013).

Based on al-Ghazali's views, the process of applying values can be categorized into three main components, namely: (i) beliefs, (ii) character and *akhlak* (Islamic ethics) and (iii) action. The beliefs proposed by Imam Al-Ghazali that can be adapted in the context of environmental conservation are the beliefs that: (i) God is the owner of nature; (ii) working is considered as *ibadah* (religious duty); (iii) there needs to be a close relationship between teachers and students; (iv) the Prophet pbuh (peace be upon him) is a role model; (v) the nature of humans is to obey Allah; (vi) the soul is pure; (vii) the main sources of reference are the al-Quran and the Hadith; (viii) the purpose of life is for the pleasure

of Allah (Othman and Kassim 2016). Thus, conservation activities would be considered good deeds (*hasanah*) in this life and the Hereafter (Efendi et al. 2017).

The tauhidic science framework developed by Othman (2016) can be used as a foundation in applying tauhidic elements for environmental education. In the tauhidic science framework, there are three relationships that need to be maintained, which are the relationship between humans and Allah, the relationship among humans and the relationship between humans and nature. The relationship with Allah involves two forms of human roles, namely as a servant of God and as a vicegerent or guardian on earth. As a servant of God, humans need to worship and practice other charges demanded of them. As guardians on earth, human beings are given the responsibility of managing this world as God has bestowed *roh* (spirit), *qalb* (heart), *nafs* (soul), intellect and physicality to them. Meanwhile, in maintaining human relations, human beings need to develop social, economic, political, science and technology systems based on the *syariat* (Islamic laws) and morals taught by Islam. In maintaining the relationship with the environment, humans need to be wise in using natural resources made available for the mutual benefits of humanity without damaging the environment (Othman 2014).

Previous studies conducted on Islamic environmental education in Islamic boarding schools in Indonesia showed that various approaches have been implemented including teaching, modeling, coercion, conducting participatory activities (such as cleaning, arranging the garden and the surrounding environment, creating green open spaces) and building collective awareness about the importance of environmental management through daily activities (Albab 2017; Efendi et al. 2017; Fua et al. 2018). Similarly, in the study conducted by Mustam and Daniel (2016), the application of formal environmental education was implemented through explanation, discussion, demonstration, questions and answers, experiment, simulation and role play activities while the application of informal environmental education was carried out through camping, fieldtrips, recycling and competition activities. However, the manner or the ways in which Islamic values are to be infused in environmental education were not clearly demonstrated in these previous studies.

In Malaysia, Iksan et al. (2015) in their study implemented the approach of *tadabbur* (reflection of the al-Quran by observing the nature) while carrying out jungle trekking and *tazkirah* (a brief talk about Islamic religion as a warning or an advising) while doing fieldwork. This approach is a good example of how tauhidic education can be integrated in environmental education. However, the approach was implemented in activities carried out outside of the school environment. Hence, if the approach by Iksan et al. (2015) could be adopted within the school environment, it would address the problems of cost, logistics, and safety for the school students as they would not need to be out of the school setting. Therefore, the practices of integrating tauhidic elements for environmental education need to be examined to understand the real scenario that occurs in Islamic science boarding schools.

### 3. Research Methodology

#### 3.1. Study Context

This research was aimed at exploring the practices in integrating tauhidic elements for environmental education by teachers. This descriptive case study employed the semi-structured interview method to obtain data from science teachers, Islamic education teachers and a coordinator teacher of the Geography and Environment Club from two Islamic science boarding schools. Islamic science boarding schools were selected in this study as they are aligned with the aims of strengthening Islamic understanding among the students while offering them knowledge of different sciences. In Islamic science boarding schools, the students get the opportunity to enroll in several disciplines of science and other professional subjects to become future academicians and to be involved in professional careers that integrate an Islamizing of the various disciplines. Furthermore, these students will then be able to reform the education system and knowledge based on true epistemological foundations of Islam (Baba et al. 2018). In Malaysia, there are four types of Islamic science boarding schools, namely Imtiaz schools, Ulul Albab Mara Junior Science College, integrated boarding schools and

federal religious schools. These four types of school implement the central curriculum developed by the Malaysian Ministry of Education in their teaching and learning. However, the Ulul Albab Mara Junior Science College was established by the Majlis Amanah Rakyat (MARA), a Malaysian government agency. The school system and learning facilities for the Mara Junior Science Colleges throughout Malaysia are therefore provided by the MARA institution. In this research, two types of Islamic science boarding schools, namely the Ulul Albab Mara Junior Science College and the federal religious school had been selected. These selected schools were considered adequate to portray the two different education systems of Islamic science boarding schools in Malaysia. In addition, these schools are located in Selangor, a state in Malaysia, and it is among the states that have received huge impacts of environmental problems because of its close vicinity to the capital city of Malaysia, Kuala Lumpur. Furthermore, according to [Palmer \(1998\)](#), experiences of nearby environmental disasters often play a significant role in promoting environmental concern.

