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The development of guided-inquiry based student worksheets integrated with Islamic values on environmental pollution material

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Abstract

Guided inquiry-based student worksheets (LKPD) that are integrated with Islamic values are still rarely developed. This research was conducted with the aim of developing LKPD, as well as testing validity, practicality and effectiveness in classroom learning. The method used is Research and Development (R&D) 4D model. Data was collected using validation sheets by media experts, materials, Islamic values material, biology teacher response questionnaires and class X MIA MAS Madinatussalam Deli Serdang students. The results of the study obtained a score of 96.15% in the "very valid" category for the media feasibility test, a score of 100% in the "very valid" category for the material feasibility test, a score of 82.86% in the "valid" category for the material feasibility test on Islamic values. The practicality test scored 96.6% (teacher response), and 89.37% (student response) in the practical category. The effectiveness test got an average N-Gain score of 0.599 with a "moderate" classification and was declared effective in increasing student learning outcomes and environmental care attitudes with a percentage of 92.12%. This LKPD can facilitate learning outcomes and instills the practice of caring for the environment which is integrated with Islamic values which will form a form of faith and gratitude to Allah, the creator of the universe, as well as being the basis for the development of other LKPD that integrates Islamic values.

Abstrak

Lembar kerja peserta didik (LKPD) berbasis inkuiri terbimbing yang terintegrasi dengan nilai-nilai Islam masih jarang dikembangkan. Penelitian ini dilakukan dengan tujuan untuk mengembangkan LKPD, serta menguji kevalidan, kepraktisan dan keefektifan dalam pembelajaran dikelas. Metode yang digunakan yaitu *Research and Development* (R&D) model 4D. Data dikumpulkan menggunakan lembar validasi oleh ahli media, materi, materi nilai-nilai Islam, angket respon guru biologi dan peserta didik kelas X MIA MAS Madinatussalam Deli Serdang. Hasil penelitian didapatkan skor 96,15% dengan kategori "sangat valid" untuk uji kelayakan media, skor 100% dengan kategori "sangat valid" untuk uji kelayakan materi, skor 82,86% dengan kategori "valid" untuk uji kelayakan materi nilai Islam. Uji kepraktisan mendapat skor 96,6% (respon guru), dan 89,37 % (respon peserta didik) dengan kategori praktis. Uji keefektifan mendapat skor rata-rata N-Gain sebesar 0,599 dengan klasifikasi "sedang" dinyatakan efektif meningkatkan hasil belajar dan sikap peduli lingkungan siswa dengan persentase sebesar 92,12%. LKPD ini dapat memfasilitasi hasil belajar dan menanamkan pengamalan sikap peduli lingkungan yang diintegrasikan dengan nilai-nilai Islam akan membentuk wujud rasa iman dan bersyukur kepada Allah pencipta alam semesta, serta menjadi dasar pengembangan LKPD terintegrasi nilai Islam lainnya.

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A. Introduction

Learning biology is a vehicle for increasing knowledge, skills, attitudes and values as well as being responsible to the environment, society, nation, state, who believe in and fear God Almighty (Nurika et al., 2021). Biology is closely related to how to find out and understand about yourself, the universe and life in a systematic way. Thus, in essence the study of religious and biological material has a very close relationship and if integrated will produce meaningful learning. Biology studies facts, procedures, and phenomena related to living things and their lives which are God's creation as contained in Islamic values (Mualimin, 2020). Islamic values are a combination of life principles and teachings about how humans should live their lives according to the Qur'an and Hadith both in the Islamic values of monotheism, piety, faith and muamalah (Hudah, 2019).

The integration of Islamic values into education and teaching is a process of guidance through good educative examples to instill life values which include the values of belief, culture, morals, and beauty so as to form students who have spiritual intelligence, have good morals and have skills (Silpina & Pritandhari, 2020). It is believed that efforts to integrate Islamic values into education can be used as a stronghold of personality and life defense for students (Hidayat, 2021).

Having the right knowledge and understanding of science, it is hoped that the practice will be in accordance with the guidance of Rasulullah SAW. The Al-Qur'an recommends for every educator to always look for the best way and media to make it easier for students to receive the knowledge of Allah SWT, as in the Al-Qur'an in principle it is expected in Surah Al-Maidah verse 35 as follows:

يٰٓاَيُّهَا الَّذِيْنَ اٰمَنُوا اتَّقُوا اللّٰهَ وَابْتَغُوْٓا اِلَيْهِ الْوَسِيْلَةَ وَجَاهِدُوْا فِيْ سَبِيْلِهٖ لَعَلَّكُمْ تُفْلِحُوْنَ ﴿٣٥﴾

Meaning: *"O you who believe, fear Allah and seek a way that draws closer to Him (wasilah) and strive in His way so that you will be successful"* (QS. AL-Maidah 05:35).

Based on the verse above, the word "wasilah" contains three meanings, namely first to get closer to Allah, second to Intermediary or Media, third to oath. In the word wasilah is the meaning for intermediaries or media used in learning activities. So far, schools under the auspices of Islam have not presented verses from the Al-Quran or hadith in the textbooks used (Anggoro et al., 2019). Someone who studies biology will be able to gain an understanding of monotheism (religion). This can be seen from the value of monotheism contained in biology subjects, namely monotheism which is rububiyah in nature, namely uniting Allah with deeds, namely by utilizing the potential that exists in humans to maintain and preserve the universe as a form of worship to God (Basith, 2021).

