Developing Class Instruction for Linking The Qur'an to Biological Science

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ABSTRACT

A module book makes all learning activities oriented towards achieving graduate competencies. In particular, the research objectives are following the following stages: 1) building an integrated Al-Quran biology teaching and learning module, 2) testing and evaluating the validity, sensitivity, and effectiveness of science teaching and learning modules on Al-Quran integrated biology subjects, 3) the influence of creative thinking on student achievement among groups of students. Efforts to obtain data on the development of Quran-based science learning modules used for research and development methods. This research design will be carried out, consists of two stages, namely the module construction phase and the module evaluation phase. The module construction phase is carried out through a construction process starting from the initial study, planning, realization, and assessment of the validity of the module. The level of module testing was carried out in the experimental group (EG) and the conventional learning (CL) as the control group. The population of this study was limited to students at two (2) Madrasah Aliyah Negeri Banten Province, namely Madrasah Aliyah Negeri 1 Pandeglang and Madrasah Aliyah Negeri 2 Pandeglang. While the science learning used is the biology subject being studied is biology semester 1 for class XI will be involved in this research. Two of the teachers in the madrasa participated in this study. Al-Quran integrated biology learning module needs to be presented. The effectiveness of the learning module is empirically assessed using the T-test, regression, and correlation.

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1. INTRODUCTION

Islam does not recognize the dichotomy between religious, sacred knowledge (*al-ulum ad-dien*), and worldly wisdom (El-Yousfi, 2021). Some people in Muslim society hold scientific and technological titles or have expertise in various sciences, but they do not feel a connection with the religion (Islam) (Avraamidou, 2020). On the other hand, many who master Islamic sciences have no contact with worldly science and cannot solve various sophisticated problems (Abedin et al., 2021).

The dichotomous view of science is conceptually not visible in the Indonesian National Curriculum of 2013 (Imaduddin, 2020). The dichotomous view of science will appear in the implementation of learning, depending on which academic unit or educational institution and which academic staff implements it. The 2013 curriculum structure at Senior High School/Madrasah aliyah contains science. Especially for Madrasah Aliyah, the implementation of science learning emphasizes science based on the Qur'an.

Science-based on the Qur'an theory discusses the relationship between the Qur'an and science (Fadly & Rochmahwati, 2020). It is not judged by the number of branches of knowledge it contains, but rather it is about how the Qur'an and the soul of its verses hinder scientific knowledge or encourage it (Yanto, 2021). Scientific progress is measured not only through contributions made to society or the collection of ideas and methods it develops (Appio, Lima, & Paroutis, 2019), but also by a set of psychological and social conditions that are realized (Thakur & Jain, 2020). It has positive and negative effects on scientific progress (Dahl, Allen, Wilbrecht, & Suleiman, 2018). Implementation of learning science curriculum 2013 based on the Qur'an at Madrasah Aliyah found several problems, including lack of compatibility of the competence of educators and education personnel with the curriculum being taught, and the textbooks used, lack of teacher ability to compensate for curriculum changes and adapt to texts taught to students, and the lack of books as teaching materials and learning resources following the learning interaction model (Faqiroh, 2020).

Teaching materials are essential in learning. Teaching materials can be made in the form of modules (Grabinski, Kedzior, Krasodomska, & Herdan, 2020). The learning module is the minuscule teaching and learning program unit, studied individually or taught by students to themselves self-instructional (Moradi, Liu, Luchies, Patterson, & Darban, 2018; Nohr, 2021). The use of learning modules can increase students' responsibility in their learning (Bosch, Mentz, & Reitsma, 2019; Leal Filho et al., 2018; Rajabalee & Santally, 2021).

Various approaches can be used in the development of learning modules. One of them is the scientific approach. A scientific approach is a learning process designed in such a way that students actively construct concepts, laws, or principles through the stages of observing (to identify or find problems), formulating problems, proposing or developing hypotheses, collecting data with various techniques, analyzing data , draw conclusions and communicate concepts, laws or principles that are "discovered" (Ellizar, Hardeli, Beltris, & Suharni, 2018). The scientific approach is intended to provide students with an understanding of various materials using a scientific method. Information can come from anywhere, not depending on the information in the direction of the teacher (Balyer & Öz, 2018; Park, Liu, & Headrick, 2020).

So it is deemed necessary to develop a Qur'an-based science learning module at Madrasah Aliyah. The characteristics of the modules that will be developed are modules that are adapted to the steps of a scientific approach. Here, students are required to have the ability to observe, ask, explore, associate, and communicate as stated by the Ministry of Education and Culture Act (Permendikbud) No. 81a of 2013 (Jannata & Retnowati, 2022). The development of this module is to provide students with understanding and analytical skills about the importance of the integration of Islam and science among Muslims due to the emergence of an assumption on the broader community which says that religion and science are entities that cannot be reconciled, that is, both have their separate areas from one another (Rahman, 2016).

This research is limited to the development of a science learning module based on the Qur'an with a scientific approach at Madrasah Aliyah. Develop special science learning modules in biology subjects

integrated with the Al-Quran. Informative modules provide students with an understanding and knowledge of biology based on the sources of knowledge in the Qur'an. Al-Qur'an-based science is meant to be the Islamization and integration of knowledge. Islamization of Science means Islamizing modern science by compiling and rebuilding science by providing a basis and purpose that is consistent with Islam. The integration of knowledge is the unification of human scientific wealth with revelation (God's instructions and their implementation in the Sunnah of the Prophet). It is uniting (not just combining) God's revelation and the findings of the human mind, not excluding God (secularism) or excluding humans.

In general, this research aims to; 1) Conducting a literature study and analyze the implementation and make an initial design of the Qur'an-based science learning module with a scientific approach; 2) Creating and test the design of the Qur'an-based science learning module with a scientific approach; 3) Implementing and evaluating, as well as perfecting the Qur'an-based science learning module. In particular, the research objectives are following the following stages: 1) building an integrated Al-Quran teaching and learning module for biology; 2) testing and evaluating the validity, sensitivity and effectiveness of science teaching and learning modules on biology subjects that are integrated with the Koran; 3) the influence of creative thinking on student achievement among groups of students.