### *3.2. Participants*

The participant determination and selection process was carried out based on the purpose and questions of this study. Accordingly, purposive sampling was utilized to ensure that participants would be able to provide the information required and answer the research questions. The participants were two science teachers, two Islamic education teachers and a coordinator teacher of the Geography and Environment Club from one school. In total, nine teachers were involved as participants in this study. The selection of the participants was based on the recommendation of the school principals by considering the teachers' experiences and expertise in the subject matter related to environmental education. In the verbatim transcript, code ST refers to science teachers, code IET refers to Islamic education teachers while code EC refers to the coordinator teacher of the Geography and Environment Club. In terms of the school name, SA refers to the first school while SB refers to the second school.

### *3.3. Data Collection Procedure*

The researcher held preliminary meetings with the participants to explain the purpose of the study and to obtain their permission to conduct the interviews. The date and time of the interview were then confirmed with each participant according to the availability of the participants based on the schedule provided by the school administrators. This study began with rapport building with the participants so that the participants were mentally and physically prepared to provide the information required to answer the research questions during the interviews. The participants were also informed that this study required the interviews to be recorded and transcribed. Therefore, the participants were requested to voluntarily sign a letter of authorization and acknowledgment as a study participant. These preparations were made to ensure that all the interviews would progress smoothly and efficiently.

### *3.4. Data Analysis Procedure*

Data analysis is a critical process where data that have been collected go through various methods of analysis. All the data in this study were obtained from the semi-structured interviews conducted. Each interview was transcribed after it ended. The verbatim transcript was then analyzed manually using thematic analysis. In thematic analysis, trends within the data are established and recorded, allowing various aspects of the research subject to be interpreted ([Valenzuela and Shrivastava 2008](#)). For the thematic analysis, an open coding was built for each verbatim transcript with the same code that was then incorporated into several categories. The process continued until all the themes and sub-themes related to the integration of tauhidic elements for environmental education were identified and categorized accordingly.

#### 4. Research Findings

##### *Infusion of Tauhidic Elements by Schools*

Analysis revealed that both schools have created an environment that supports the integration of *aqli* (acquired knowledge) and *naqli* knowledge (knowledge revealed by Allah SWT to a person, either through the reading of knowledge revealed by Allah in al-Quran and Sunnah of Rasulullah PBUH or through insights or intuition). At SA, there are three cores that form the main pillar of the education system; namely, Quranic, which is related to the al-Quran, encyclopedic (academic-related) and *ijtihadik* (sports-related), as mentioned by research participant IET\_1SA. Students also memorize the Quran to increase their knowledge of Islam as well as their emphasis on other disciplines, especially science. Co-curricular activities are also emphasized to produce students who are balanced spiritually, intellectually, and physically.

*"There are three cores. The first is Quranic which is memorizing the al-Quran; the second is Encyclopedic which is academic-based, more to science; the third is ijtihadik which is more to sport, meaning co-curricular activities." (IET\_1SA)*

Based on the findings, it was found that the integration of the tauhidic elements with the curriculum occurs through the teaching and learning implemented by linking science with the al-Quran. For example, religious values are instilled in science concepts including *qurban* (sacrificial animal slaughter). Usually, a celebration is performed during Muslim pilgrimage in Malaysia. The values associated with sacrifice in Islam are instilled in students whose activities are planned by the Islamic Education Department in school as an annual activity, as stated by ST\_1SB teachers.

*"According to the Islamic Education Department's program, in the course of a year, there are already plans on student outcome in terms of religious values. So, in teaching and learning, the department has also inserted the topic of qurban (sacrificial animal slaughter), slaughtering ... so involve all the students." (ST\_1SB)*

Time is also allocated for al-Quran memorization, academic class, and co-curriculum. The co-curriculum activities offered include sports which are highly demanded to be learned in Islam; namely, archery, horse riding and swimming programs, as mentioned by research participant ST\_1SA. Academic class and co-curriculum are complementary with each other to produce individuals who are intellectually, spiritually, emotionally, and physically balanced, as stated in the National Education Philosophy of Malaysia.

