FOSTERING STUDENTS' SCIENCE LITERACY AND ISLAMIC VALUE THROUGH DEVELOPMENT OF SCIENCE TEACHING MATERIAL: AN ETHNOSCIENCE-BASED INTEGRATION AND INTERCONNECTION APPROACH

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ASBTRAK

Penelitian ini bertujuan untuk mengembangkan bahan ajar melalui pendeatan etnosains berbasis integrasi interkoneksi untuk meningkatkan literasi sains dan mengembangkan nilai-nilai Islam siswa. Penelitian ini merupakan penelitian pengembangan/*Research and Development* (R&D). Model pengembangan mengikuti model *Four-D* (*Define, Design, Develop, Disseminate*). Sampel dalam penelitian ini terdiri dari sampel uji skala kecil dan sampel uji skala luas. Uji skala kecil terdiri dari 42 siswa dan sampel pada uji skala luas berjumlah 84. Instrumen dalam penelitian ini adalah lembar tes dan lembar angket. Penilaian kelayakan bahan ajar dilakukan oleh empat orang ahli yang terdiri dari ahli materi, ahli integrasi interkoneksi, ahli media, dan ahli bahasa. Hasil penelitian menunjukkan bahwa: 1) bahan ajar IPA berbasis integrasi interkoneksi melalui pendekatan etnosains memiliki kualitas yang sangat baik dan layak digunakan sebagai bahan ajar dalam pembelajaran IPA; 2) bahan ajar berbasis integrasi interkoneksi melalui pendekatan etnosains dapat meningkatkan kemampuan literasi sains siswa; 3) bahan ajar berbasis integrasi interkoneksi melalui pendekatan etnosains mampu mengembangkan nilai-nilai keislaman pada diri siswa.

Kata kunci: bahan ajar IPA, integrasi interkoneksi, etnosains, literasi sains, nilai-nilai Islami

ABSTRACT

This study aims to develop teaching materials based on interconnection integration through an ethnoscience approach in fostering science literacy and Islamic values. This research is a research development or Research and Development (R&D). The development model follows the Four-D model (Define, Design, Develop, Disseminate). The sample in this study consisted of small-scale and broad-scale test samples. The small-scale test consisted of 42 students and the sample on the broad-scale test amounted to 84. The instruments in this study were test sheets and questionnaire sheets. The assessment of the feasibility of teaching materials was carried out by four experts consisting of material expert, interconnection

integration expert, media expert, and linguists expert. The results show that: 1) teaching materials based on interconnection integration through the ethnoscience approach have very good quality and are suitable for use as teaching material in science learning; 2) teaching materials based on interconnection integration through the ethnoscience approach are able to fostering students' science literacy skills; 3) teaching materials based on interconnection integration through the ethnoscience approach are able to develop Islamic values in students.
***Keywords**: Science teaching materials, interconnection integration, ethnoscience, science literacy, Islamic values*

INTRODUCTION

The characteristics of 21-st century learning describe the process towards achieving core competencies such as critical thinking skills, problem-solving, creativity, communication and collaboration. Scientific literacy is a vital program for current generation of students in the whole world (Mahmudah, et al., 2020). One of the efforts to develop these core competencies is scientific literacy. Scientific literacy can be defined as scientific knowledge and skills to be able to identify questions, acquire new knowledge, explain scientific phenomena, and draw conclusions based on facts, understand the characteristics of science, awareness of how science and technology shape the natural, intellectual and cultural environment, and willingness to be involved. and care about science-related issues (OECD, 2016). Scientific literacy is the main key to face various challenges in the XXI century (UNEP, 2012) and is part of basic literacy that is indispensable in supporting the achievement of 21st Century skills (Ministry of Education and Culture, 2017). In addition, scientific literacy has the potential as a medium to develop positive attitudes (scientific attitudes) of students such as curiosity, initiative, adaptability, leadership, and social and cultural awareness.