2. METHODS

There were efforts to obtain data on the development of Quran-based science learning modules used in research and development methods. Research and development (R&D) is an effort to develop an effective product in models, learning materials, learning media, and learning strategies (Branch & Kopcha, 2014). The steps in implementing this study were developed in Figure 1.
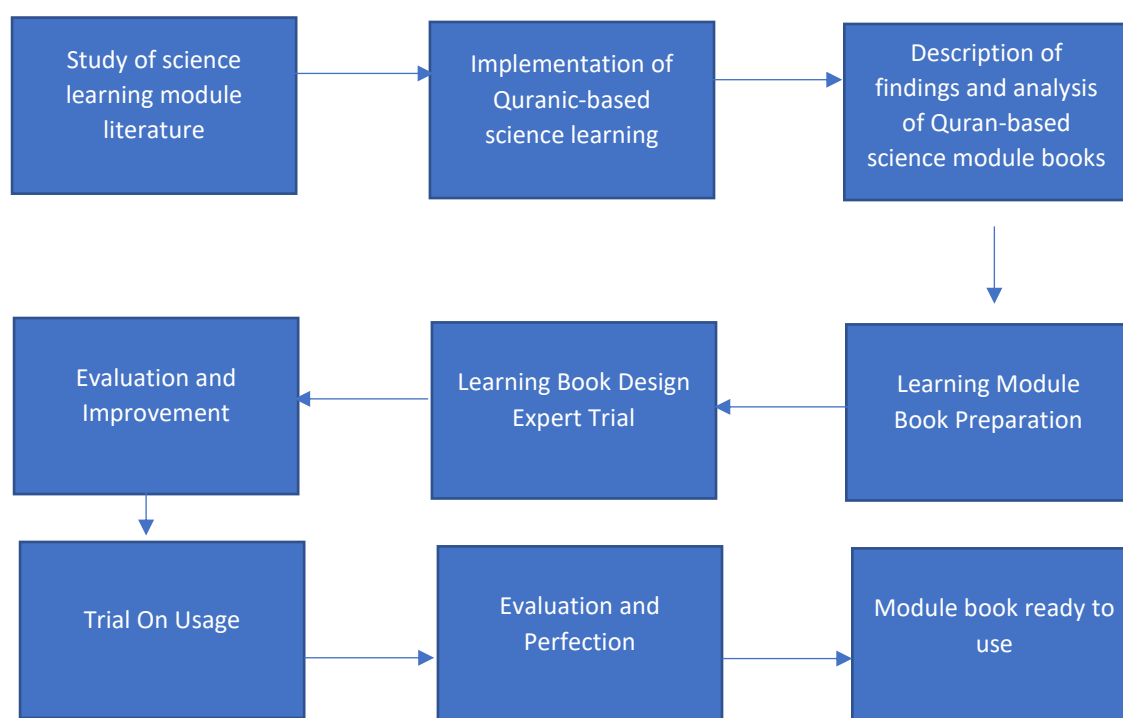

Figure 1 Research Steps

The Flow of Development of a Science Learning Book Model for Al-Quran-based biology subjects based on pictures of curriculum development steps: 1) literature study, the importance of module books; theories/models, and concepts of learning science based on the Koran; 2) Analyzing the

implementation of science learning that has been going on so far; 3) Designing a module book; 4) Formulating the module book; 5) Conducting expert test of science module books; 6) Evaluate and improve the module book; 7) Conducting trial usage; 8) Conduct evaluation and refinement 9) Produce module books that are ready to be used (Sugiyono, 2018).

This research design will be carried out and consists of two stages, namely the module construction and evaluation phases. The module construction phase is carried out through a construction process starting from the initial study, planning, realization, and assessment of the validity of the module. The level of module testing was carried out in the experimental group (EG) and the conventional learning (CL) control group.

The module testing phase uses a quasi-experimental design to test a causal relationship (Harrison, Reilly, & Creswell, 2020). For the experimental group, the teaching approach used is the teacher's teaching method. It is assisted by teaching aids and science learning modules in biology subjects integrated with the Koran. Experimental research is research conducted by manipulating the object of research and controls (Molina et al., 2021).

This classroom experimental research method is used because the main focus of this research is to examine and find out the construction and evaluation of science learning modules (Langbeheim, Perl, & Yerushalmi, 2020). Here we used it in biology subjects that are integrated with the Koran through learning biology, and knowledge of religion through the Koran increase students' knowledge and achievement. The selection of this method is based on the consideration that the expected research objectives are obtaining information related to the status of existing symptoms and seeking factual information about individuals, namely students, as the unit of analysis.

The use of experimental studies as experiments in the field of education aims to assess the effect of an action on behavior or test whether the impact of the action is noticed. Experimental research methods are used to find the effects of specific treatments on other people under controlled conditions (Sugiyono, 2018). Two groups were formed in a quasi-experimental study: the experimental group (EG) and the conventional group (CL). Students in the CL group conventionally use learning methods without being integrated into the Al-Quran. In contrast, the EG refers to the blended learning and learning of the Al-Quran; students are in groups to be able to have good thoughts and understanding of biology learning and religious learning so that they can understand the holy verses of the Koran related to biology subjects so that they have good religious knowledge coupled with general knowledge.

The population of this study was limited to students in two (2) Madrasah Aliyah Negeri Banten Province, namely Madrasah Aliyah Negeri 1 Pandeglang and Madrasah Aliyah Negeri 2 Pandeglang. While the science learning used is the biology subject being studied is biology semester 1 for class XI will be involved in this research. Two of the teachers in the madrasa participated in this study. The results of the construction and evaluation of biology learning and learning modules are expected to be applied in madrasas to improve the quality of education.

The sample in this study were students of Madrasah Aliyah Negeri. In contrast, the models used in this study were four classes in two madrasas in Pandeglang, namely 120 students of class XI madrasah. One (1) madrasa became the experimental sample, and one (1) madrasa became the control sample.

The Quran integrated biology learning module needs to be presented. The effectiveness of the learning module is empirically assessed using the T-test, regression, and correlation. In this analysis, the variables that become the focus of the study are student achievement and creative thinking for the experimental group and the conventional group. Correlation analysis was used to determine the strength or weakness of the relationship between creative thinking and student achievement in the experimental group. And to find out whether there is an influence of innovative thinking on student achievement in student groups, linear regression analysis was used.

The data analysis technique used in this study is the Statistical Package for the Social Sciences (SPSS) for Windows. Various tests were carried out to test the research questions, namely inferential analysis using t-test analysis, correlation, and regression analysis.

