Learning of reproduction system with an integrative curriculum approach in junior high school

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Abstract. The education system in Aceh has not implemented the Qanun of Aceh's Education integrating Islamic values in the learning process. Integrative Curriculum (IC) is an effective approach to implement Islamic values in biology learning. Learning materials on reproduction topic with the IC approach have been developed using Plomp development model. This paper describes the learning activities on reproduction topic implemented in a trial learning. The trial conducted in this study aims to investigate the implementation of the learning materials with the IC approach. The implementation is then used as an indicator of the practicality of the learning materials. This trial involved 28 students of grade 8 in a junior high school in Indrapuri, Aceh Besar regency. This study utilized an observation sheet to observe the learning implementation with the IC approach. The results show that the learning on reproduction topic with the IC approach could be implemented in a biology classroom. The learning process integrated the Islamic values based on the verses of the Qur'an that describe the process of human creation. Qur'an Surah Al-Hajj verse 5 was assigned for Group 1, Surah Al-Mu'minuun verses 12-14 for Group 2, Surah Al-Mu'min verse 67 for Group 3, and Surah Al-Qiyaamah verses 37-38 for Group 4. This finding suggests that the learning on reproduction topic integrating Islamic values need further investigation on evaluating the practicality and effectivity of the learning with the IC approach.

1. Introduction

National education curriculum in Indonesia emphasizes that teachers should integrate the values of life in the learning process by incorporating knowledge, skills, and attitudes. The attitude aspect needs to accommodate religious and social attitudes [1-4]. Social and religious attitudes need to be in accordance with the local and religious wisdom of the students [5]. Education can integrate life values, such as curiosity and affection while teaching the competencies demanded by the curriculum [6]. The integration of life values in education is known as the Integrative Curriculum (IC) [7]. IC is done by synchronizing conceptual contents, skills, and attitudes. The attitude aspect in IC is based on the belief, behavior, and character education [8].

IC combines basic knowledge with the learning experience that fits students' needs [9]. IC can help students understand topics taught through the problems that relate to students' needs [10] and offers a range of possibilities of strategies to integrate and relate daily activities to experience taught at school [11]. Some countries have been implemented the integration of life values in learning and the implementation shows positive results. For example, curriculum in the United States engages students...
through social and humanitarian activities [12]. In addition to that, it integrates history values in science learning [13], such as biology and physics [14]. While in Nigeria, the integration of life values in the learning process is applied to physics and chemistry classroom [15,16]. In contrast, Japan emphasizes the integration of hygiene, health and healthy food in learning. Curriculum in Japan also emphasized education that integrates preparations for reducing disasters [17,18]. Meanwhile, New Zealand emphasizes education that incorporates culture and respects the life of Maori society [19]. Some tahfiz institutions in Malaysia integrate the local community culture in the learning to improve the quality of students [20].

Also, the IC approach has been implemented in Aceh by integrating the value of water and sanitation, local wisdom, and cultural diversity. All three values are embedded in learning without additional lesson time [21]. The IC approach with the integration of Islamic values also needs to be included in curriculum in Aceh to support the Aceh Education Qanun which mandates that education in Aceh implements Islamic education based on Al-Quran and Al-Hadith, Pancasila (Indonesian philosophy), the Indonesian Constitution of 1945, and Aceh culture [22-24].

The integration of Islamic values in learning reflects that Aceh is excellent in implementing an Islamic Sharia-based education to support the ideals of generations that are qualified, superior, competitive, faithful, and cautious [25,26]. Islamic values also help teachers grow character as characteristic of Indonesia's national education curriculum [5]. Besides, learning can combine religious knowledge and general knowledge through the materials being taught [27].

The learning process with the IC approach has not been implemented thoroughly. There has been no significant progress in Islamic sharia-based education [28]. This is due to the lack of learning implementation guidance that facilitates teachers to implement learning that integrates Islamic values [29]. This is a challenge in the implementation of Islamic education in Aceh, and this challenge makes teachers reluctant to implement IC with Islamic values. Also, the unavailability of ideas, teaching materials, and assessment instruments for learning makes the implementation more challenging. Teachers are still looking for and building ideas of lessons that they will teach. Therefore, this study intends to develop biology learning materials that integrate Islamic values through the IC approach. This paper will discuss biology learning activities that integrate Islamic values through the IC approach on reproduction topic taught in grade 8 in a junior high school.