*"In terms of science, we often relate to the al-Quran. If you see the student's schedule on a day-to-day basis, there will be time allocated for al-Quran recitation. There is time for academic class. There are times for physical, co-curricular activities ... there are archery programs, go horse riding, swimming." (ST\_1SA)*

At SB, the integration of tauhidic elements also occurred as an al-Quran memorization program and the cultivation of Islamic values is included in the teaching and learning sessions. However, the al-Quran memorization program at SB takes place on Saturday and Sunday mornings under the management of the school's Parent-Teacher association, as opposed to the SA where the al-Quran memorization program is included in the learning session. The al-Quran recitation sessions were also taught with *tajwid* and *tasmik* (meaning of the al-Quran verses) to enable students to understand the meaning of the al-Quran verses. This makes the teaching and learning schedule in SB more compact than in SA.

*"Others if like Saturday and Sunday, we have the Huffaz program under the Parent-Teacher Association (PTA), which involves all students. During weekends, on Saturday and Sunday, some of the students have to read the al-Quran, some do the tasmik (teacher listening to Al-Quran recitation by the students) and there are groups that we guide, teach the tajwid." (IET\_2SB)*



The enculturation of al-Quran recitation at the SB is also highlighted through official activities where al-Quran verses are read at the assembly every Friday. This practice became a culture in SB.

*"During the official assembly every Monday, like other schools, we have the principal's speech and singing of the national anthem as usual, but we will have the additional recitation of al-Quran verses. That is the identity of our school." (EC\_1SB)*

The school also created the PLC (Professional Learning Community) program where students and teachers are gathered according to their subject matter committee for the purpose of sharing knowledge and encouraging the love of Islam. PLC runs once a week, which is every Friday, as mentioned by participant IET\_1SB.

*"We have the Professional Learning Community (PLC) where every Friday we will gather according to our subject matter committee and share knowledge. From there, we get lots of new input and we are also encouraged to love our religion." (IET\_1SB)*

The launch of the hashtag "one imam, one salam" also encourages prayer in congregation, *tazkirah*, and sharing of the Hadith and the al-Quran verses. In addition, there is a Da'wah and Spiritual Body known as BADAR, which is established in the SB to enhance religious and spiritual activities through activities of *usrah*.

*"Hashtag one imam one salam (#1Imam1Greeting) ... prayer in congregation, through this, there are always tazkirah, sharing of the Hadith and sharing of al-Quran verses." (EC\_1SB)*

*"Da'wah and leadership Board (BADAR). So, these students, they have their daily routine ... they have their group ... before bedtime they will sit in a circle ... it is called usrah." (ST\_1SB)*

The aspect of leadership is also emphasized at SB where the school has launched a leadership theme to maintain the momentum and balance between the academic, co-curricular and student personality outcomes. In addition, *tazkirah* related to environmental issues are also applied in the school.

*"There is still maintaining the academic momentum, co-curriculum and student personality outcomes, so we just launched the theme of leadership ... related to personality, soft skills and leadership aspects." (EC\_1SB)*

*"More to tazkirah in the evening, sharing of knowledge at the prayer room ... Indeed, Islamic values are associated with environmental education." (EC\_1FR)*

At SA, the heads of department and principal strongly encourage the teachers to integrate al-Quran verses related to the topics taught and to apply Islamic values.

*"Every teacher even for the science department itself, our department indeed encourages each teacher to include if possible, to find al-Quran verses related to the topics taught ... it's just that the content is not compiled yet." (ST\_1SA)*

*"Examples of Islamic values here, first of all, when we start meetings, our teachers and principal do indeed ask us to apply Islamic values." (IET\_1SA)*

Meanwhile, at SB, the principal launched the "lights-out" program where the lights are switched off at 11.30 p.m. This program was launched because the students have to take up to 11 subjects, including subjects related to religion, namely, Shari'ah Islamiah and Arabic, which led to feelings of tiredness and sleepiness among the students during the teaching and learning sessions. Therefore, the "lights-out" program was implemented to help students manage their time well with regard to managing their time for academics and rest. These show the support from the administration and schools' principals.