3. Research Findings And Discussion

Building an Integrated Al-Quran Science Learning Module

Developing an integrated Al-Quran science learning module is carried out with several activities: module books, teaching and learning components, and the instruments' design. The module design explains the biology curriculum, literature review, teaching and learning module components, and module implementation activities.

Review of the Biology Curriculum Used

Based on interviews with madrasa teachers, teachers practice the education unit curriculum (KTSP). By practicing the unit-level curriculum, each madrasah designs and develops a curriculum appropriate to the conditions of students in the madrasa. The development of an integrated biology module with Islamic values is the development of a module that integrates the verses of the Qur'an with the material. This module leads students to the achievement of science and Islamic values that can shape students' character to have good morals. The integrated module of Islamic values also plays a role in increasing students' religious attitudes by integrating the material with the verses of the Koran.

Curriculum improvement aims to improve the quality of education, improving the curriculum which refers to Law no. 20/2003 concerning the National Education System and Government Regulation Number 19 of 2005 concerning National Education Standards. To apply SNP, especially on content and competency standards (SKL), schools need to develop a curriculum known as KTSP.

The Education Unit Level Curriculum (KTSP) is an operational curriculum organized and implemented by each education unit. KTSP contains (1) the vision, mission, and objectives of the education unit; (2) the structure and content of the curriculum; (3) a List of education; (4) The subject of the syllabus and (5) the lesson plan. Each KTSP component needs to be developed by the education unit and school committee under the coordination and supervision of the ministry of education. The teacher also revealed that the use of KTSP has several components that need to be built by teachers in implementing the curriculum in learning in schools which include the vision, mission and goals of education, curriculum structure and load, list of education, curriculum also contains student syllabus and lesson plan implementation plans).

Literature Review

A built model must be supported by theories that can defend it, whether the idea is related to learning or describes the development of the model. Constructivism is a learning theory that holds that people organize or construct their understanding of new experiences based on their prior knowledge and beliefs. A teacher needs to learn the culture, life experiences, and knowledge, and then develop learning experiences that give students new opportunities to deepen their knowledge. The teacher's role in constructivist learning is to facilitate the learning process by: 1) Making knowledge meaningful and relevant to students, 2) Providing students with opportunities to discover and apply their ideas, and 3) Bringing students to apply their strategies in learning.

In the Al-Quran integrated biology learning module, the material integrated with the Quran is about plant cells and tissues. The material of plant cells and tissues has been explained in full based on the verses of the Qur'an that Allah sent down. Cell and plant tissue material is one that students easily understand at the SMA/MA level. Literature study activities include curriculum studies, syllabus, textbooks related to plant cell and tissue student material, textbooks that discuss Islamic integration, textbooks on research and development of a product, and several references from the internet.

Components of the model

Al-Quran integrated learning and teaching biology. To prove this, we can involve students in meaningful activities that help them connect academic students with verses in the Koran. This module, which incorporates Islamic values, is expected to help students increase their religious knowledge, which does not only refer to science but also the knowledge that is based on the Qur'an. The modules integrated into the verses of the Koran will attract students to study biology, increase students' confidence that all knowledge comes from the Koran, and train them to solve problems through critical thinking skills. Al-Quran integrated learning involves three components that support the development of teaching and learning, namely the preliminary phase, the core phase, and the closing phase.

The model syntax is a network of learning activities and teacher and student activities; activities carried out are based on integrated learning. The syntax in this study contains three phases, namely: the introductory phase, namely relating, in this activity, the teacher conveys the objectives of the learning to be achieved in these students and conveys perceptions, the teacher seeks to place understanding related to religious education through verses holy Al-Quran relating to student material.

In the core phase, there are three cooperative syntaxes. The teacher motivates students to be involved in groups and can train students to interact with other individuals. In addition, the teacher conveys motivation, conveys material and provides examples, explains and demonstrates experiments, organizes students into heterogeneous study groups; Experiencing; in this activity the teacher encourages and motivates students in using tools and materials and to carry out forms of active learning, guiding students in answering questions in School Worksheets as problem solving on students' critical thinking skills.

The closing stage in the closing phase, there is a syntax that is transferred; the teacher, in this case, plays a role in making various learning experiences with a focus on understanding, not rote memorization, the teacher guides students to conclude all the materials that have been studied, and give tests to students, teachers to evaluate student learning outcomes to determine the learning outcomes of each student.

In this model, the relationship between teachers and students in teaching and learning activities consists of three relationship patterns, namely a one-way relationship, which means that the teacher acts as the giver and the student acts as the recipient of the action so that the teacher is more active than the students; bilateral relations, which means teachers and students can play the roles of givers and recipients of action, and the last of the multilateral relationships, namely the teaching and learning process allows students to optimally expand their learning activities in the madrasa, situation, at the level of submission of teaching subjects and students have a balanced role.

Module Implementation

Activities for implementing the built modules consist of three activities, the performance of modules that are integrated with Islamic values that have been compiled with references to learning materials about plant cells and tissues. The references needed in the development of integrated biology modules are Al-Quran science books, class XI Biology Syllabus on cell and tissue material with Basic Competence on plant cell and tissue material, module implementation activities, namely:

First activity; make details of various initial activities in module planning; in this activity include: 1) learning structure and objectives; 2) arrange a schedule of activities and subjects, 3) arrange learning plans and learning activities, 4) prepare observation sheets, 5) prepare learning media or teaching aids.

The second activity is implementing and learning; in teaching and learning activities, the teacher educates the learning process and is observed by observers. In teaching and learning activities, teachers form a group, and group members work on learning strategies and mentor members in group work activities. As observers are only allowed to observe and record every item seen in teaching and learning activities, observers are not allowed to participate in teaching and learning activities.

Third activity: Discussing the results of observations and preparing plans is done to improve the activities carried out. The instruction: Discuss the application of activities related to the advantages and disadvantages of teaching and learning activities.

Fourth activity: Developing further plans from the results of discussions and reflections obtained by the objectives of the learning implementation, then make plans for the next stage based on the previous performance. The instruction: Carry out classroom organization which is the arrangement of interactions between teachers and students. The relationship between teachers and students is multilateral, so that in the implementation of teaching, there are various interactions between teachers and students, as well as between students and students.

Design of teaching and learning components

Teaching and learning components designed in model development are: a) student books, b) student worksheet designs, teaching, and learning designs.