Studying biology, it is hoped that students will magnify the greatness of God. Biology learning reveals scientific facts, can be done using various methods (Mualimin, 2020). One method that can be used is the activity of scientific investigation or research. The Qur'an and Hadith have provided a complete and perfect system that covers all aspects of human life, including scientific activities or scientific investigations. Scientific activity is an integral part of the entire Islamic system where each part contributes to the others (Hamdan & Nugrawijayati, 2020). The Koran as the word of God, was not revealed for practical purposes. In its capacity as hudal linnas (guidelines for humans), the Al-Quran provides stimulant information about natural phenomena in quite a large portion, namely around seven hundred and fifty verses (Mualimin, 2020). These verses in the Koran can be studied through learning biology in order to find scientific facts (Suryaningsih, 2018).

Based on observations, learning biology in class is still focused on how students memorize concepts, not on the concept discovery process. This is supported by the results of direct observations of students, by conducting interviews with biology teachers and also by research conducted by Kumalasari et al. (2021) where a percentage of 100% or the entire student population has not met the specified minimum completeness criteria, namely 70 and students must take remedial tests in order to achieve the minimum completeness criteria. According to this, students participate less actively in learning activities, are less able to discuss in groups, and are less likely to propose and respond to friends opinions. The results of direct observations and interviews show that Biology learning is currently running with several obstacles during the teaching and learning process, especially in environmental pollution material because it uses special methods but has not used an appropriate approach.

The inquiry-based learning approach is divided into three levels from low to high difficulty levels, namely: Structured Inquiry, Guided Inquiry, and 3) Open Inquiry (Misbahul, 2020). In structured inquiry, students will carry out investigations and discoveries based on questions and procedures provided by the teacher, in open

inquiry, students carry out investigations based on questions and procedures that students form, while guided inquiry although students carry out investigations based on questions posed by the teacher, but students determine the procedure and investigation (Damhuri et al., 2020). An approach that is suitable for students, especially high school/MA students, in the lack of learning experience through the discovery process, namely by providing learning such as guided inquiry which is effective in improving student learning outcomes and can be used in learning (Kumalasari et al., 2021).

The guided inquiry approach students learn to use critical thinking skills when they discuss and analyze evidence, evaluate ideas and propositions, reflect on the validity of data, process, and make conclusions (Fegi & Ali, 2021). The guided inquiry approach in which the teacher guides students in carrying out activities by giving initial questions and leading to a discussion. The general goal of the guided inquiry approach is to help students develop intellectual skills and other skills, such as asking questions and finding (looking for) answers that start from their curiosity (Harianti, 2020). These activities will be more meaningful if implemented in a worksheet of one of the learning media, namely LKPD.

Learning media that can help students and teachers in the learning process are LKPD (Kristyowati, 2018). LKPD including print media resulting from the development of printing technology in the form of books. LKPD is a learning media that can be used by teachers in conveying material and increasing students' understanding of a learning process. In implementing the 2013 Curriculum, teaching materials in the form of Student Activity Sheets are expected to be an alternative in completing teaching materials in 2013 Curriculum learning, especially in biology learning (Lase & Lase, 2020). According to Wati et al. (2021) LKPD is a learning tool that can be used in experimental activities, demonstrations, discussions, and can also be used as a guide in curricular assignments.

Based on the preliminary study, the LKPD used did not develop learning activities which made students' understanding of concepts still low, causing unsatisfactory student learning outcomes (Wahono et al., 2022). Students have not been accustomed to constructing their own concepts in a learning material through LKPD learning media. The LKPD used is also only strengthening or enrichment LKPD, which means simply emphasizing the results of activities, not LKPD that is able to explore students' critical thinking skills. From the results of observations at MA Madinatusalam, Percut Sei Tuan District, it is known that biology teachers usually use media in the form of companion books obtained from public publishers. Companion books that only contain summaries of material and practice questions which are generally in the form of multiple choice or essays, where the book is not in accordance with curriculum learning activities that promote research-based learning (inquiry learning). The biology teacher provides practice questions at the end of each lesson which aims as enrichment of the material just studied. Sometimes the practice questions are done at home or as homework. The use of LKPD in learning is also very rare. In addition, learning in the classroom is still teacher centered, which means teacher-centered learning and students tend to only listen and pay attention to the teacher when explaining learning material.

Learning material in biology, especially on environmental pollution material, is material that emphasizes information processing where the learning process rarely uses a particular learning model, and there are still few teaching materials that contain biological material that is associated with understanding in the Qur'an and Hadith, especially Islamic values. Student Activity Sheets integrated Islamic values are a form of implementation in the world of education to meet the needs of students in the learning process (Agustina et al., 2022). The LKPD is oriented between the material being taught and situations in the real world that are Islamic in nature (Herman, 2015), in this case students are required to actively solve problems related to the real world and be integrated with Islamic religious values. . In this case, LKPD will assist students in discovering concepts through their own activities or studying in groups which will lead to more meaningful learning both in terms of material and Islamic religious values (Harianti, 2020).