*“In 2016, the teachers lamented that with 11 subjects that the students have to take, it is a pressure for them, when they (the students) are not good at managing their time to complete their school work, this resulted in the students often falling sleep in the classroom. And when the principal found out about the issue, he said that sleep quality is very important; hence, the principal launched lights-out. Meaning at 11.30 p.m. all must sleep (lights switched off). So, students will automatically complete their work before 11.30 p.m.” (EC\_1FR)*

Overall, based on the findings, there are four elements in the learning system that were emphasized and focused on by these schools in order to produce students who are well-balanced in terms of their academic, character, spiritual and physical achievements. Therefore, various activities for the students were planned by the schools. Academic development has always been emphasized by the schools, including conducting PLC (Professional Learning Community). Among the applied practices to enhance the students' spiritual elements implemented at the schools were recitations of al-Quran during assembly, *tazkirah*, *usrah*, and prayers in congregation. The development of a student's character is nurtured through leadership programs and the value of appreciating time. Meanwhile, a student's physical development is nurtured through co-curricular activities such as archery, swimming, and horse riding. The values nurtured in the environment of these schools are the basis in teaching the students to be a good servant and vicegerent or caliph on earth in managing the environment. Based on the views of the teachers, the integration of tauhidic elements in the schools require strong support from the school principle. It was found that the teachers and students were often reminded by the principles of the schools to apply environmental values in teaching and learning, as well as to put in effort to enculturate the values in the school environment.

## **5. Application of Environmental Education and Integration of Tauhidic Elements for Environmental Education by Teachers through Formal Education**

The application of environmental education has been indeed carried out in the teaching and learning sessions at the Islamic science boarding schools. Many of the activities conducted by the teachers in integrating environmental education in the topics taught are done formally. Among the activities are the inculcation of Islamic values related to environmental education, learning from the al-Quran, sharing of knowledge with other peers, project-based learning such as modeling or innovation from recyclable materials, learning by example, tree and soil therapy, dissemination of information about the environment through flyers and brochures, video screening, online applications, gallery walks, problem-solving methods, introduction of outside organizers related to environmental conservation such as grab cycle and the use of existing modules related to environmental education. However, this article focused only on the activities where the integration of tauhidic elements and environmental education occurred simultaneously.

### *Topics Related to Environmental Education*

Environmental topics or concepts related to the environment are often associated with science and geography subjects. In contrast, the application of values related to environmental education or environmental awareness is often associated with civic education and Islamic education subjects. Based on the findings from the interviews with the science teachers in both schools, the teachers linked the topics of science with environmental education in the teaching and learning process. Among the topics related to the environment contained in the curriculum were biodiversity, ecosystems, the relationship of chemicals produced from industries, greenhouses, geo-disasters pertaining to land and natural disasters, food chains, human health and human activities that affect the balance of nature. Most of the topics provided information about the effects of the interaction between humans and the environment and how the environmental problems can be addressed and tackled.



*“For Form two, Biology topics often do indeed relate to nature. Biodiversity, ecosystems or also topics that are related to chemistry ... such as chemicals produced from industries ... or for the greenhouse chapter, the use of recycling materials for homes. Meaning, recycling of water, recycling of energy or using recycled materials for decorations around the house and also those who set up waste bins that separate waste materials. That’s considered a greenhouse.” (ST\_1SA)*

*“Formally, it is more to the subject of geography, but there is in the subject of science too. For form one with the new syllabus, it talks about geo-disaster. So, we will talk about soil and natural disasters ... how to overcome ... ” (ST\_1SB)*

*“In Biology, they also learn about human interaction that disturbs environmental balance.” (ST\_2SB)*

Even though there were lots of topics related to environmental concepts in a science subject, the integration of tauhidic elements depends on the creativity of the science teachers. Based on the science teachers’ views, most of the topics related to environmental education were pertaining to education *about* the environment which focused on providing information or enhancing knowledge about the environment.

Meanwhile, in the Islamic education subject, the values or ethics related to environmental education were applied both directly and indirectly. Among the topics of Islamic education related to environmental education were earth creation, seeking forgiveness from God for being cruel to the environment, conduct or behavior toward the environment, direction toward doing good and forbidding wrongful behavior toward the environment. Based on the views of the Islamic education teachers, the infusion of environmental education in the subject of Islamic education focused on education *in* the environment that is to instill the affective component related to emotion toward the environment.

*“The topic on the creation of the world is evidence of God’s wisdom. In that topic, we study about nature ... the creation of the world is expansive ... in the universe, we have the earth ... the creation of the universe in science, there are planets ... ” (IET\_1SB)*

*“For form two, the first topic is to seek the forgiveness of God. It contains types of dalil, being cruel to the environment, to ourselves and being disobedient to God.” (IET\_2SA)*

*“Subtopics of manners and morals in Islam. Examples are manners to teachers, manners to parents ... manners to the environment as well.” (IET\_2FR)*

*“What I see is ‘amar ma’ruf nahi mungkar’ ... It means we invite them to doing good and forbid from doing wrong. Among the good deeds we can demonstrate is by teaching to protect the environment.” (IET\_1SB)*

Additionally, the topic in Islamic education that is indirectly related to environmental education was about the *rukshah* (concessions) in prayer concerning the tayammum (using the dust to purify themselves for prayer). The topic of *rukshah* in prayer is related to the need for a clean environment to worship Allah.