PISA results in 2012, Indonesia ranks 64th out of 65 countries that participate in the acquisition of an average scientific literacy component, which is around 382 (OECD, 2014). The low level of scientific literacy ability is caused by several test materials at PISA that are not included in the

science curriculum in Indonesia (Ministry of Education and Culture, 2013). In addition, the absence of ethnoscience-based teaching materials that meet the demands of the curriculum also has an impact on the low achievement of students' scientific literacy skills (Dewi, et al: 2020). Therefore, one of the efforts that teachers can make in developing scientific literacy is to facilitate students through teaching materials.

Making modified teaching materials will provide more learning experiences for students. In addition, it can also be adapted to the conditions and characteristics of each environment. Local wisdom and potentials of an area can be used as learning resources in science learning so that students can learn for real and directly learn local wisdom in their area.

Learning by integrating cultural and regional values is stated in government regulation Number 19 of 2005 concerning National Education Standards in article 17 (1). These regulations provide greater opportunities for teachers to develop learning resources that are tailored to the potential and culture that exists in their respective regions. The development of teaching materials using an ethnoscience approach is one strategy in integrating local wisdom into learning resources.

Sudarmin, et al (2019) stated that the ethnoscience approach is appropriate to use in the development of teaching materials in exploring the local wisdom of an area because this approach is used to explore knowledge and understanding from the surrounding community into scientific knowledge. The development of teaching materials based on the ethnoscience approach was proven to improve critical thinking skills and generic science skills. In addition, it can also be used to develop student learning outcomes in the cognitive, affective, and psychomotor domains.

Dewi, et al (2020) also found that ethnoscience-based teaching materials were effective in improving students' scientific literacy skills. Nurcahyani, et al (2020) also stated the importance of ethnoscience learning in developing science education in the 21st century, namely to improve students' scientific literacy skills. Likewise, the findings produced by Atmojo, et al (2018) that integrated

science learning with ethnoscience can improve students' scientific literacy and scientific character. The development of teaching materials based on an ethnoscience approach is very important because it has a large impact on science education in schools (Dewi, et al: 2020).

The development of ethnoscience-based teaching materials will be more meaningful if they are integrated between science and the verses of the Qur'an. The existence of integration and interconnection between science and the verses of the Qur'an provides opportunities for students to understand natural phenomena from a religious perspective so that they can develop religious values in students which can then be applied in real life. The religious aspect of learning is very important to be developed. This is because religious attitudes are the first goal in the national education system in Indonesia, namely forming students to become human beings who believe and fear God Almighty and have noble character.

Aswirna (2017) found that science learning that links science with Qur'anic verses/Islamic values can make a high contribution in improving students' religious character. In addition, linking science with Qur'anic verses/Islamic values can improve students' understanding. There is a significant relationship between religiosity and mastery of science material. The higher the level of student religiosity, the higher the student's scientific ability. The integration of Islamic values with local wisdom is very relevant to be applied to science learning in the era of society 5.0. Nurhamidah & Purwanto (2020) stated that Islamic values and local wisdom when actually implemented will contribute to the realization of society 5.0.

Based on the above background, the formulation of the problem in this study is: how to develop science teaching materials with an interconnection-based ethnoscience approach in improving students' scientific literacy skills and developing students' Islamic values?

METHOD

This research is a research and development research that develops science teaching materials with an interconnection-based ethnoscience approach in improving scientific

literacy skills and developing students' Islamic values. This development uses the Four-D model proposed by Thiagarajan, Semmel, and Semmel (1974). This model consists of 4 stages of development, namely Define, Design, Develop, and Disseminate. The research subjects are students in the second semester of the 2020/2021 academic year. The instruments used are in the form of a questionnaire sheet and a test sheet.

The validation process and assess the feasibility of teaching materials that have been made through a closed questionnaire with categories from 3,26 to 4,00 with very good categories; 2,51 to 3,25 with good category; 1,76 to 2,50 with the poor category; and 1 to 1,75 with not good category. The assessment of the feasibility of teaching materials was carried out by four experts, namely science experts, linguists, media experts, and interconnect integration experts.