Student Book Design

Student books as a component of the Al-Quran integrated teaching and learning model, Al-Quran integrated biology learning not only provides knowledge about science but also provides knowledge and understanding of Al-Quran verses related to student material, In addition, learning science in the field of biology that is integrated with the Koran provides the cultivation of Islamic values and also plays a role in increasing students' religious attitudes.

In designing student books, there are several guidelines: 1) student books must be easy to read and understand, contain illustrations as an exciting guide for students to have the motivation and desire to learn. 2) designed subjects allow students to study individually or in groups and can use four problem-solving strategies. 3) The questions asked allow students to carry out four stages of problem solving: understanding the problem, drawing up a plan, implementing the plan, and reviewing.

Student Worksheet Design

In designing student worksheets, several problems need attention: 1) Student worksheets contain a summary of the subject that can be used to understand the subject. 2) Simple and simple level questions that allow each group member to be motivated and able to solve questions. 3) Achievement measurable learning goals and objectives of all questions in student worksheets.

Design of teaching and learning

The design of teaching and learning consists of at least seven main components of learning, namely: constructivism (*constructivism*); ask (*questioning*); find (*inquiry*); learning in the community (*learning community*); modeling (*modeling*); *reflection* (the Review, summary, follow-up); actual (*authentic assessment*).

The things that must be considered in preparing the implementation plan for learning activities are: (1) The components contained in the lesson plan must be complete and refer to competency standards, essential competencies, materials, and achievement of learning outcomes. (2) The steps used in the module are based on the Al-Quran integrated biology learning system with a problem-solving strategy consisting of two aspects, namely groups and problem-solving techniques. (3) Understanding the subject is done in groups with teacher guidance. (4) The construction of questions refers to the implemented indicators and learning objectives. (5) Teaching and learning activities use individual and group approaches.

Development of Learning Module Assessment Instruments

This study developed eight instruments to evaluate the Al-Quran integrated biology learning module. (1) module book instrument, (2) student book assessment instrument, (3) student worksheet

assessment instrument (LKS), (4) module implementation instrument, (5) student activity assessment instrument, (6) student response assessment instrument, (7) student achievement instrument, (8) creative thinking instrument.

Before the instrument is used to evaluate the validity of the module, the instrument and the reliability of the instrument are first evaluated by an expert in the field of education, from the results of the validity and reliability of the instrument, 8 sets of instruments that have been developed have met the validity and reliability and can be used to measure the instrument and can be used for research next.

Test and evaluate the validity, sensitivity, and effectiveness of science teaching and learning modules on Al-Quran integrated biology subjects

Validity of Al-Quran Integrated Biology Learning Model Book

Validity assessment of Al-Quran integrated biology learning model book consists of seven aspects with 25 instrument items. The results of the validity of the model book show that every single correlation between the scores of expert 4, expert 5, expert 6 with the overall score is strong (r = .807, *p*= .000) (r = .601, *p*= .002; r = .636 , *p*= .001). It shows that the model book assessment instrument meets the validity requirements. In the study conducted, the reliability of the model book that is integrated with the Koran is assessed based on correlation statistics between classes. The results of the reliability test of the Al-Quran integrated model book are presented in the table. 1.

Table 1 Results of the Reliability Exam of the Integrated Al-Quran Model Book

Measures	Correlation Between Classes	Confidence Level 95% Confidence Level		F Exam with real value 0			
		Lower	Limit Upper Limit	Value	df1	df2	Sig
Single	.444	.242	.656	4.196	24	72	.000
Average	.762	.561	.884	4.196	24	72	000

Table 1 shows that the level of reliability of the integrated Al-Quran model book is high. The average correlation between classes obtained was .752 with 95% confidence level between .561 and .884 (F(24,72) = 4.196, *p* < .000. Based on the validity and reliability assessment, it can be concluded that the Al integration model book -Quran meets the requirements of validity and reliability. It means that the model book is suitable for use in trial studies.

Student Book Validity

Assessment of the validity of the built student book includes several aspects, namely the content of the book, practice questions, and language and appearance. Assessment of student book validity results showed that every single correlation between expert 4, expert 5, expert 6 scores with the overall score was strong (r = .741, *p*= .000) (r = .766, *p*= .000; r =. 862, *p*= .000). It shows that the student book assessment instrument meets the validity requirements. In the study conducted, the reliability of student books was assessed based on correlation statistics between classes. The results of the student book reliability test are presented in the table. 2.

Table 2 Reliability Book Student Exam Results

Size	Correlation Between Class	95% Confidence Level		Exam F with actual value 0			
		Lower Limit	Limit Upper	Value	DF1	DF2	Sig
Single	.338 .724 5,599.000				24	72	.535
average.	.671	.821	5,599.000		24	72	913

Table 2 shows that the level of reliability of student books is high. Min correlation between classes obtained was .821 with 95% confidence level between .671 and .913 (F=24/72) = 5.599, *p* < .000. Based on the assessment of validity and reliability, it can be concluded that the student book meets the requirements of validity and reliability. This means that student books are suitable for use in trials.

Student Worksheet (LKS)

The validity of student worksheets was assessed by three experts covering aspects of book content, practice questions, language use, and appearance. The assessment of the validity of the student worksheets showed that every single correlation between the scores of expert 4, expert 5, expert 6 and the overall score was strong (r = .842, *p*= .000) (r = .716, *p*= .000; r =. 830, *p*= .000). It shows that the student worksheet assessment instrument meets the validity requirements. In the study conducted, the reliability of student worksheets was assessed based on correlation statistics between classes. The results of the student worksheet reliability test are presented in the table. 3.

Table 3 Exam Results Student Worksheet Reliability

Size	Correlation Between Class	95% Confidence Level		Exam F with actual value 0			
		Lower Limit	Limit Upper	Value	DF1	DF2	Sig
Single	.311 .750.000			5,710	19	57	.541
average	.654	.825	.923	5,710	19	57	000

Table 3 shows that the level of reliability of student worksheets is high. The average correlation between classes obtained was .825 with 95% confidence level between .654 and .923 (F=19.57) = 5.710, *p* < .000. Based on the assessment of validity and reliability, it can be concluded that the student worksheets meet the requirements of validity and reliability. This means that the student worksheets are suitable for use in trials.

