

Biology Module for Immune System Material with Islamic Values as Learning Media

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Abstract. This research aims to develop a biology module for immune system material containing Islamic values as learning media. The physical form of the product in this development is printed media in the form of a module (printed materials). The Islamic content in the module is classified into the technical level as an effort for students' self development. The product was validated and rated by a material expert, a media expert, and four peer reviewers. In this research development, a limited test was conducted to Biology teachers and 14 students of class XII of SMA Sains Wahid Hasyim. The instrument used in this development was a checklist questionnaire of qualitative data from the assessment results which was converted to quantitative data using a Likert scale. The results of the assessments from the material expert, media expert, and peer reviewers show that the percentage of ideality from the material expert is 88.7% in the Very Good category, from the media expert is 76% in the Good Category, from peer reviewers is 89.33% in the Very Good category, and the Biology teachers considered it Good with a percentage of ideality 79.9%. Meanwhile, the students' responses showed that they strongly agree with the percentage of ideality 89%. Thus, the Biology Module for Immune System with Islamic values is appropriate to be used as learning media.

Keywords: Module, Learning Media, Immune System, Islamic Conten

INTRODUCTION

Media is an important input instrumental in the learning process. According Hamalik (1986) in Sukiman (2012) the use of media in learning to generate new desires and interests of learners, improve motivation and stimulation of learning activities, even the psychological effect on learners. But in fact, the media in the learning process is still a lack of innovation. The demands of innovation, making the teacher as the spearhead in the implementation of education is expected to have an idea or goods that may be used in order to solve the problems of education in Indonesia, more specifically the problems that exist in this sekolah. Hal done in high schools and high school-based cottage pesantren.

In general, school-based Boarding School became one of the Community, although some admit school-based Pesantren more specialized in the study of religion (tafaqquh Fil addin), but now the patterns and cultures are already packed and developed in educational institutions, formal and even has a program certain seed (Aknan, 2015).

Problems faced in school-based boarding school is the number of activities including learners outside formal learning activities, making less than the maximum learners participating in learning activities in hours Teaching and Learning Activities (KBM) limited, with less supports varied media. Therefore, the need for innovation and the Media Teaching Learning Resources in order to realize the goal of Education as expected.

Based School Boarding School uses the curriculum integration model, namely the National Curriculum Ministry of Education and Culture (Kemendikbud) and Model boarding school curriculum as a study to increase knowledge of students who are expected to have a multidisciplinary science, is expected to print learners who excel in IMTAQ and science and technology.

Sciences, one of which has contributed significantly to the development of technology. Biology is a science that has the ability to think logically, systematically and empirically. Biology as basic sciences, today has grown rapidly, both material and its use, resulting in the development or learning in school should pay attention to its development. Education Globalization Era also makes education has made progress in various fields. In education, there are also important things to note are English learners. According to (Astika, 2009) English plays an important role in international communication both in terms of development, technology, economy, and education. Since most of Mathematics and Natural science and technology disseminated in English then to obtain it easily and quickly takes learners who are able to speak English well. Researchers innovate to create learning media is also equipped with two languages (bilingual) as a selection of learners but aims to reproduce the reference source to learn, as well as to improve the ability to speak English, helping learners to access knowledge renders the habituation of the international media in the future,

The times to make Science and Imtak learners need to be built, the Media Development study not only take

into consideration the academic aspect, but also take into account the personal development of students, teachers as educators should be able to package both these aspects in teaching media are developed. According to Abdullah (2006) and Purwanto (2008) Islamic cargo in science learning will encourage students to recognize the creator with all His creation and critical thinking in understanding the phenomenon of science.

The immune system is a functional system in the physiological process in the body, one very complex system with a variety of roles in the business balance of the body, particularly maintaining the balance of body components. Immune System that serve as antidote foreign substances that enter the body, because we live in an environment that is always surrounded by the threat of bacteria and other foreign bodies, the immune system in the body has a vital role for the survival of the individual, to preserve and protect the immune system healthy and optimally a major need, with this basic knowledge related to the immune system becomes very important, because the health of an individual is directly affected in part by the immune system. The material on the concept can be said to be very close to the daily life of an individual.