The results of expert assessments are used to produce appropriate teaching materials before they are implemented in the field. After being declared feasible, the teaching materials were tested on a small scale, which was carried out on 42 students. The instrument used in the small-scale test was to use pre-test and post-test sheets in the form of a description test to measure the increase in scientific literacy skills and a questionnaire sheet to measure the developed Islamic values of students. In addition, students are directed to fill out questionnaires to get responses to the teaching materials that have been developed. The scientific literacy ability test instrument was adapted from the Test of Scientific Literacy Skills (TOSLS) by Gormally (2012). Meanwhile, the questionnaire instrument for developing Islamic values and local wisdom was adapted from Nurhamidah & Purwanto (2020) which consisted of six aspects, namely: (1) honesty and accountability, (2) loyalty, (3) endurance and responsibility, (4) humility and tolerance (5) teamwork and recognition, and (6) punctuality and consistency. The results of the validity of the test instrument and the Islamic values questionnaire use the product-moment while the reliability uses Cronbach's Alfa. The results of the analysis show that all items are valid. The results of the reliability analysis

resulted in a coefficient value of 0.830 for the scientific literacy ability test instrument and 0.810 for the Islamic values questionnaire instrument.

The results of the small-scale test are used as a guideline to continue the large-scale test. In a wide-scale test, science learning was carried out on 84 students. The broad-scale test aims to obtain responses to the teaching materials that have been developed. Input and suggestions from students at this stage are used as materials that will be used to get the final product, namely science teaching materials with an ethnoscience approach based on proper interconnection integration. This stage also measures the improvement of scientific literacy skills and the development of students' Islamic values.

The data analysis technique used a qualitative descriptive technique. To measure the increase in students' scientific literacy skills, namely by using the N-Gain with a category of 0,70 <*N-Gain* ≤ 1,00 in the high category; 0,30 <*N-Gain* ≤ 0,70 is in the moderate/moderate category; and *N-Gain* ≤ 0,30 in the low category. Meanwhile, to find out how high students' Islamic values can be developed using teaching materials with an interconnection-based ethnoscience approach by making categories, namely 3,26 to 4,00 with very good categories; 2,51 to 3,25 with good category; 1,76 to 2,50 with good enough category; and 1 to 1,75 with poor category. Meanwhile, to measure the effectiveness of science learning using teaching materials through an ethnoscience approach based on interconnection integration, it was analyzed using descriptive statistics by making categories, namely 3,26 to 4,00 with very effective categories; 2,51 to 3,25 with effective category; 1,76 to 2,50 with the moderately effective category; and 1 to 1,75 with ineffective category.

RESULT AND DUSCUSSION

Results of the Development of Science Teaching Materials Using an Ethnoscience Approach Based on Interconnection Integration

The development of science teaching materials uses an ethnoscience approach, namely teaching materials that integrate with the social values of the community and local potentials that exist in the region. In addition, the integration of

interconnections between science and the Qur'anic verse aims to provide students with an understanding that many scientific materials are described in the Qur'an so that it will increase students' beliefs and religious character. The assessment of teaching materials was carried out by four experts consisting of material experts, linguists, media experts, and interconnect integration experts.

Table 1. Results of Feasibility Assessment of Science Teaching Materials

Feasibility Aspect	Average	Category
Content feasibility	3,9	Very good
Language feasibility	3,7	Very good
Presentation feasibility	3,8	Very good
Ethnoscience approach	3,9	Very good
Integration and interconnection	3,8	Very good
Fostering science literacy skill and Islamic value	4,00	Very good
Graphic feasibility	3,9	Very good
Average	**3,85**	Very good

Based on table 1, the developed science teaching materials are feasible to be used and implemented in the field with an average score of 3.85 and the category is very good. The theme developed is energy in life. The material studied includes the application of energy to humans, plants, and animals. The materials developed are related to local wisdom and potential of the Kebumen area, Central Java and integrated-interconnected with the verses of the Qur'an. Figure 1 is the front page display of the developed teaching materials.