*“It means the student may apply it during the tayammum, which is a concession in prayer using clean dust because there is no water available. For example, if we do not care for the environment, where do we find clean dust if the whole earth is tainted with dirt by our hands, and if there is no water, rivers, all the trees cannot grow.” (IET\_1SA)*

Based on the comparative analysis of the views of the science teachers and the Islamic education teachers, it became apparent that the science subjects focused more on environmental concepts while the Islamic education subject was more focused toward infusing Islamic values related to environmental conservation. These values included goodwill; gratitude for the gift of the environment for the benefit

of humans; environmental responsibility; how the quality of the environment will influence Muslims in their worship through the use of natural resources, such as water and land, to purify themselves. Findings showed that the science subjects tended to infuse elements of education *about* the environment while the Islamic education subject focused more on education *in* the environment. However, education *for* the environment such as issue-based learning, action-oriented learning, problem-solving and action-based learning was still lacking in both the science and Islamic education subjects.

## 6. Approach for Integrating Tauhidic Elements in Environmental Education

Specifically, the findings displayed that two activities were carried out by the teachers for integrating tauhidic elements in environmental education in the topics taught formally, namely, fostering Islamic values related to environmental conservation and linking al-Quran verses with environmental elements.

### 6.1. Fostering Islamic Values Related to Environmental Education

Fostering of Islamic values occurred directly and indirectly during the teaching and learning of environmental education. Among the values emphasized in teaching and learning were the role as a caliph, value of cleanliness, gratefulness, appreciation of the environment as every creature of Allah is always reciting the *zikr* (remembrance of God) including the trees, and the wisdom behind the disasters that occur such as flash floods.

*"We can also connect it back to God who created the universe, and this means that we have a part to prosper the earth ... "* (ST\_1SA)

*"Islam loves cleanliness ... for example, if the person does not practice cleanliness, then what will happen ... there will be rubbish everywhere, the earth will be polluted, the rivers will be dirty ... "* (ST\_1SB)

*"The value of gratefulness for what we already have now ... usage of water, for example. Sometimes, there is disruption of water supply. So, it becomes a trouble for students living in the hostel. So, we have to appreciate what we have ... do not waste."* (ST\_2SB)

*"We link to Islamic values. For like science subject, we express gratefulness to God that has created us perfectly, learn about human beings, the complexity of humans with all the systems, organs, working together."* (ST\_2SB)

*"In terms of food, we may relate it to Islam, for example in the aspect of being grateful ... We teach them that food is the sustenance from God for us so that we can learn to be grateful."* (IET\_2SB)

*"The thing is indirectly the plants, animals are always saying zikr to God."* (ST\_2SB)

*"We sometimes mention ... wanting to connect it to the values of Islam ... when flood occurs. Among our students there are also those from Kelantan (one of the states in Malaysia which got terrible destruction due to flood in raining season). Previously, like the flood ... we used to see many negative things about the floods. But we have to find the wisdom behind the calamities."* (ST\_2SB)

In addition, the concept of *Ihsan* was highlighted by teachers to instill the Islamic values in environmental education. In Islam, *Ihsan* means compassion for others including animals and how to act with respect toward nature. The Islamic values of *Ihsan* are important in creating the awareness of environmental conservation and respect for each creature of the earth.

*"The values must be practically practiced, only then can you see the effect. I feel in the topic of Ihsan ... like being kind to animals. Like when I teach the students, I will bring them to the animals, so that they can see closely how starving animals live, how the animals are when they are sick. Only then will they see and realize dawns."* (IET\_1SB)

The approach to nurture values related to environmental conservation was also carried out through advice by the Islamic education teachers by linking it to Japan, which is a well-known country that is good with regard to environmental management.