Research related to the development of LKPD that was carried out previously, namely Kumalasari et al. (2021) showed that guided inquiry-based LKPD that integrated Islamic and hadith values after being validated and tried out showed higher experimental class scores compared to the control class. Subsequent research was investigated by (Cindy et al., 2021), on natural science material, based on the validation value of LKPD in the valid category, the practicality of LKPD is in the very practical category, and the effectiveness of LKPD with moderate improvement criteria. Based on this, it is necessary to develop other LKPD. So, the purpose of conducting research related to the development of LKPD is to produce LKPD based on

guided inquiry integrated with Islamic values on environmental pollution material for class X SMA/MA for LKPD that are valid, practical and effective. So, the development of LKPD can be applied in learning biology in schools, especially those that are integrated with Islamic values, as well as to find out students' responses to LKPD products integrated with Islamic values for class X SMA/MA students on other biology material.

B. Material and Method

This type of research is research and development (Sugiyono, 2015). The model used is the 4-D model development by Thiagarajan et al. (1974). In this research, Student Activity Sheets (LKPD) will be developed which are oriented towards the guided inquiry approach with the development stage referring to the 4-D type device development model. The 4-D development model was chosen because it is the recommended development model in the development of learning tools. This model consists of four stages of development, namely Define, Design, Develop, and Disseminate.

At the define stage, the learning process in schools has been observed and interviewed. This stage is the result of these processes. The purpose of this stage is to define and determine the requirements of the learning process. Determination of learning requirements is carried out by analyzing Core Competencies, Basic Competencies, and learning materials in accordance with the 2013 Curriculum content standards. The research begins with the definition stage, namely analyzing Core Competencies, Basic Competencies, and learning materials according to the 2013 Curriculum content standards.

The design stage, the purpose of this stage is to make LKPD, which consists of 3 stages namely, compiling tests, choosing media, preparing learning objectives, and drafting LKPD. The design of LKPD was carried out based on the stages of the guided inquiry learning approach. The material used is environmental pollution. the purpose of this stage is to make a prototype LKPD, which consists of 3 stages, namely, compiling tests, selecting media, compiling learning objectives, and drafting LKPD.

The third stage is develop. The purpose of this stage is to develop LKPD with valid, practical, effective criteria that have been previously revised by media experts, materials and student responses. The LKPD revision process consists of two stages, namely the LKPD revised by the supervisor and the assessment of media and material experts and field practitioners. And also the aim of this stage is to develop LKPD with valid, practical, effective criteria that have been previously revised by media experts, materials, Islamic values and student responses. The LKPD revision process consists of two stages, namely the LKPD which is revised by the supervisor and the assessment of media and material experts and field practitioners.

And the last one is at the Disseminate stage. This stage is to disseminate the designed LKPD. The dissemination of this LKPD was carried out by class X Madrasah Aliyah or SMA. Furthermore, large-scale dissemination is the publication of this scientific article. The validation assessment instrument is in the form of media and material expert validation sheets. Then the practicality of LKPD by field practitioners and the effectiveness of LKPD in the form of student questionnaire responses and analysis of student scores which are known from the results of the pre-test and post-test. In measuring the quality of LKPD using data analysis techniques by converting scores into percentages. The purpose of this stage is to disseminate the designed LKPD. The dissemination of this LKPD was carried out by class X SMA/MA. Furthermore, large-scale dissemination is the publication of this scientific article.

The instruments used were: 1) interview sheets and teacher observation, to find information related to the learning process in the class in finding research background at the define stage; 2) questionnaire for responses, to see the responses of students and biology teachers regarding the use of LKPD; and 3) expert validation sheets aimed at assessing the validity of the LKPD products to be developed as well as a questionnaire to measure environmental care attitudes.

Data analysis techniques aim to obtain valid, practical and effective LKPD by using quantitative data (validity, practicality and effectiveness), as well as qualitative data (comments, criticism and suggestions) and Quantitative Data Analysis. Validity analysis uses the results of validators from media expert validators, material, Islamic values and language. Later the sheet is validated in advance by the instrument validator. Then validation was carried out by each validator, the validation results were analyzed using Table 1.

Table 1 Score Guidelines for the Likert Scale Assessment

Assessment criteria	Score
Strongly agree	5
Agree	4
Doubtful	3
Don't agree	2
Totally disagree	1

(Source: Sugiyono, 2015)

Based on Ikhwani & Kuntjoro's research (2021), explains the Formula 1 used in the following product success percentages.

$$\text{Index } 100\% = \frac{\text{Score obtained}}{\text{Maximum number of scores}} = 100\% \text{ ...(Formula 1)}$$

The values that have been obtained are then analyzed according to the following Formula 2.

$$\text{N} - \text{Gain} = \frac{\text{Posttest value} - \text{Pretest value}}{\text{Maximum value} - \text{Pretest value}} \text{ .....(Formula 2)}$$

The validation results then calculated the percentage based on the criteria which can be seen in Table 2.

Table 2 Validity Assesment Criteria

Persentage (%)	Validation criteria
76-100	Very Valid
56-75	Valid
40-55	Less Valid
0-39	Invalid

(Source: Sugiyono, 2015)

Practicality analysis on LKPD can be seen based on the results of student and teacher responses regarding the implementation of these learning stages (see Table 3).