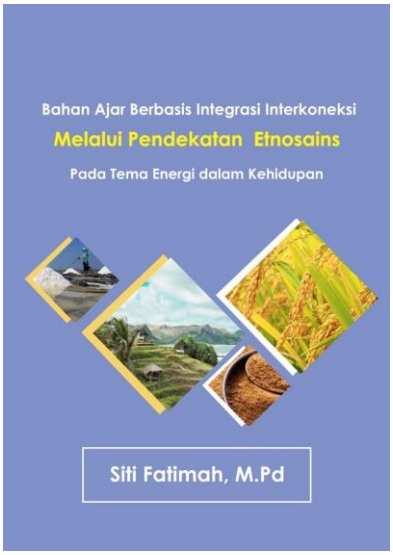


Figure 1. Cover

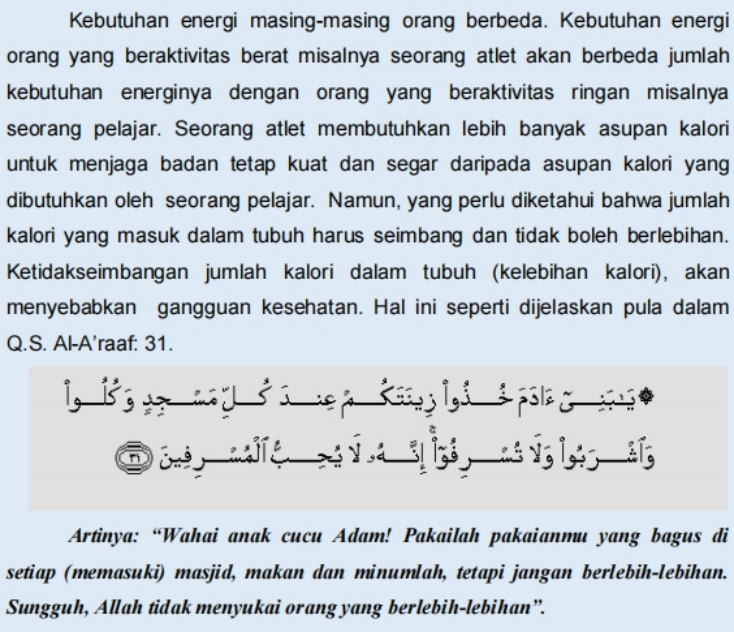
Some inputs from experts on this teaching material include: the formulation of more specific objectives, more careful use of spelling rules such as the use of exclamation marks in command sentences, careful observation of sentence structures such as the use of the words "that is", "so" is not placed at the beginning of the sentence Based on some input from these experts, then the teaching materials were revised. Suggestions from several experts aim to produce teaching materials that are appropriate, interesting, and in accordance with the level of student development before being implemented in learning. This is as explained by Kumalasari, et al (2021) that the purpose of the suggestions given by experts is so that the draft of teaching materials can be presented in full and supported by an attractive appearance. Interesting teaching materials will be more effective in achieving learning objectives because students are more happy and enthusiastic to learn science material. The development of these teaching materials is to incorporate the local potentials of the Kebumen area, Central Java to explain science material as shown in Figures 2.

Gambar 4. Pawai Ta'aruf Khotmil Qur'an Kebumen
(Sumber: http://www.kebumenekspres.com/)

Pawai ta'aruf merupakan kegiatan arak-arakan dalam rangka memeriahkan *Khotmil Qur'an* di Kebumen. Banyak anak (santri) yang menaiki delman dan odong-odong dalam kegiatan pawai tersebut. Delman dapat bergerak karena kuda memberikan gaya, sehingga delman dapat bergerak searah dengan arah gerak kuda tersebut. Begitu juga dengan odong-odong, odong-odong dapat bergerak karena kita memberikan gaya dengan cara mengayuh, sehingga odong-odong dapat bergerak searah dengan arah kayuhan kaki kita. Mari kita cermati gambar 5 berikut dengan seksama!