*“More in the form of advice . . . here we sometimes teach them by talking with implied meaning, but at the same time educating them. People say let them gain insight through their learning.” (IET\_1SA)*

*“Another thing that I’ll say is about taking care of the mosque. I will tell them that taking care of the mosque is not merely about maintaining the cleanliness inside the mosque but outside the mosque too. Let’s make our mosque beautiful. I tell them let our mosque be beautiful like in Japan . . . that is environmental part too.” (IET\_1SB)*

The fostering of environmental values was also carried out through exemplary behavior by the teachers who showed good examples of environmental conservation behaviors. Through such actions, students are expected to imitate their teachers’ behavior in terms of environmental management.

*“For me, have to start with the teachers first actually. Teachers have to model what must be done. The teachers themselves must do these things. But if the teachers themselves pay no attention to the garbage they see . . . teachers should not be like that . . . then Insha’Allah the students will follow . . . lead by example.” (ST\_1SA)*

*“These students will follow our actions. For example, they are sitting in a circle, the teachers come, sometimes it’s the teachers who collect the rubbish, the teachers who sweep the floor.” (IET\_1SA)*

## 6.2. Tadabbur al-Quran

The common practice applied by the teachers at both schools in integrating tauhidic elements for environmental education was the activity of *tadabbur al-Quran*. *Tadabbur al-Quran* is implemented by linking the verses of the al-Quran and the Hadith to the topics taught, particularly in the fields of science and environment. This approach is more efficient in the schools involved as the students also memorize the al-Quran and study the Hadith. Through this method, students can enhance their understanding of the interpretation of the al-Quran verses they read and memorized.

*“For me, for each topic that I teach, I will look for any al-Quran verses that are related to that topic or we will ask the student to give the verses because they memorize the al-Quran. For instance, which verses do you think are related to the science concept? So, if they could not do so, we provide the verses.” (ST\_1SA)*

*“We share the al-Quran verses, share whatever values that we get from the verses and continue with our learning.” (ST\_2SA)*

Among the science concepts in the al-Quran that were highlighted by the teachers are reproduction (formation of the fetus), the concept of humans as a caliph or vicegerent and the concept of skin receptors. In Islam, understanding the formation of the fetus provides teachings of the greatness of Allah in creating humans in such a perfect and detailed manner to carry out their roles as servants and vicegerents on earth. Humans are also asked to take heed and lessons of the creation of the fetus in the womb where Allah breathes the spirit into the fetus, grants the senses, intellect, *nafs*, and *qalb* to differentiate between good and bad deeds or actions to help humans in governing the environment. In Islam, humans are reminded through the verses in the al-Quran to equip themselves with knowledge to manage this world. This is why humans are bestowed with intellect by Allah SWT.

*“As for me, I will relate it to the al-Quran verses, whatever is related to science. We teach a topic, for example, reproduction, which is in surah ar-Rahman about the formation of the fetus. So, we relate the topic and the surah by looking at the meaning and based on what science says about it. Thus, they will see the correlation between science and the al-Quran.” (ST\_1SB)*

*“They not only memorize the al-Quran, they also need to understand the meaning behind their memorization. So, indirectly, the students understand that the meaning of caliph is a leader. The leader itself actually has a close relationship with God ... and the environment.” (IET\_1SA)*

*“For instance, when learning about skin, we also need to look for its dalil from the al Quran and also the Hadith that talks about the skin. What I remember the most is about the bees. The bees have two stomach. This is also stated in the al-Quran.” (IET\_1SB)*

Additionally, the activity of *tadabbur* al-Quran by the students was performed through video screening during *tazkirah* activities as stated by the environmental coordinator teacher, EC 1. Environmental phenomenon such as the effects of global warming that are happening worldwide need to be taken heed of by the students and remembered through *tazkirah*. The students also related the similarities between the environmental phenomenon occurring to those mentioned in the al-Quran as well as the warnings from the Hadiths. This can remind students of their role as vicegerents who have been entrusted to manage the environment.

*“The usual screening that I have watched ... that the students carried out is video sharing, sharing of al-Quran verses and what has happened to our earth ... the word of Allah demands it and it's our responsibility to conserve the environment. So, during the tazkirah between maghrib and isyak prayers, sometimes there are video screenings of global warming and all that, so by relating to the al-Quran verses ... they relate it to the environment. Thus, it seems that the element has been applied ... There is always tazkirah, sharing of the Hadith, sharing of the al-Quran verses ... and the relationship with the environment is included as well.” (EC\_1SB)*

## **7. Effectiveness of the Activities of Integrating Tauhidic Elements in Environmental Education on the Students**

Overall, the findings from the interviews with the teachers showed that the students already have good environmental knowledge. In addition, the level of environmental awareness and environmental interest among the students from the perspective of the teachers was at a moderate level and needs to be improved. However, the teachers felt that more emphasis should be given on improving students' practices in environmental conservation. In terms of the environmental education application, the science and Islamic education teachers should focus on education for environmental education by applying the activities that can change the students' behavior toward the environment. In order to achieve these goals, support from non-formal education components such as the school's environmental club is needed.