The practicality of the Module

After assessing the validity of the integrated Al-Quran module and its components successfully tested, a trial was conducted to determine the practicality and effectiveness of the integrated Al-Quran module. The problem was to test the usefulness and effectiveness of implementing the Al-Quran integrated biology module for the theme of plant cells and tissues. Held for 4 hours with a total of 2 meetings. The study respondents consisted of 30 students in class XI at Madrasah Aliyah Negeri in Pandeglang Banten.

The model's practicality is assessed against teachers who use the Al-Quran-integrated module learning model; the model's practicality assessment is carried out by observing the implementation of the Al-Quran-integrated module learning model. For this purpose, two instruments were used: the performance of an integrated Al-Quran learning model and the implementation of an integrated Al-Quran.

Before implementing the trial run, a discussion on the design of the learning model module that was integrated with the Al-Quran and student worksheets was carried out first. The discussion explains the preparation for implementing the Al-Quran integrated learning module model, the implementation time, and the teaching components, namely student books and student worksheets. The discussion was carried out accompanied by researchers, a teacher who carried out assignments, a biology teacher who taught in different classes, and two teachers as observers.

Assessment of the Practicality of Teaching and Learning Implementation

The assessment of the implementation of the integrated Al-Quran module was carried out through four meetings and was carried out by working teachers. The evaluation uses an instrument for implementing an integrated Al-Quran module that covers seven aspects with 25 question items. The seven aspects include an introduction to an integrated Al-Quran module, implementation of an integrated Al-Quran module, utilization of learning resources, student involvement, assessment of learning processes and outcomes, use of language, and conclusion. Indicators for evaluation are high, low, and straightforward. Before being used, the instrument has been tested to meet the requirements of validity and reliability. Two observers assess the implementation of learning by giving scores to the implementation instrument of the module that is integrated with the Koran. Overall the main assessment of the performance of the integrated Al-Quran module for the first to fourth meetings shows that the average evaluation by observers for each session is uniform with a minimum score of 3.5 and a maximum score of 4.00. Overall, the average assessment of implementing the integrated Al-Quran module from the first meeting to the fourth meeting was high. While the average evaluation of the aspects of the introduction of the module, implementation of the module, utilization of resources, student involvement, evaluation of learning processes and outcomes, use of language, and closing for the entire meeting were in the high category with a minimum score of 3.63 and a maximum score of 4.00.

The correlation value between classes to measure the effectiveness of the assessment carried out by the two observers on the implementation of the integrated Al-Quran module for the first meeting found a correlation value of 0.76, the second meeting was 0.80, the third meeting was 0.84, and the fourth meeting was 0.84. The effectiveness of the assessment by both observers from the aspects of the introduction of the module, implementation of the module, utilization of resources, student involvement, evaluation of learning processes and outcomes, use of language, and closing for the first meeting to the fourth meeting was in the high category. Overall the correlation between classes obtained is 0.81, this shows that both observers have the same view on implementing the integrated module of the Quran.

Assessment of the Practicality of the Implementation of Teaching and Learning Models

The evaluation of the implementation of the integrated Al-Quran module was carried out through four meetings and carried out by working teachers. The assessment is using a model implementation instrument consisting of three aspects with 20 statement items. The three aspects include introducing the integrated Quran module, the filling, and the end. The rating categories are high, simple, and low. The instrument has been tested to meet the requirements of validity and reliability before being used. Overall the average assessment of the implementation of the model for the first meeting to the fourth meeting shows that the average assessment by observers for each meeting is uniform with a minimum score of 3.75 and a maximum value of 3.9. Overall, the average assessment of the implementation of the integrated Al-Quran module from the first meeting to the fourth meeting was in the high category. While the average assessment from the Introduction aspect of the module that is integrated with the Quran, filling, and ending for the entire meeting is in the high category with a minimum score of 3.71 and a maximum score of 3.96.

The correlation value between classes to measure the effectiveness of the assessment carried out by the two observers on the implementation of the integrated Al-Quran module for the first meeting found a correlation value of 0.837, the second meeting of 0.895, the third meeting of 0.869, and the fourth meeting of 0.823. The effectiveness of the assessment by both observers from the aspects of the beginning of the module that was integrated with the Quran, filling and ending for the first meeting to the fourth meeting was in the high category. Overall, the correlation between classes obtained is 0.856. It shows that both observers have the same view on implementing the integrated Al-Quran module. The assessment carried out is the implementation of the integrated Al-Quran module and the implementation of the model, which is the model's practicality criteria. The study conducted shows that the practicality has been successfully implemented based on the established standards.

The Effectiveness of the Integrated Al-Quran Module

The model's effectiveness was tested based on achievement, student activities, student responses to the integrated Al-Quran module, differences in student achievement, and creative thinking between students in the conventional and experimental groups.

Student Achievement

The student achievement analysis results are obtained from assessing the theme of plant cells and tissues based on individual and initial achievements. If a student scores more than 65 percent, that student achieves personal glory. Initial achievement is based on the minimum achievement of 75% of students achieving a minimum score of 65 percent. The model's effectiveness from the aspect of student achievement is assessed based on initial achievement.

Table 4 Results of Student Achievement Assessment

Frequency of Achievement Assessment Scores	Percentage (%)	Criteria
Exceeded 65	24 (75%)	Successful
Less than 65	8 (25%)	Unsuccessful

Table 4 shows that the percentage of student achievement assessment scores for the theme of plant cells and tissues exceeding 65 is 75 percent. It shows that the model is effective in improving student achievement.

Student Activities

To determine the model's effectiveness in implementing an integrated Al-Quran module, one of the requirements is related to student activities. The point of student activities is contained in the assessment instrument, namely student activities. The results of the effectiveness of student activities are presented in table 5.

Table 5 Effectiveness of Student ActivitiesStudent

No.	Activities	Mean	Ideal Criteria	Category
1	Listening and paying attention to teacher	explanations 18.25	10-20%	Ideal
2	Reading LKS in getting strategies for understanding the study	18.94	10-20%	Ideal
3	Getting strategies to solve study problems	18.69	10-20 %	Ideal
4	Asking questions	19.94	10-20%	Ideal
5	Responding to teachers or friends	18.88	10-20%	Ideal
6	Improving work results	17.94	10-20%	Ideal
7	Carrying out activities outside the learning process	12.69	10-20%	Ideal

Table 5 shows that the overall learning activity has met the effectiveness based on the table of established criteria.