Figure 2. Local wisdom associated with scientific

The use of local potential in science teaching materials provides new knowledge for students. Students will be more interested in learning science by using ethnoscience-based teaching materials because students learn science material in relation to everyday experiences. Kumalasari, et al (2021) stated that science teaching materials containing ethnoscience are very suitable for students' daily lives so that students will be more interested in understanding science material. Dewi, et al (2019) explained that studying science material by connecting phenomena in the surrounding environment such as culture, customs, and so on can help students understand the surrounding environment and the material being studied. It is also explained by Hikmawati, et al (2021) that the natural and socio-cultural environment is very suitable to be used as a learning resource in science learning. This is because in addition to being able to develop students' thinking skills, it also provides awareness to students of the importance of preserving local culture.

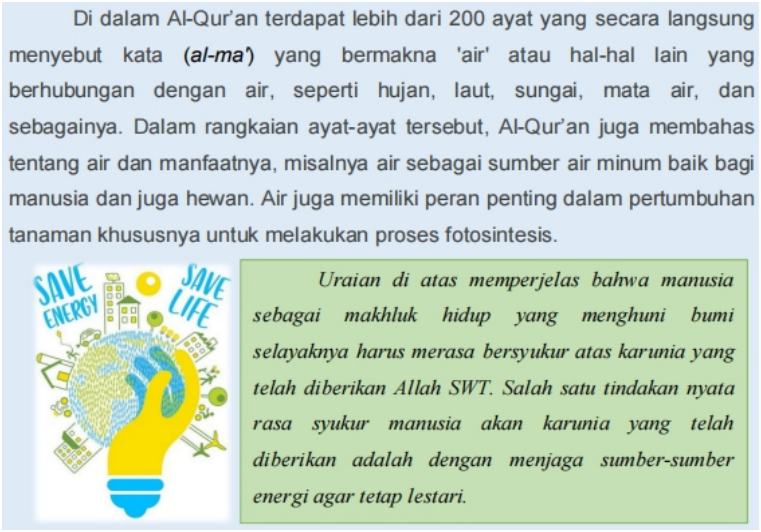

Kebutuhan energi masing-masing orang berbeda. Kebutuhan energi orang yang beraktivitas berat misalnya seorang atlet akan berbeda jumlah kebutuhan energinya dengan orang yang beraktivitas ringan misalnya seorang pelajar. Seorang atlet membutuhkan lebih banyak asupan kalori untuk menjaga badan tetap kuat dan segar daripada asupan kalori yang dibutuhkan oleh seorang pelajar. Namun, yang perlu diketahui bahwa jumlah kalori yang masuk dalam tubuh harus seimbang dan tidak boleh berlebihan. Ketidakseimbangan jumlah kalori dalam tubuh (kelebihan kalori), akan menyebabkan gangguan kesehatan. Hal ini seperti dijelaskan pula dalam Q.S. Al-A'raaf: 31.

يَٰبَنِيٓ ءَادَمَ خُذُواْ زِينَتَكُمۡ عِندَ كُلِّ مَسۡجِدٖ وَكُلُواْ وَٱشۡرَبُواْ وَلَا تُسۡرِفُوٓاْۚ إِنَّهُۥ لَا يُحِبُّ ٱلۡمُسۡرِفِينَ ٣١

Artinya: "Wahai anak cucu Adam! Pakailah pakaianmu yang bagus di setiap (memasuki) masjid, makan dan minumlah, tetapi jangan berlebih-lebihan. Sungguh, Allah tidak menyukai orang yang berlebih-lebihan".

Figure 3. Integration and interconnection material science and Alquran

The integration of interconnections in the development of these teaching materials is in the form of science materials and Qur'anic verses. In addition to integrating with the verses of the Koran, science materials in teaching materials are also integrated with Islamic values. The existence of integration and interconnection will increase students' knowledge in understanding the material holistically and thoroughly. Purwati, et al (2018) mention that the integration of Islamic values in science material makes students have a holistic and more meaningful understanding and mindset and makes students more enthusiastic and actively participates in learning.