*“In terms of environmental knowledge, I feel that the students have exposure. Because on television, there are campaigns being carried out. Only maybe in terms of practice.” (ST\_1SA)*

*“From what I see, some students have their own interest. So, there are some students who are really interested in the environment, whose ambition is indeed related to the environmental field.” (ST\_2SA)*

*“So, to say the least, there must be much more effort for this environmental application.” (ST\_1SB)*

*“In my view, the students overall from Form 1 to Form 5, their awareness should be enhanced.” (EC\_1SB)*

*“They know, but in terms of environmental practices, we still need to educate them. We need to cultivate ... the students already have the knowledge. The knowledge is already extensive, but how can we apply the practices ... in terms of the process of educating them.” (EC\_1SB)*

## **8. Discussion**

This study investigates the application of tauhidic element integration in environmental education based on the teachers' perspective. Science and Islamic education teachers as well as a coordinator for

the Geography and Environment Club were selected as the study participants because these teachers are responsible for implementing the integration of tauhidic elements in environmental education through teaching practices in line with the schools' mission. Moreover, in Malaysia, environmental education is carried out across the curriculum; thus, there are officially no environmental education subject teachers in schools. Environmental education is widely applied in science subjects because the topics in these subjects are more relevant to the environment. However, environmental education is also applied in and supported by other related subjects and environmental clubs in schools.

In integrating tauhidic elements, Islamic education teachers play an important role as moral activators and help the students to become good citizens by playing a positive role as agents of social change in their local communities (Irham 2017; Tamuri 2015). This study revealed that the Islamic education teachers instilled moral values in environmental education among the students by showing good examples of behavior or conduct toward the environment through advice and support through Islamic programs, such as video shows, *tazkirah* and recitation of the al-Quran in various events at school. These approaches were also mentioned by Kamaruddin and Patak (2018) in their study where they found that Islamic education teachers practice five aspects in instilling students' discipline; namely, giving advice, habituation, exemplary role, reward, and punishment.

Integration of environmental education and science education is needed in producing competent citizens who can solve complex environmental issues (Wals et al. 2014). Consequently, the combination of Islamic education, science and environmental education would enable the integration of tauhidic elements for environmental education that focuses on combining moral development and skills in investigating environmental problems and solutions. The teachers in both schools played their respective roles in applying environmental education in their own unique ways. However, the role as a caliph is important, and to be appreciated and internalized by the students (Djainudin and Sirait 2016).

The integration of the elements of tauhid in environmental education is also parallel with the views of Albab (2017) that emphasized the cultivation and application of environmental practices among students, demonstration of exemplary behavior and good examples toward the environment as well as enculturation of feelings of love and care for the environment. There are three main sources of reference in tauhidic education; namely, the Quran, as-Sunnah and the characteristics of nature. The environment is the gift of Allah to His creatures as *ayatullah* or signs of the greatness of Allah SWT, as a book of knowledge that is always ready to be studied and as a gift from Allah SWT to His creatures to be benefited (Akhter et al. 2010; Djainudin and Sirait 2016; Ibrahim 2010).

The application of environmental education is widely obtained either through the topics contained in the curriculum, teaching and learning activities, or informal activities organized by outsiders or NGOs (non-government organizations). Based on the findings, teaching and learning environmental education emphasized on education *about* and *in* the environment instead of education *for* the environment, which focuses on behavioral changes. It was also found that only two approaches of teaching and learning were involved in the integration of *naqli* and *aqli* knowledge, namely the approach of integrating Islamic values related to environmental education (such as the value of *shukr* or gratitude for all of God's blessings, appreciation of the environment and practicing prudence) and activities linking al-Quran verses to relevant environmental topics. The Islamic values associated with environmental protection, as mentioned in the al-Quran, are important in producing Muslims who are ethical toward the environment (Fachruddin 2010; Yaacob et al. 2017).