Table 3 Practically Level Criteria

Score ranking	Criteria
21%-40%	Very impractical
41%-60%	Quite practical
61%- 80%	Practical
81%-100%	Very practical

(Source: Sugiyono, 2015)

The pretest and posttest results, as well as the development of a caring attitude toward the environment, are the focus of effectiveness analysis. If the post-test value is higher than the pre-test value, LKPD is said to be effective. This is calculated using the classical completeness formula of students. The data is then converted based on the effectiveness assessment criteria (see Table 4).

Table 4 Product Effectiveness Criteria

Percentage (%)	Criteria
0,01 - 0,40	Very less effective
0,41 - 0,70	Effective
0,71 – 1,00	Very effective

(Source: Sugiyono, 2015)

The development of an attitude of caring for the environment is carried out by using a questionnaire to measure the attitude of caring for the environment which consists of 20 statements using the Likert scale instrument which includes 4 indicators of caring for the environment, namely, keeping the environment clean as a form of gratitude to Allah SWT, participating in maintaining activities to protect the physical environment, cleaning the biological environment, and social environment.

Qualitative data analysis contains responses, comments, criticisms, suggestions, revisions, and observations. Qualitative descriptive analysis by means of data analysis or processing by systematically compiling in the form of sentences/words, categories regarding a subject (objects, symptoms, and certain variables), so that finally a general conclusion is obtained. This qualitative descriptive analysis technique is used to process data from expert reviews. This data analysis technique was carried out by grouping information from qualitative data in the form of input, responses, criticisms and suggestions for improvement contained in the questionnaire. The results of the analysis are then used to revise the product being developed. The research sample was 41 students of class X science 1 as many as 41 students.

C. Results and Discussion

The results of the developed LKPD consist of the stages of the guided inquiry approach using Llewellyn's (2013) steps. The stages of Inquiry activity in this study are interpreted as a learning model in which the stages follow the seven stages of inquiry according to Llewellyn (2013), namely: (1) exploring a phenomenon, (2) focusing questions, (3) planning an investigation, (4) conducting investigation, (5) data analysis and verification, (6) building new knowledge, (7) communicating new knowledge which in each stage already contains a guided inquiry approach.

The LKPD that are integrated with Islamic values are required to facilitate learning. The researcher wants to make guided inquiry-based LKPD integrated with the Qur'an and Hadith Islamic values to improve learning outcomes and student responses as well as religious traits in environmental pollution subjects. The development of guided inquiry LKPD integrated with Islamic values is an alternative that can be done in order to instill Islamic values in students. The use of guided inquiry-based natural science LKPD is expected to improve learning outcomes and the religious nature of class X SMA/MA students.

Validation of LKPD integrated Islamic values based on guided inquiry on environmental pollution material was carried out by 3 expert

lecturers, consisting of 1 lecturer as a material and language expert validator, 1 lecturer as an expert validator on Islamic values material, and 1 lecturer as an expert validator media.

At the define stage, preliminary research was carried out based on the results of interviews with biology teachers and field observations related to the implementation of learning in class X MIPA MA Madinatussalam Deli Serdang, obtained problems in learning biology, including: First, the implementation of biology learning is still teacher-centered, because students are not used to it discover concepts and facts on their own, thus causing low learning ability in students. Second, the use of teaching materials in these schools is still focused on textbooks and other internet sources. Teachers still rarely apply LKPD in the biology learning process, usually teachers apply LKPD when they are going to do practicum. Third, when studying biology there are some students who are still passive and not enthusiastic when following lessons. Fourth, the biology teacher also said that he had never used guided inquiry-based LKPD integrated with Islamic values as a biology learning medium.

Furthermore, in the design stage, guided inquiry-based LKPD designs were carried out integrated with Islamic values and research instrument designs, including: expert validation sheets to see the feasibility of LKPD, teacher and student response sheet instruments to determine the practicality of LKPD, and pre-test post-test lattice to see the effectiveness of LKPD. After the LKPD framework has been designed, the contents of the LKPD are developed according to the guided inquiry stage by including the guided inquiry syntax, and the content of the material is adapted to environmental pollution. Furthermore, Color pictures and illustrations are added to support readers interest in guided inquiry-based LKPD. LKPD can be said to be good if it has an attractive appearance, clear writing, and pictures that support the student's interest in reading.

The develop stage, namely the development stage of LKPD used in research as teaching materials to validate LKPD. The validation test is carried out to find out how valid the LKPD has been made by the researcher. Validation was carried out with 3 validators, each of which validated material and language, media, and material on Islamic values.

The validation that was carried out by material and language experts obtained a total score of 160 with the overall validation results showing the criteria of "very valid", valid category with revisions and having a percentage of 100% (see Table 5). Assessments by material and language experts provide suggestions for adding material on understanding the environment so that students know in advance the definition of the environment itself, adding material on countermeasures, be it water, air and soil countermeasures. Improving pictures of activities that are appropriate and related to each other between pictures before and after experiencing environmental changes and fixing the time of activities to be carried out by students. The revised results are shown in Figure 1.