Di dalam Al-Qur'an terdapat lebih dari 200 ayat yang secara langsung menyebut kata (*al-ma'*) yang bermakna 'air' atau hal-hal lain yang berhubungan dengan air, seperti hujan, laut, sungai, mata air, dan sebagainya. Dalam rangkaian ayat-ayat tersebut, Al-Qur'an juga membahas tentang air dan manfaatnya, misalnya air sebagai sumber air minum baik bagi manusia dan juga hewan. Air juga memiliki peran penting dalam pertumbuhan tanaman khususnya untuk melakukan proses fotosintesis.

Uraian di atas memperjelas bahwa manusia sebagai makhluk hidup yang menghuni bumi selayaknya harus merasa bersyukur atas karunia yang telah diberikan Allah SWT. Salah satu tindakan nyata rasa syukur manusia akan karunia yang telah diberikan adalah dengan menjaga sumber-sumber energi agar tetap lestari.

Figure 4. Integration and interconnection material science and Islamic values

Islamic values contained in teaching materials will guide students to have commendable attitudes (akhlakul karimah) because there is an invitation to be able to apply them in everyday life. Such as an invitation to protect the environment and energy sources, an invitation to always be grateful to Allah SWT, and others. Purwati, et al (2018) explain that this interconnection integration will foster a positive attitude and religiosity in students such as realizing the order and beauty of the universe and praising the power and greatness of Allah SWT.


Update Info

Pembangkit Listrik Tenaga Mikro Hidro (PLTMH) Kebumen

Energi air dari Saluran Induk Wadaslintang Timur (SIWT) menghasilkan energi listrik sebesar 2x200 Kilo Volt Ampere (KVA). Listrik dihasilkan dari Pembangkit Listrik Tenaga Mikro Hidro (PLTMH) yang dibangun di Desa Merden, Kecamatan Padureso, Kabupaten Kebumen. PLTMH Merden memanfaatkan air dari Waduk Wadaslintang yang terletak di perbatasan antara Kabupaten Wonosobo (daerah genangan waduk) dan Kabupaten Kebumen (lokasi Bendungan) air yang mengalir ditangkap di Bendung Pejengkolan terletak ± 6 km dari Bendungan Wadaslintang kemudian dialirkan ke Saluran Induk Wadaslintang Timur ± 5 km dari Bendung Pejengkolan. Air yang digunakan dikhususkan untuk irigasi sehingga air yang dipakai untuk pembangkit listrik disesuaikan dengan kebutuhan air irigasi.

Beberapa manfaat dari PLTMH adalah peningkatan lahan dan sumber daya air untuk pembangkit tenaga listrik, sehingga dapat meningkatkan produksi dan pasokan tenaga listrik sebesar ± 2,5 juta KWh/tahun; mengurangi Emisi Gas Buang serta dapat menghemat bahan bakar minyak setara dengan ± 857 ribu ton/tahun; sebagai pembangkit yang produksinya dapat langsung dinikmati oleh masyarakat (Listrik yang dihasilkan langsung dihubungkan dengan Jaringan Tegangan Menengah PLN yang menghubungan anatara Kecamatan Prembun, Kabupaten Kebumen dengan Kecamatan Wadaslintang, Kabupaten Wonosobo) dengan produksi sebesar 2 x 200 KVA.

Figure 5. Update informatioan about local wisdom in Kebumen

The additional information contained in this teaching material aims to provide additional knowledge that contains the latest information around the Kebumen area, Central Java. In addition, it also provides an understanding to students about the local potentials that exist in their area. Nurcahyani, et al (2021) stated that introducing the surrounding environment strongly supports students' knowledge of the importance of the environment so that students will feel proud and care about the local wisdom and environmental sustainability. This sense of pride will make students more enthusiastic in learning science material through teaching materials.

Implementation of Ethnoscience-Based Science Teaching Materials

Using an Interconnection Integration Approach

Teaching materials that have been declared feasible by experts are then implemented at the small-scale test stage, namely by using one class and broad-scale test using two classes.