2. Method

This paper describes biology learning activities integrating Islamic values through the IC approach. These activities are based on a pilot study on learning materials developed through the development model [30]. The materials with the integration of the Islamic values used in the biology classroom have met valid criteria based on recommendations from experts and practitioners. Trials conducted in this study aims to examine the implementation of the learning materials. This implementation becomes the practicality criteria of the learning materials [31]. The learning activities used in the learning materials focus on reproduction topic.

3. Result and discussion

The biology learning process integrating Islamic values through the IC approach on reproduction topic was developed to achieve indicators of competencies in describing the reproductive system in men and women, explaining the function of the reproductive system in men, describing the reproductive hormone system in women, and describing venereal diseases in the reproductive organs. This paper will describe the results of a learning trial in the first meeting of the reproductive system in men.

The learning process in the first meeting began with reviewing the previous material and student experience related to the material. That is about the importance of the reproduction of living things. Next, students were motivated to know the importance of doing activities in everyday life including reproduction that follows the provisions of God. The students were given an understanding of the term of faithful that refers to doing all the commandments of God and avoiding all His prohibitions. Furthermore, the teacher delivers the learning objectives in the first meeting. Then, the students are
expected to understand the reproduction system in men and their functions through reading references, torso media observations, pictures, and discussions.

The main activity in the first meeting began with the activity of students in groups that observe the verses of the Qur'an associated with the reproductive system in human beings. Students read and examined the meaning of the verses of the Qur'an through the reading material provided. Each group was responsible for discussing and understanding the meaning of assigned verses of the Qur'an. Qur'an Surah Al-Hajj verse 5 was assigned for Group 1, Qur'an Surat Al-Mu'minun verses 12, 13 and 14 for Group 2, Qur'an Surah Al-Mu'min verse 67 for Group 3, and Qur'an Surah Al-Qiyaamah verses 37-38 for Group 4. The sentence, interpretation, and meaning of the verses were provided in the reading material.

Chapter 1 of the reading material provides verse 5 from Surat Al-Hajj. The interpretation of the verse is shown as follows.

"Oh Human, if you are in doubt about the resurrection, then We have made you from clay, then from a drop of semen, then from a clot of blood, then from a clot of flesh perfect and incorruptible, that We may make clear to you, and establish in the womb, what We will, until the appointed time; and then We bring you forth as a baby, and then come to maturity, and between You are the one who has been raised up and has been raised among you for a length of time, so that he does not know anything that he had known before. And when you see the earth dry, then when We have sent down water on it, the earth lays its life and grows and produces all sorts of beautiful plants."

Students discussed the meaning of verse 5 of Surah Al-Hajj. This activity aims to foster students' understanding that the verse describes the creation process of humans and plants as clear evidence of truth and the coming of the Day of Resurrection. This means that as God's khalifah on the earth, humans must always be vigilant and not fall into sinful deeds.

The reading material given for Group 2 is Surah Al-Mu'minun verses 12, 13, and 14. The interpretation of verse 12 of Surah Al-Mu'minun is "And verily We created man from a quint (origin) from the ground." Then, it is followed by Surah Al-Mu'minun verse 13 with the interpretation of the verse: "Then We made a semen-drop (stored in a firm place)." Next, the meaning of Surah Al-Mu'minun verse 14 is "Then the semen we made a clot of blood, and clothed it We made a clot of flesh, and clothed it We made the bones, then bones We covered with flesh. Then We made him another (form). So Blessed is Allah, the Best Creator."

The students in Group 2 read and discussed the reading material provided. This activity aims to build students' understanding of Surah Al-Mu'minun verses 12, 13, and 14 which explains that the long process of human creation that originated from food as a source of life. The source of human food comes from the soil which then becomes the essence of semen formation in men and ovaries in women. The semen (spermatozoa) that meets the ovaries will become the fetus through a long process. The students need to understand that after God commanded his servant to guard and cultivate his faith.

In the teaching material it is also explained that through the verse, God reminds us of the origin of human creation, from where it came, how he lives and where he will return. This will eliminate the arrogant attitude in the students as God's creation. In verses 12, 13, and 14 of the Surah Al-Mu'minun, it is said that all the food that God bestowed upon humans contain all sorts of substances needed for the survival of human beings. There are iron, egg whites, vitamins, calories, hormones and so on. The benefits of these foods help drain blood in the human body. In a healthy body, blood flow centering on eagles and from the heart flows through the whole body. In the blood, there is a substance that will become semen. A drop of semen has thousands and even the "look" that will be human, stored in the male shubbi and female taroib. Subsequently, God's will pertains to the appearance of a man who appears to be a tiny worm, in combination with semen in a woman who is a very small egg. The combination of both, it is called nutfah. The nutfah is growing within 40 days.