Islamic values in the learning process is the aspect of faith, devotion, noble character, intelligent, and independent, such as by Barbour in 2000 in Waston 2014 The existence of God can be inferred from (supported by) the evidence about the design of nature, that nature would make we are increasingly aware of the power of God.

Based on the above for Media learned of integrative learning is not yet available and modules make the most effective option for module is a learning media print that it is in accordance with the conditions of the students who live in the school and not allowed to bring electronic devices, modules can be used as teaching materials self which is expected to enhance the activity of the participants didik. Peneliti innovating learning media compose form of learning module on material Immune system and combined with Islamic values are also presented in two languages, namely Indonesian and English as a choice that is expected to support the achievement of integrative learning in school-based boarding schools in order to improve the effectiveness of learning in school-based schools. In this study will be discussed how the stages of development and implementation in the Islamic cargo loaded modules Islamic values on the material of the immune system as a medium of learning and how the quality of the charged Biology Module Islamic values on the material immune system as a learning medium.

METHOD

Type of this research is the Research and Development (R & D), Research and Development, according

Setyosari (2013) in the Bord and gall (1983) is a process used to develop and validate the educational product. Step research or development process consists of the study of research findings that the products will be developed, developing products based on these findings, conduct field trials in accordance with the background where it will be used and to revise the results of the field test.

Immune Systems Biology Module Content Loaded Islamic values created through several stages: the preparation stage through the Data Collection Module Outline literature review Material Content Writing immune system and gave the charge of Islamic-related material in every activity of the immune system learned from relevant sources. Islamic existing cargo, belonging to the technical level that is expected to have a positive effect on the spiritual aspects of learners, written using Microsoft Word, and (4) the design content using Corel Draw X7. Subject assessment module products are rated by 1 Expert Materials, 1 Expert Media 4 Per reviewer, 2 Master Biology and 14 Learners SMA / MA. Data qualitative observation, and feedback given by the validator in the form of criticism and suggestions on learning modules developed, The quantitative data obtained from the questionnaire or questionnaires given to the validator to assess the product development of teaching materials. Data collection instruments used in the development of learning modules are the guidelines for observation and assessment instruments interview guides and learning modules in the form of a questionnaire sheet valuation. Data Module Product development process Biological Immune system charged material Islamic values were analyzed by descriptive.

Table 1. Rules scoring for subject matter experts, media experts, peer reviewer, biology teacher, with Likert Scale.

Criteria	Score
SB (Very Good)	5
B (Good)	4
C (Enough)	3
K (Less)	2
SK (very poor)	1

Table 2. Rules and scoring for learners with Likert Scale.

Criteria	Score
SS (Strongly Agree)	5
S (Agree)	4
KS (Less Agree)	3
TS (Disagree)	2
(STS) Strongly Disagree	1

Counting results the average score of each component are assessed by the formula (Musial et al., 2009

$$\bar{x} = \frac{\sum x}{n}$$

Information:

\bar{X} = Average scores of each aspect
 n = Number of Assessors
 ΣX = Total score

Changing the average score obtained aspect into qualitative values in accordance with the criteria of the assessment categories Ideal as presented in Table 3.

Table 3. Criteria for assessment category is ideal for subject matter experts, media specialists, linguists, peer reviewers, a biology teacher and learners.