There are activities that relate al-Quran verses or the Hadith to related topics to further strengthen the relationship between knowledge of *aqli* and *naqli* among students. Islam combines revelation and scientific facts as a way of determining the validity of knowledge through two major methods, which are the al-Quran and the Hadith (Tamuri 2015). According to Yusof et al. (2011), the Quran and the Hadith are the main incentives that influence Muslim scientific achievements and researchers. It has been estimated that there are 750 verses (from 6236 verses) that refer to various aspects of the environment, as well as the relationship between humans and the environment (Mănoiu et al. 2016). The method of linking relevant al-Quran verses to the environment or *tadabbur* is important in integrating tauhidic

elements in environmental education (Hamzah et al. 2017; Iksan et al. 2015). The process of taking the al-Quran as a reference involves identifying, listing, sorting, and grouping (Haddad 2006). Through the activity of *tadabbur* al-Quran, the greatness of God can be felt, feelings of gratitude can be evoked, and the warnings of Allah as contained in the al-Quran can be learned (Iksan et al. 2015). Nevertheless, it was found that the practice of *tadabbur* al-Quran requires cooperation between science teachers and Islamic education teachers based on their respective fields of expertise.

However, practices of environmental care among the students are still lacking. Previous researchers argued that responsible behavior toward environmental care is increasingly eroding due to the lack of appreciation of Islamic values in relation to environmental management based on the al-Quran and as-Sunnah (Rahman 2017; Ibrahim 2010; Rusdi 2010). To address environmental issues, focus should not only be on infrastructure improvements, technology in environmental management and the law, but also on enhancing environmental care behaviors through environmental education (Kamidin and Roslan 2014). This is supported by McKay et al. (2013), who stated that better results could be obtained if awareness of Islamic teachings and the value of humanity in environmental conservation are raised, compared to efforts of raising public awareness on environmental conservation issues. Overall, there is no doubt that religious or tauhidic elements have the potential to offer something different, but often complementary, to science-based environmental education (Parker 2017).

## 9. Conclusions

This study attempted to explore the practices in integrating tauhidic elements in environmental education among Islamic science boarding schools. The results of this investigation showed that although the integration of tauhidic elements for environmental education occurred through inculcation of values and seeking the meaning of the verses in the al-Quran or the Hadith, teaching and learning practices are still lacking and need to be nurtured. This integration of tauhidic elements in environmental education in schools is mainly supported by religious activities related to the environment, which have been implemented in Malaysia, such as Friday sermons, *tazkirah*, forums, and campaigns in mosques. However, the evidence from this study suggests that the students' environmental behavior needs to improve even if they have good environmental knowledge, awareness, and interest. Furthermore, students' faith and worldview guide their environmental actions that would subsequently bring about the desire to be involved in environmental protection (Aung 2016). Therefore, the integration of tauhidic elements in environmental education is an essential practice to change the worldview, ethics, spiritual and behavioral attitudes toward environmental conservation.

The investigation in this study was limited in its sampling because the participants involved were selected from two types of school, namely Ulul Albab Mara Junior Science College and federal religious schools. In addition, the views of teachers were selected from the science and Islamic education subjects only, as well as from one coordinator of the Geography and Environment Club, because the teachers of these two subjects and the coordinator of the Geography and Environment Club in these schools were seen as having more relevance in terms of the integration of tauhidic elements for environmental education compared to other subject teachers. Nevertheless, this preliminary study provided new understanding about the reality of the scenario in schools in relation to the schools' practices in integrating tauhidic elements in environmental education. Therefore, for future research, it is recommended that investigations are carried out in more schools representative of the four types of Islamic science boarding schools in Malaysia; namely, Imtiaz schools, Ulul Albab Mara Junior Science College, integrated boarding schools and federal religious schools. Further research should also investigate the practices in integrating tauhidic elements in schools from students' perspectives. This would provide valuable and diverse perspectives regarding the integration of tauhidic elements in environmental education. It is also recommended that different research methods such as interviews with teachers and observations of teachers' teaching in the classroom are carried out in the future to investigate the different angles in teaching practices when integrating tauhidic elements in environmental education. This study can serve as a base for future studies in developing



an integrated module of tauhidic elements and environmental education, for students and teachers, in fostering environmental literacy.

The findings of this study have important implications for future practices in terms of the requirement for science teachers to have competencies in integrating Islamic values and science in their teachings. Competencies in integrating Islamic values and science concepts are crucial as Bagdonas and Silva (2015) contended that most pre-service teachers highlighted the differences between science and religion, and pointed out that they do not feel prepared to conduct classroom discussions on this topic. Therefore, one of the solutions of this situation is to carry out collaborations between science teachers and Islamic education teachers to strengthen the integration of religious values in science teaching and learning. The findings of this research are also compatible for adoption in integrating science learning with other religions or different socio-cultures that focus on the development of environmental management.

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