Table 2. Student responses and the effectiveness of teaching materials in small-scale trials

Aspect	Average	Percentage	Category	Conclusion
Easily understand the material on the ethnoscience teaching material	4,00	100	Strongly agree	Very effective
Effective use of language	3,8	95	Strongly agree	Very effective
Interesting presentation	3,8	95	Strongly agree	Very effective
Conformity with the ethnoscience approach	3,8	95	Strongly agree	Very effective
Conformity with the integration and interconnection	3,7	92,5	Strongly agree	Very effective
Support scientific literacy skills and Islamic values	3,9	97,5	Strongly agree	Very effective
Graphical suitability of teaching materials	3,8	95	Strongly agree	Very effective
Average	**3,82**	**95,71**	**Strongly agree**	**Very effective**

Table 2 shows student responses to the developed teaching materials. The results show that students strongly agree with learning science by using science teaching materials through an interconnection-based ethnoscience approach. The input given at the small-scale test stage is that several explanations of the content of the Qur'anic verses are made in more effective sentences so that they are easy to understand. The input results from the small-scale test as the basis for the next step trial, namely the large-scale trial. A wide-scale trial was conducted on 84 students. The results of trials on a large scale are used as the basis for producing a feasible final product, namely ethnoscience-based science teaching materials through an interconnection integration approach.

Table 3. Student responses and the effectiveness of teaching materials in large-scale trials

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Graphical suitability of	3,8	95	Strongly	Very

teaching materials			agree	effective
Average	**3,82**	**95,71**	**Strongly agree**	**Very effective**

Based on table 3, learning using teaching materials through an ethnoscience approach based on interconnection integration is very effective in learning science. Science teaching materials developed can facilitate students to understand the material easily and interestingly because it includes local potentials of the region and integrates science material with the Alquran.

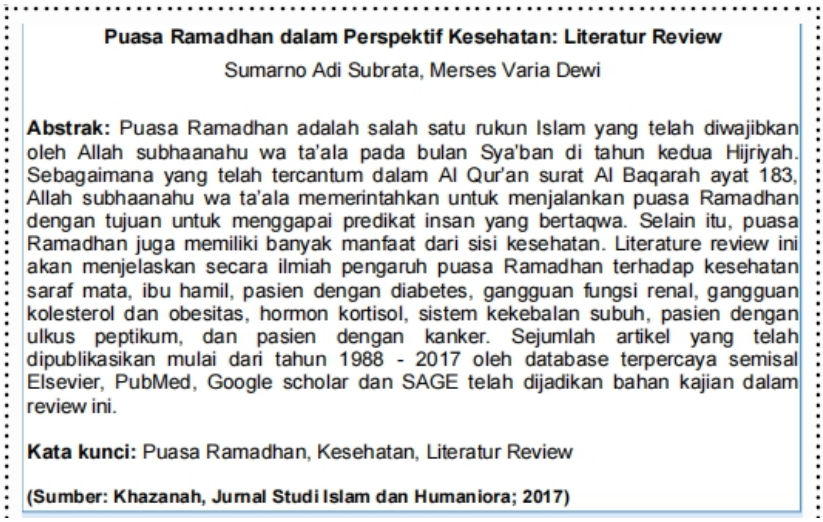
Table 4. N-Gain Result

Description	Class	
	Small class	Large class
Total Students	42	84
Minimum skor	65,34	70,67
Maximum skor	90,00	100
Average Pre test	68,76	73,34
Average Pos test	83,67	95,34
N-Gain	**0,47**	**0,82**

Table 4 shows the magnitude of the increase in students' scientific literacy skills which is indicated by the N-Gain value. The value of N-Gain in both small-scale and large-scale trials has increased. In small-scale trials, the increase in student literacy skills showed a moderate category with an N-Gain value of 0.47. Meanwhile, in the large-scale trial, the increase in student literacy skills showed a high category with an N-Gain value of 0.82. These results prove that teaching materials using an ethnoscience approach based on interconnection integration can be used to improve students' scientific literacy skills. Dewi, et al (2019) explained that science learning by connecting materials and the surrounding environment such as local potential in the area is effective in increasing students' understanding and scientific literacy skills. In addition, learning using an

ethnoscience approach also makes science learning more meaningful because students make direct observations and find concepts on their own.