Student Responses to the Module

Student responses to interest, up-to-date, and easy module learning activities were obtained from the instrument filled out by students after participating in the learning activities in the trial. Students' responses to interest, up-to-date and easy learning activities, students' responses to interest are known that the average overall score of student interest in learning activities is 3.23. This means that students are interested in the learning activities that are developed.

Students' responses to the up-to-dateness are known that the average overall score of the up-to-date learning activities based on student responses is 3.26. It means that students as a whole say the learning activity is up-to-date or up-to-date. The data shows that the overall average student response to the ease of learning activities is 3.26. This means that students as a whole do not experience difficulties in participating in learning activities.

The trials that have been carried out have succeeded in demonstrating the model's effectiveness based on student responses to interest, and up-to-date and accessible learning activities with an integrated Al-Quran module. Then the model's effectiveness was tested again through model testing on the conventional and experimental groups. Student achievement and thinking comprehension were tested to determine the model's effectiveness compared to the traditional group model.

Differences in Student Achievement

A t-test was conducted. Before the t-test can be carried out, several tests, namely the data normality *Kolmogorov-Smirnov test and* the variance homogeneity test were *Levene* carried out. From the day of the study, it showed that all scores obtained by the experimental group students and the conventional group were normal, namely the experimental student achievement scores ((32)= 0.357, *p*= 0.000), the conventional group ((32)= 0.218, *p*= 0.001); and creative thinking in the experimental group ((32)= 0.164, *p*= 0.048), and the conventional group ((32)= 0.131, *p*= 0.175). Furthermore, the homogeneity test of the variance of student achievement scores, and the creative thinking of the experimental group and the conventional group, showed that all the variance scores obtained by the students of the experimental group and the conventional group were homogeneous, namely student achievement scores (F = 10.377, *p*= 0.002), creative thinking (F= 6.276, *p*= 0.21). Then the t-test was conducted to test the model's effectiveness in the experimental group compared to the conventional group. While the hypothesis for the t-test for this study is as follows:

Ho(1)   : There is no significant difference in the average student achievement score between the experimental and conventional groups.

Ho(2)   : There is no significant difference in the average creative thinking score between the experimental and conventional groups.

The results showed that the experimental group students obtained an average score higher than the conventional group students.

Table 6 Test-t Difference Average Score Group Conventional Group Experiment and

Testing	Group	N	Min	spouse skilled	Min Difference	T Statistics	Dk	Sig
Student Achievement	Experiment	0,564 0,188	3.06		32	1,022	62	0. 311
	Conventional	32	2.88	0871				
Creative Thinking	Experiment	32	12.53	1,831	1,656	3,830	62	0.000
	conventional	32	10.88	1,621				

From the analysis conducted, the study rejected the two t-test hypotheses. Table 6 shows that there is a significant difference in student achievement scores in the experimental group and the conventional group (t (62) = 1.022, *p*= 0.311), there is a significant difference in creative thinking scores between the experimental group and the traditional group (t (62) = 3.830 , *p*= 0.000). The table above also shows that all the mean difference scores for student achievement scores, and creative thinking are positive. It means that the score of the experimental group students is higher than the conventional group students.

The Relationship Between Creative Thinking Against Learning Achievement of Experimental Student Groups.

Linear regression analysis was carried out to answer the study questions; before the test was conducted to determine whether there was a relationship between the influence of creative thinking on student achievement in the experimental group, several statistical requirements needed to be met. Statistical requirements that need to be met include residual normality, variability between variables, homoscedasticity, error of variance, multicollinear range between variables and variable inequality.

Residual Normality Test

Residual from regression is required to be normalized. If the residuals from the regression are normally distributed, the observed variables are also normally distributed. To test residual normality, the Kolmogorov-Smirnov test can be used. For the residual norm test for regression in this study, it was found that the residuals were normally distributed (D(32)=0.357, p=0.001, which indicates a significance value greater than 0.005 (0.164> 0.359), this means that the data are normally scattered.

Heteroscedasticity Test

Heteroscedasticity occurs in regression when the variance error is for several independent variables. Recognition of variance error can be done from residual plots with regression prediction. If the line delimiting the distribution of relative points is parallel, the variance error is unchanged. From the Glejser test, it was found that no heteroscedasticity of the independent variables was observed. It is seen from the significance value greater than 0.005, which is 0.573 (creative thinking). The heteroscedasticity test can be seen in the scatter plot diagram below.
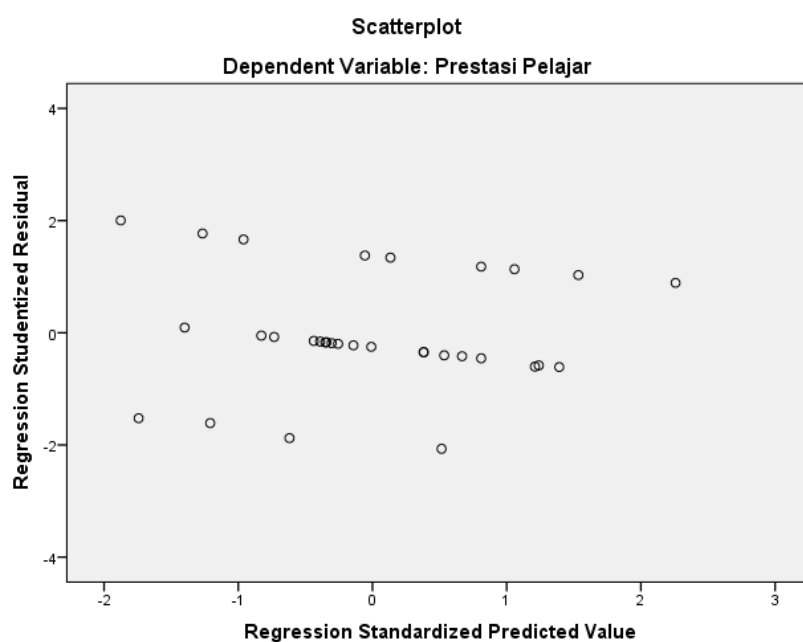

Figure 2. Picture of Heteroscedasticity Test

Figure 2 shows that the pattern of the data spread in the form of dots with the scatter is up and down. The spread does not form a specific design. From this distribution pattern, it can be concluded that there is no heteroscedasticity.