Table 5 The Result of the Validation of Material and Language Experts

Aspect	Score obtained	Maximum score	Percentage	Criteria
Content feasibility aspect	65	65	100%	Very Valid
Aspects of persentation feasibility	40	40	100%	Very Valid
Aspects of contextual assessment	20	20	100%	Very Valid
Language feasibility aspect	35	35	100%	Very Valid
Maximum number of scores	**160**			
Percentage	**100%**			
Criteria	**Very Valid**			

Table 6 Media Expert Validation Results

Aspect	Score obtained	Maximum score	Percentage	Criteria
Size LKPD	10	10	100%	Very Valid
Cover Design LKPD	33	35	93,3%	Very Valid
Content Desaign LKPD	82	85	96,5%	Very Valid
Maximum number of scores	**125**			
Percentage	**96,15%**			
Criteria	**Very Valid**			

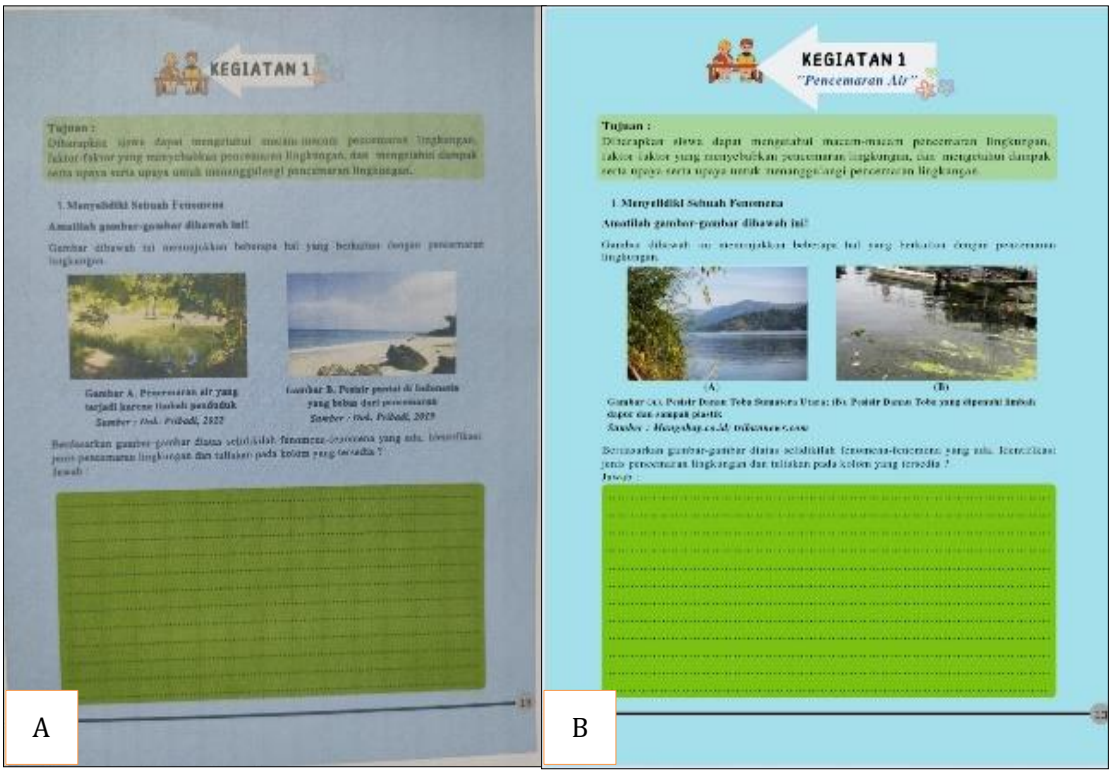

Figure 1
The results of improving the content of learning activities according to the advice of material experts;
(A) before, and (B) after (in Indonesian)