This result is the same as research by Nurcahyani, et al (2021) that learning using an ethnoscience approach has a positive effect on scientific literacy skills because students are directly involved in the surrounding community so that students are more motivated and more active in the learning process. Likewise, research conducted by Yuliana, et al (2021) found that the development of teaching materials based on an ethnoscience approach was proven to improve scientific literacy skills and student activities by providing a positive response to the teaching and learning process.



Puasa Ramadhan dalam Perspektif Kesehatan: Literatur Review

Sumarno Adi Subrata, Merses Varia Dewi

Abstrak: Puasa Ramadhan adalah salah satu rukun Islam yang telah diwajibkan oleh Allah subhaanahu wa ta'ala pada bulan Sya'ban di tahun kedua Hijriyah. Sebagaimana yang telah tercantum dalam Al Qur'an surat Al Baqarah ayat 183, Allah subhaanahu wa ta'ala memerintahkan untuk menjalankan puasa Ramadhan dengan tujuan untuk menggapai predikat insan yang bertaqwa. Selain itu, puasa Ramadhan juga memiliki banyak manfaat dari sisi kesehatan. Literature review ini akan menjelaskan secara ilmiah pengaruh puasa Ramadhan terhadap kesehatan saraf mata, ibu hamil, pasien dengan diabetes, gangguan fungsi renal, gangguan kolesterol dan obesitas, hormon kortisol, sistem kekebalan subuh, pasien dengan ulkus peptikum, dan pasien dengan kanker. Sejumlah artikel yang telah dipublikasikan mulai dari tahun 1988 - 2017 oleh database terpercaya semisal Elsevier, PubMed, Google scholar dan SAGE telah dijadikan bahan kajian dalam review ini.

Kata kunci: Puasa Ramadhan, Kesehatan, Literatur Review

(Sumber: Khazanah, Jurnal Studi Islam dan Humaniora; 2017)

Figure 6. Illustration of teaching materials to support students' scientific literacy

The teaching materials developed contain contents that contain materials and activities to support the development of scientific literacy skills. Such as reading material sourced from trusted references, observation and experiment activities carried out by free inquiry. Experimental/observational activities in teaching materials are in accordance with the ethnoscience approach. Hikmawati, et al (2021) mention that the method of inquiry/investigation/experiment is one of the suitable methods in ethnoscience-based learning

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Table 5.The development of Islamic value

Aspect	Small scale		Large scale	
	Average	Category	Average	Category
honesty and accountability	3,10	Good	3,23	Good
loyalty	3,78	Very good	3,80	Very good
endurance and responsibility	3,20	Good	3,50	Very good
humility and tolerance	3,25	Good	3,78	Very good
teamwork and recognition	3,86	Very good	3,88	Very good
punctuality and consistency	3,30	Very good	3,40	Very good
Average	**3,41**	Very good	**3,59**	Very good

Table 5 shows that Islamic values owned by students can develop very well in small-scale trials and large-scale trials with average scores of 3.41 and 3.59. These results prove that teaching materials using a scientific approach based on interconnection integration can develop students' Islamic values very effectively. Teaching materials that link materials with local potential and integrate science and Qur'anic verses provide new knowledge for students. Aswirna (2017) mentions that science learning that links the material and verses of the Koran is proven to be able to develop students' religious attitudes very well. Students who have good religiosity tend to follow religious orders in accordance with Islamic teachings. The existence of a good religious attitude / Islamic values will affect behavior in daily life including maintaining and preserving

the natural environment and being proud of the local potential of the region.

CONCLUSION

The results show that: 1) teaching materials based on interconnection integration through the ethnoscience approach have very good quality and are suitable for use as teaching material in science learning; 2) teaching materials based on interconnection integration through the ethnoscience approach are able to improving students' scientific literacy skills; 3) teaching materials based on interconnection integration through the ethnoscience approach are able to develop Islamic values in students.

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