Multicollinearity Test

Multicollinearity is the existing linear correlation between the variables included in the regression model. Multicollinearity between variables can be detected through statistical calculation of colline tolerance and variance of inflation factor. If the tolerance value exceeds 1.00 and the variance inflation factor is less than 10, the independent variable is free from multicollinearity problems. The study's multicollinearity test of the independent variables showed that the independent variable creative thinking was free from multicollinearity problems (T=1,000. FIV=1,000). This value is greater than 0.10, and less than the value FIV= 10.

Autocorrelation

Autocorrelation Testtest in the regression model is through the Durbin-Watson (DW) test. DW values less than 1.00 or more than 3.00 indicate autocorrelation in the multiple regression model. The study found no autocorrelation in the multiple regression model (DW= 2.439). After all, the requirements of the regression analysis were met, a regression analysis was carried out to determine the effect of creative thinking on student achievement. Table 12 presents the coefficient values for the student achievement regression model.

Table 12 Coefficient of Student Achievement Regression Model

Mode	Unstandardized Coefficients		Standardized Coefficients	T statistics	Sig.
	B	Std. Error	Beta		
(Constant)	4.878	.629		7.758	.000
Creative mind	.145	.050	.470	2.917	.007

Dependent Variable: Student Achievement

From table 12 the regression equation is written as student achievement = 0.470 creative thinking. The regression equation shows that the regression coefficient (B_1= 0.470, t(31) = 2.917, *p*= 0.007). Creative thinking has a positive value. It shows a positive relationship between creative thinking and student achievement.

4. DISCUSSION

The discussion in this section is about the results of the model development process. The study results found that student learning achievement and creative thinking between students, namely the conventional and experimental groups, differed. The study results show that students' learning achievement and creative thinking owned by the conventional (CL) group are lower than the experimental group.

From these results, it can be proven that the experimental group that uses the learning module using an integrated Al-Quran module is better than the conventional group; in the learning process, the right learning model is needed, so that it can improve student learning achievement. The learning model is a design used as a guide in designing learning inside and outside the classroom (Blau & Shamir-Inbal, 2017).

In addition, in the learning process that applies an integrated Al-Quran module utilizing various learning resources, learning activities using a tentative module, changing according to existing

conditions and circumstances, learning with an integrated Al-Quran module where learning settings are not always in the classroom, and what media are used in learning. It is very different from conventional learning, which focuses on classroom activities and is teacher-centered. It can make the atmosphere and condition of the classless comfortable, and less pleasant, which can impact the low motivation of students to learn.

The integrated application of the Al-Quran in the activities of the learning process in madrasas can change students to be more active in learning activities because in the learning activities of the integrated Al-Quran module students not only study the material in general but gain religious knowledge, and have an involvement in the learning process themselves actively and directly in the learning carried out so that students can absorb the material provided quickly.

In addition, in this study, there is a positive and significant relationship between creative thinking and student achievement, which has a positive and significant relationship. The experimental group has a positive and meaningful relationship between creative thinking on student achievement. Using an integrated Al-Quran module in the learning model in madrasas provides a better contribution, as seen from the excellent understanding of students towards the material, to maximize learning in madrasas, as evidenced by student learning outcomes that are increasing in the learning process.

In conventional learning, the teacher plays an active role, while students only receive the material provided by the teacher, so students only focus on the teaching provided by the teacher. In general, conventional learning uses expository methods. An expository method is the same as the usual (traditional) teaching method we use in teaching biology (Kidd & Murray, 2020). It is confirmed that learning so far that is often done by teachers is generally called direct learning. In learning modules integrated with the Koran, students are very eager to play an active role in learning activities. Students need to get used to learning to give arguments for each answer and provide feedback on the answers given by others so that what they learn becomes more meaningful to them (Bicen & Kocakoyun, 2018).

The approach Al-Quran integrated module helps students find meaning in their lessons by connecting biological material with religious contexts so that they can understand and understand about religious sciences related to science and can carry out self-regulated learning, work together, think critically and be creative, respect others, achieve high standards and participate in tasks. Students who have a critical thinking pattern, have to solve practical problems, and present contextual problems at the beginning of learning are stimuli and triggers for students to think (Lambert, 2020). In biology learning with an integrated Al-Quran module approach, students have a critical thinking pattern, and this shows that students can solve problems related to biology learning.

5. CONCLUSION

The findings of the implementation of the model show that the overall average of the assessment of the implementation of the model for the first meeting to the fourth meeting shows that the average rating of observers for each meeting is uniform. Overall, the performance assessment of the module from the first meeting to the fourth meeting was in the high category. Meanwhile, the average evaluation of the introduction, implementation, and closing modules for all meetings was high. The correlation value between classes to measure the consistency of the assessments made by the two observers on implementing the model for the first to fourth meetings shows that the character of the evaluation from the aspects of the module introduction, implementation, and closing is in the very high category. Overall, the correlation between classes is high. This shows that both observers have the same view on implementing the learning module model. This also means that the developed model meets the criteria of practicality.

The findings of the model's effectiveness in terms of student achievement were assessed based on previous success (classic). Classical success is based on achieving a minimum of 75% of students achieving a minimum of 65 percent. The student assessments for plant cell and tissue material analysis showed a minimum score of 65 percent. It shows that the use of the model effectively improves student achievement. The overall aspect of student activity lies within the range of defined criteria and meets

the requirements for the model's effectiveness. In addition to research activities carried out by students to test interests and the latest models based on student responses. The average score of the overall student response from interest and humility is high. It means that students are generally interested in the built learning modules. Students typically have no difficulty following the implementation of the module learning implementation.

This study recommends suggestions to teachers and other researchers. Teachers' understanding of the deepening of the verses of the Qur'an is very necessary, because a high performance can assist teachers in designing and managing every activity of implementing biology learning that is integrated with the Qur'an which aims to achieve student achievement and have a better understanding of religion for student. The development of biology learning modules with the integration of the Koran helps teachers improve and improve the quality of the biology learning process in madrasas. Other researchers could carry out further research in developing and expanding research by deepening those related to the improvement and improvement of the construction of biology learning modules, both those that are integrated with the Koran and other approaches, to find the right formula in biology learning that is liked and desired by students, so that students can follow the learning process well and have the knowledge, thereby improving the quality and achievement of student learning.