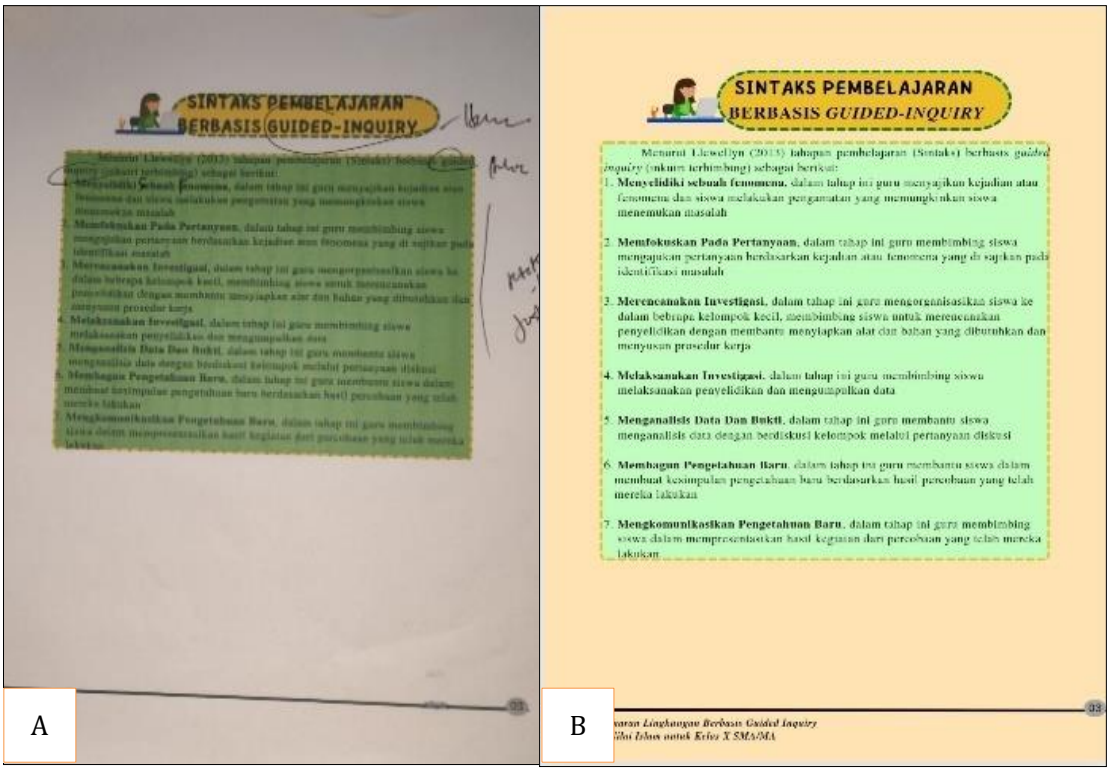

Figure 2
Results of repair according to media expert advice; (A) before, and (B) after (in Indonesian)

Table 7 Result of Material Validation Islamic Values

Aspect	Score obtained	Maximum score	Percentage	Criteria
Material corelation with the verses of the Al-Quran	16	20	80%	Valid
Integration of material content with verses of the Al-Quran	28	35	80%	Valid
The support of verses of the Al-Quran with material	15	15	100%	Very Valid
Insight of students towards Islamic values	12	15	80%	Valid
Internalization of Moral Values through material integration with Al-Quran verses	13	15	86,6%	Valid
Strengthening Spiritual Attitudes in learning	12	15	80%	Valid
Development of character learning based on Al-Quran verses	20	25	80%	Valid
Total Score	**116**			
Percentage	**82,86%**			
Criteria	**Valid**			

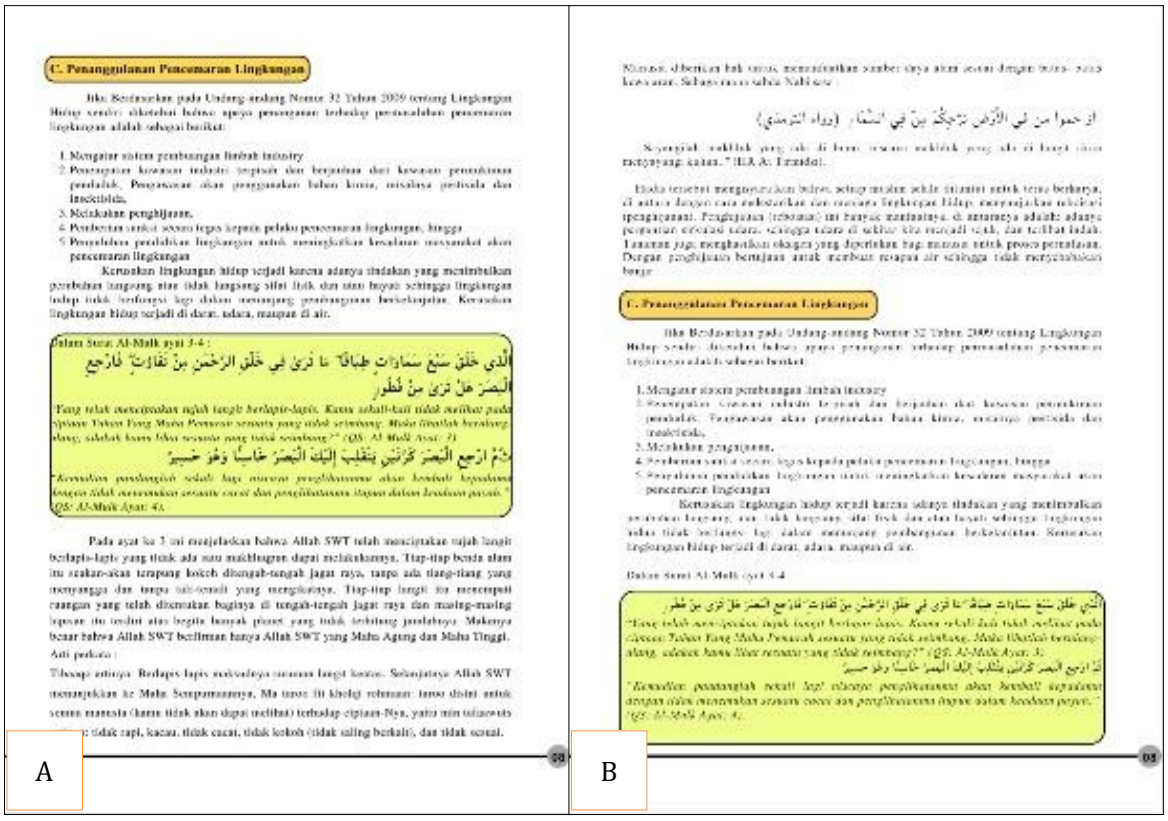

Figure 3
Results of material improvement of Islamic values; (A) before, and (B) after (in Indonesian)

Validation carried out by media experts, based on the results obtained by averaging all media validation results, showed the category of "very valid", with a percentage of 96.15% (see Table 6). As for the notes and input from the validator, namely to improve the use of italic letters, cover writing and layout, make the syntax steps to make it look clearer and fullcolor, and pay attention to right-left alignment. The results of revisions by media experts are shown in Figure 2.