During the 40-day the semen that has been mixed, it gradually turns into a clot of blood. After 40 days in the form of a lump of semen, she turned into a lump of blood. It then freezes up into a clump
of meat and continues to change its nature into bones. The bones are surrounded by water which then becomes the meat to cover the bones. Bones then grow into a head, legs, hands and all the bones in the body was covered by meat. At that moment, it was conferred the spirit and the formation of a respiratory system.

Students are motivated to see the reality of God's greatness through the process of human creation. It aims to instill a sense of faith in students. Group 3 discussed Qur'an Surah Al-Mu'min verse 67. This verse motivates the students about the importance of studying the reproduction system as a part of worship to God. The interpretation of the verse is presented as follows.

"He who created you from the earth then from a drop of semen, after that from a clot of blood, then born of you as a child, then (you are left alive) that you may reach the age (then) until you are old, between you was what had been taken before. (That we may do so) that you may come to an appointed term and that you may understand."

Group 4 discusses verse 37 of Qur'an Surah Al-Qiyaamah. The meaning of the verse is "Did not he first drop a seminal spilled (into the womb)." Then, it is continued with verse 38 of the Qur'an Surat Al-Qiyaamah with the interpretation: "Then the semen becomes a clot of blood, then God created it, and perfected it."

The students' understanding of the meaning of the Qur'an verses during the discussion was re-written in the student worksheet. In the worksheet, the students also wrote in their own language the relationship between the verse and the reproductive system in men.

The next activity was that students observed the problem about the development of reproductive organs in men and the obligation of circumcision in men regarding Islamic Sharia, Acehnese culture and local wisdom, and cleanliness. This activity referred to observing activities that are the first activities of a scientific approach.

The students were given the opportunity to ask questions on the problems they had not understood. This activity is a questioning activity on a scientific approach. Next, the students discussed the reading material or notes on the key points of the lecture. These activities are literacy reading activities that are emphasized in the Curriculum 2013 and also data collection activities on a scientific approach.

The students identified reproduction type and function in men through Torso media, image media and clipping. The information the students obtained from their investigation was used to answer questions on the worksheet. The activity of identifying reproduction type and function in men through image media is shown in Figure 1.

![Figure 1. A student identified reproduction type and function in men through image media.](image)

The learning activities were continued by discussing and writing down the results obtained. Furthermore, each group made a display of male reproduction and function in their respective groups. This activity is shown in Figure 2.
Furthermore, groups of students present their work. Presentation activity is shown in Figure 3 below.

In the group visits, the students classically raised the problems encountered during the visit and discussed the solution. The teacher guided the discussion to find solutions to student problems.

In closing activities, the students were asked to make the conclusions about the reproductive system in humans and their functions. The teacher provided reinforcement to the conclusions formulated by the students related to the Aceh culture and Islamic Sharia. Next, the students completed the individual tasks. Scores of each student contributed to their group scores. The group that got the highest average score earned an award from the teacher. Then, the teacher provided follow-up information as preparation for further material.

Based on the implementation of reproduction topic learning with IC approach, it is found that learning materials that have been developed can be implemented in the biology classroom. Students were enthusiastic in discussing the meaning of Qur'an verses. The students were passionate in interpreting and relating the meaning of the verses to the to reproduction system topic. The integration of Islamic values through the verses of the Qur'an could connect the topic to the students’ life. This happened because the students in Aceh, especially participants in this study, implement the Islamic values based on the Qur'an. This condition can be utilized by teachers to achieve learning objectives [31]. Student enthusiasm on the Islamic value integrated into the learning process because the value is close to students’ lives [32].

The conformity between classroom learning and learning materials developed shows that Islamic values can be integrated into the learning [11,33,34]. Furthermore, the learning materials developed and tested in the classroom were carried out with an IC approach. This was done with the consideration that the integration of Islamic values through an IC approach will give an emphasis not only on the learning materials but also on the students' ability to understand and solve problems related to daily life and religious matter [7-9].

4. Conclusion
Based on the experiment conducted, it can be concluded that the learning materials of reproduction topic with Integrated Curriculum (IC) approach can be implemented in the classroom. The evidence is
showed by the implementation of learning in the classroom relevant to the lesson plan. Every aspect of IC, i.e., knowledge, skill and attitude, can be integrated without additional lesson time. In the learning, the students were trained to solve problems related to reproduction system based on Islamic values. Also, the religious attitude learned in the learning is understanding the reproductive system based on Islamic values.

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