REFERENCES

Abedin, M., Islam, M. A., Rahman, F. N., Reza, H. M., Hossain, M. Z., Hossain, M. A., … Hossain, A. (2021). Willingness to vaccinate against COVID-19 among Bangladeshi adults: Understanding the strategies to optimize vaccination coverage. *PLoS One*, *16*(4), e0250495.

Appio, F. P., Lima, M., & Paroutis, S. (2019). Understanding Smart Cities: Innovation ecosystems, technological advancements, and societal challenges. *Technological Forecasting and Social Change*, *142*, 1–14.

Avraamidou, L. (2020). "I am a young immigrant woman doing physics and on top of that I am Muslim": Identities, intersections, and negotiations. *Journal of Research in Science Teaching*, *57*(3), 311–341.

Balyer, A., & Öz, Ö. (2018). Academicians' Views on Digital Transformation in Education. *International Online Journal of Education and Teaching*, *5*(4), 809–830.

Bicen, H., & Kocakoyun, S. (2018). Perceptions of students for gamification approach: Kahoot as a case study. *International Journal of Emerging Technologies in Learning*, *13*(2).

Blau, I., & Shamir-Inbal, T. (2017). Re-designed flipped learning model in an academic course: The role of co-creation and co-regulation. *Computers & Education*, *115*, 69–81.

Bosch, C., Mentz, E., & Reitsma, G. M. (2019). Integrating cooperative learning into the combined blended learning design model: Implications for students' intrinsic motivation. *International Journal of Mobile and Blended Learning (IJMBL)*, *11*(1), 58–73.

Branch, R. M., & Kopcha, T. J. (2014). Instructional design models. In *Handbook of research on educational communications and technology* (pp. 77–87). Springer.

Dahl, R. E., Allen, N. B., Wilbrecht, L., & Suleiman, A. B. (2018). Importance of investing in adolescence from a developmental science perspective. *Nature*, *554*(7693), 441–450.

El-Yousfi, A. (2021). Muslims and mosques in France: navigating the 'cultural/religious' dichotomy through God's witnessing and the holism of Islam. *Religion, State & Society*, *49*(4–5), 297–313.

Ellizar, E., Hardeli, H., Beltris, S., & Suharni, R. (2018). Development of scientific approach based on discovery learning module. *IOP Conference Series: Materials Science and Engineering*, *335*(1), 12101. IOP Publishing.

Fadly, W., & Rochmahwati, P. (2020). Kauniyah verse-based science learning: Reconstruction of the 21th century science learning program. *Journal of Physics: Conference Series*, *1567*(4), 42035. IOP Publishing.

Faqiroh, B. Z. (2020). Problem based learning model for junior high school in Indonesia (2010-2019).

Indonesian Journal of Curriculum and Educational Technology Studies, *8*(1), 42–48.

Grabinski, K., Kedzior, M., Krasodomska, J., & Herdan, A. (2020). Embedding E-learning in accounting modules: the educators' perspective. *Education Sciences*, *10*(4), 97.

Harrison, R. L., Reilly, T. M., & Creswell, J. W. (2020). Methodological rigor in mixed methods: An application in management studies. *Journal of Mixed Methods Research*, *14*(4), 473–495.

Imaduddin, M. (2020). A New Way to Promote Islamization of Science: I-SETS Design for Pre-Service Science Teachers. *Journal of Natural Science and Integration*, *3*(1), 1–12.

Jannata, T., & Retnowati, T. H. (2022). Evaluation of Physical Education Learning in the 2013 Curriculum in the Junior High School of Wonosobo District. *5th International Conference on Current Issues in Education (ICCIE 2021)*, 203–207. Atlantis Press.

Kidd, W., & Murray, J. (2020). The Covid-19 pandemic and its effects on teacher education in England: how teacher educators moved practicum learning online. *European Journal of Teacher Education*, *43*(4), 542–558.

Lambert, K. (2020). Re-conceptualizing embodied pedagogies in physical education by creating pre-text vignettes to trigger pleasure 'in'movement. *Physical Education and Sport Pedagogy*, *25*(2), 154–173.

Langbeheim, E., Perl, D., & Yerushalmi, E. (2020). Science teachers' attitudes towards computational modeling in the context of an inquiry-based learning module. *Journal of Science Education and Technology*, *29*(6), 785–796.

Leal Filho, W., Raath, S., Lazzarini, B., Vargas, V. R., de Souza, L., Anholon, R., … Orlovic, V. L. (2018). The role of transformation in learning and education for sustainability. *Journal of Cleaner Production*, *199*, 286–295.

Molina, R., Redondo, B., Molina-Carballo, A., García, J. A., Muñoz-Hoyos, A., Vera, J., & Jiménez, R. (2021). Capturing attention improves accommodation: An experimental study in children with ADHD using multiple object tracking. *Vision Research*, *186*, 52–58.

Moradi, M., Liu, L., Luchies, C., Patterson, M. M., & Darban, B. (2018). Enhancing teaching-learning effectiveness by creating online interactive instructional modules for fundamental concepts of physics and mathematics. *Education Sciences*, *8*(3), 109.

Nohr, R. F. (2021). Instructional Devices. *Digital Culture & Society*, *7*(1), 29–52.

Park, Y., Liu, Y., & Headrick, L. (2020). When work is wanted after hours: Testing weekly stress of information communication technology demands using boundary theory. *Journal of Organizational Behavior*, *41*(6), 518–534.

Rahman, M. T. (2016). Rasionalitas Sebagai Basis Tafsir Tekstual (Kajian atas Pemikiran Muhammad Asad). *Al-Bayan: Jurnal Studi Ilmu Al-Qur'an Dan Tafsir*, *1*(1), 63–70.

Rajabalee, Y. B., & Santally, M. I. (2021). Learner satisfaction, engagement and performances in an online module: Implications for institutional e-learning policy. *Education and Information Technologies*, *26*(3), 2623–2656.

Sugiyono, P. D. R. (2018). *Metode penelitian kuantitatif kualitatif & RND*. Bandung: Alfabeta CV.

Thakur, V., & Jain, A. (2020). COVID 2019-suicides: A global psychological pandemic. *Brain, Behavior, and Immunity*, *88*, 952.

Yanto, M. (2021). The Values of Patient Education in Surah Ar-Rad verse 22. *Nazhruna: Jurnal Pendidikan Islam*, *4*(3), 792–803.