Assessment by material experts on Islamic values, obtained a percentage of 82.86% with the "Valid" criterion (See Table 7). Material experts on Islamic values provide suggestions for adding the arguments of the Al-Quran and Hadith in accordance with the pictures listed on the LKPD. The results of the revision by material experts on Islamic values are shown in Figure 3.

The LKPD that are considered valid are then implemented in the learning process to assess their practicality. The Figure 4 are the results of the practicality test through a response questionnaire by teachers and students.

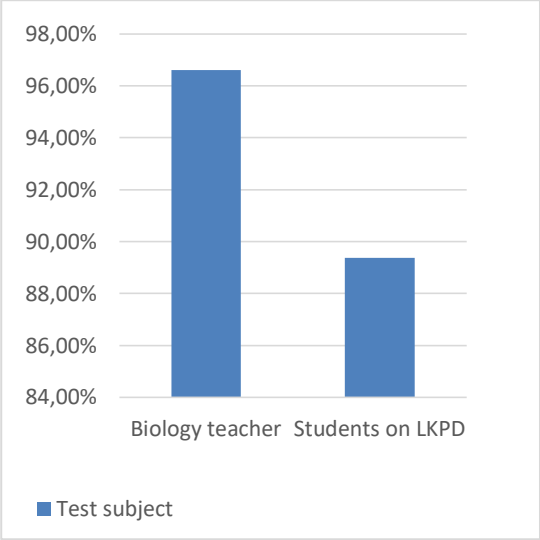

Figure 4
Practical test results

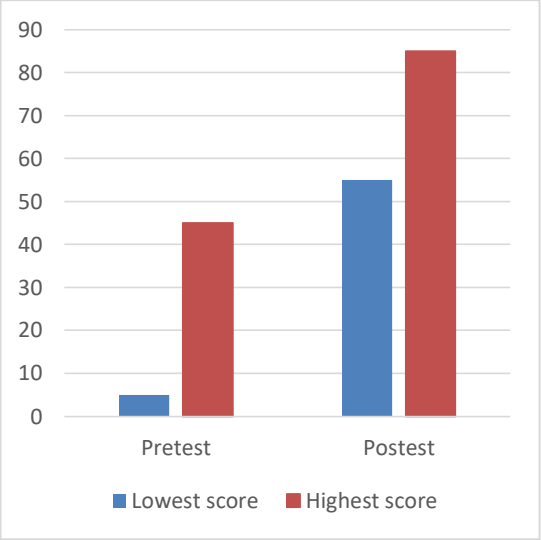

Figure 5
Increasing the value of pretest and posttest student learning outcomes

Table 8 The Average Value of Pretest, Posttest, and N-Gain

Pretest	Posttest	N-Gain
24,87	69,14	0,599

Based on Figure 4, an average of 96.6% (teacher response questionnaire) was obtained, an average of 89.37% (student response questionnaire to LKPD) showed LKPD with the criteria "Very practical". Teachers and students showed a positive response to the developed LKPD. According to students, the LKPD developed were interesting, the material presented was clear and straightforward, making it easier for them to master the material, and encouraging students to always involve the Al-Qur'an and hadith as inspiration in learning biology.

After revising the material, language, media and material aspects of Islamic values, the product can be tested in learning to assess its effectiveness. The results of the effectiveness of LKPD were analyzed from the pretest, posttest of students seen from the aspects of learning outcomes and the development of mastery of environmental care attitudes.

Based on Figure 5, it can be seen that the students pretest and posttest scores increased. Then tested the N-Gain to determine the increase in student scores. The average value of students is presented in Table 8.

In table 8 above it is clearly seen that the acquisition of students' pretest scores is lower than the posttest scores. The average N-Gain calculation obtained is 0.599 with a "medium" classification and an effective description. This shows that LKPD are effective for use in learning. Improved learning outcomes after using LKPD with the acquisition of posttest scores higher than pretest scores. Where the average pretest and posttest scores obtained were 24.87 and 69.14.

In addition to measuring the effectiveness of LKPD on learning outcomes, the effectiveness of LKPD on caring for the environment was also measured with a percentage of 92.12% in the "very effective" category. The increase that occurs in learning outcomes and the mastery of environmental care attitudes occurs because of the guided inquiry syntax or stages that exist in LKPD. Where in the guided inquiry syntax that is in the LKPD will guide students to investigate phenomena and find problems and solutions to deal with these problems.

In the aspect of mastering environmental care attitudes it shows effectiveness because the syntax in LKPD will lead to indicators of environmental care attitudes such as the fifth syntax, namely analyzing data and evidence where in this fifth syntax can improve all indicators of environmental care attitudes, namely as in the first indicator, encouraging students to keeping the environment clean as a form of gratitude to Allah SWT is indicated by questions that guide students to explain how to or solutions to deal with water pollution and what Islamic values can be drawn from these solutions. So this shows that LKPD can influence the effectiveness of learning biology on environmental pollution material.

After testing by conducting an effectiveness test to determine the level of effectiveness of the developed LKPD, the effectiveness of using LKPD is tested through the average N-Gain calculation

obtained from students' pretest and posttest scores. The increase that occurs before and after the use of the LKPD is calculated using N-Gain.

The average N-Gain calculation obtained is classified as "moderate" and effective. These results are supported by research conducted by Harahap et al. (2021), learning resources in the form of guided inquiry-based LKPD are effective for use in learning because they require students to be more active in learning and fun and meaningful learning will be achieved. Where the average N-Gain obtained is 0.43 with the "medium" classification. In another study conducted by Ikhwani & Kuntjoro (2021), there was an increase in learning outcomes after using LKPD with posttest scores higher than pretest scores in the experimental class. The high value of practicality and effectiveness as well as students' responses to LKPD and Islamic values, shows that the contents of LKPD are effective for use in biology learning with the stages of the guided inquiry approach, especially on environmental pollution material, as in the research of Harianti (2020) that the Islamic values-oriented LKPD which was developed was very practical by obtaining a fairly high percentage of student responses.

The development of LKPD based on guided inquiry has been quite extensively developed as according to Ananda & Tanjung (2022) who states that LKPD can be used as a learning medium and guided inquiry as a supporting learning approach; Leli & Sipayung (2019) which is limited to guided inquiry-based and excretion system material; and Ramadhani et al. (2021) which only focus on guided inquiry based on Invertebrate material. However, the development of these studies has not integrated them with Islamic values. Unlike the other guided inquiry-based LKPDs, the guided inquiry-based LKPDs integrated with Islamic values that have been developed already contain Islamic values and can be applied in learning.

Guided inquiry-based LKPD integrated with Islamic values can be used as a support for learning in class because the use of LKPD makes students more willing to work with groups with evaluation activities and practicum carried out by students and also the application of Islamic values displayed. This is in accordance with the research of Chandra et al. (2020) which states that learning can be said to be effective if it is able to provide new experiences to students to shape students' competencies and can lead them to the learning goals they want to achieve optimally. By studying biology and the process of the scientific method in understanding biological concepts, it can facilitate the mastery of learning outcomes because students actively construct their knowledge like a scientist. The learning process also instills the practice of attitudes related to the subject of biology, namely the attitude of caring for the environment. Through the integration of Islamic values, students get the view that caring for the environment is also a form of faith and gratitude to God, the creator of the universe.

The LKPD that are integrated with Islamic values are needed to support the learning process, making the Al-Quran and Hadith to facilitate student inquiry LKPD to improve student learning outcomes and religious character in environmental pollution material, where the development of guided inquiry LKPD integrated with the Quran and Hadith is an alternative that can be done in instilling Islamic values in students, the use of guided inquiry-based LKPD can improve learning outcomes in learning and students' religious character (Kumalasari et al., 2021). Thus, studying biology in a constructive manner through the guided inquiry model which is integrated with Islamic values will support the improvement of learning outcomes and environmental care attitudes. As in the research by Sari et al. (2022) which stated that an increase in character values before and after learning using guided inquiry LKPD integrated with Islamic values occurred because of the active involvement of students during the learning process, so that students experienced changes in behavior as a result of experience.

Based on these results, the developed LKPD guided inquiry integrated Islamic values can be said to be valid, practical, and effective in use but still has limitations. Such as the limitations in developing LKPD at the development stage where it has not been widely disseminated because the research focuses on only one school, limitations in the learning process which requires a longer time. This is because students are not familiar with the stages in the guided inquiry approach and the practicum carried out so that students are less skilled when carrying out practicum. So this causes time to be used inefficiently. However, these limitations can be handled by disciplining the use of time so that learning outcomes can be achieved in high and very effective categories.

D. Conclusion

The development of guided inquiry-based LKPD integrated with Islamic values is feasible to use with a very valid validation assessment by media and material experts and valid by material experts on Islamic values. LKPD is declared "Very valid" seen from the achievement of teacher responses

and good student responses to LKPD. The development of LKPD is also said to be effective based on the achievement of post-test completeness results of 0.599 in the medium category and the mastery of developing an attitude of caring for the environment. So it was concluded, the guided inquiry-based LKPD integrated Islamic values that had been developed were declared valid, effective, and practical to use, and could find out the responses or responses of students to LKPD integrated Islamic values through the guided inquiry approach, LKPD could facilitate mastery of learning outcomes because students actively build knowledge like a scientist. The learning process also instills the practice of attitudes related to the subject of biology, namely the attitude of caring for the environment. Suggestions that need to be considered include the importance of mastering the guided inquiry approach and the application of Islamic values so that activities on LKPD are carried out properly and efficiently, as well as the use of the right time is needed when implementing guided inquiry based LKPD integrated Islamic values in the learning process.

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