No.	Score Range (i)	Category
1	$\bar{X} > Mi + 1.80 \text{ SBI}$	Very good
2	$Mi + 0.6 \text{ SBI} < X \leq Mi + 1.80 \text{ SBI}$	Well
3	$Mi - 0.60 \text{ SBI} < X \leq Mi + 0.60 \text{ SBI}$	Enough
4	$Mi + 1.80 \text{ SBI} < X \leq 0.60 \text{ Mi-SBI}$	Less
5	$\bar{X} \leq Mi - 1.80 \text{ SBI}$	Very less

(Source: Widoyoko, 2011)

Information:

Mi = Mean ideal
 \bar{X} = Average scores
 SBI = Standard Deviation Ideal

Price Mi (average base) and SBI (ideal standard deviation) is obtained by using the formula:

$Mi = (1/2) \times (\text{highest score lowest score ideal base} +)$

$SBI = (1/2) \times (1/3) \times (\text{highest score lowest score ideal base} +)$

Highest Score Ideal = Σ Grain x highest scoring criteria

Ideal lowest score = Σ butir criteria x lowest score

To determine the percentage of ideals used calculation formula:

percentage of votes = $\frac{\text{skor hasil penelitian}}{\text{skor maksimal ideal}} \times 100\%$

RESULT AND DISCUSSION

The result of the development of Biology Module

This research resulted in the form of media learning modules charged biological material Islamic values of the immune system. The physical form of the product generated in this development is the print media in the form of modules (printed material). The module consists of a title page, foreword, table of contents, concept maps, introduction, part of learning activities that included discussion of the core material of the immune system and additional information supporting the module contents that hopes to make the module more attractive. Translation of materials in each given charge of Islamic learning activities as additional knowledge and is expected to have a positive impact on the spiritual

aspects of learners, and presented in two languages, namely Indonesian and English. Coverage of the material in this module is limited to the core competencies (KI) and the Basic Competency (KD) eleventh grade curriculum Semester 2, 2013 and closing. The module contains 130 pages, printed using A4 size hvs 80gr. The module is composed of supporting components.

Results Module development is expected to provide comprehensive information and different. The subject matter of the immune system are also reviewed from various sources of learning, sharing information between each other scientific knowledge is informative. This follows on the module cover image that has been compiled. The design phase of product modules using Microsoft Word and Corel Draw X7. Modul organized by Secondary sources. In the planning stage, arrangement of structural framework (Outline). Module framework describes the overall preparation of the manuscript to be displayed on each Learning Activity.

In component Learning Activities (KB), presented a charge of Islam that is relevant to the material part of learning activities, which it is expected to support one of the goals of Education in learning, namely the establishment and formation of values and good character law the national education system in 2003 article 1 mandates so that learners have the spiritual power of religion better.

Another advantage of the module that was developed in this study is the presentation of experimental biological activity column called Bio-Experiment. Bio-Experiment can be developed as a teacher of learning materials in practical activities. Bio-experiment on learning two, entitled "Skin as Defense Body". As we know, the skin and the mucous membranes of the earliest hurdles immune system whose job is to monitor the introduction of the cells that turned into an abnormal through mutation to infection. Intact skin is a barrier that normally could not be penetrated by bacteria or viruses, though a very small scratches even allow the entry of these microorganisms. In addition to its role as a physical barrier, the skin and mucous membranes are also facing pathogens by chemical defense.

Results and Assessment Module Validation Biology

At this stage of development and the validation stages performed limited testing. The development phase aims to generate an IPA module products based Islamic character through a scientific approach that is ready to be tested later after revisions in accordance with the validation and revision of the test phase is limited. Products in draft I module, syllabus, lesson plans, and evaluation questions were validated by expert lecturers 2, 2 a science teacher and 2 peer reviewers. After going through the stages of validation and to revise the draft module II is obtained, the next step is to conduct limited testing. In the pilot phase aims to determine the feasibility limited Biology module.

Biological material quality test module immune system charged Islamic values obtained material percentage of 88.7% Expert ideals by category Very Good (SB), Expert Media 76% with good category (B), Peer reviewer of 89.33% to the category of Very Good (SB), from 79.9 Biology Teacher with good category (B), and the test is limited to the response of students is 89% in the category Strongly Agree (SS).

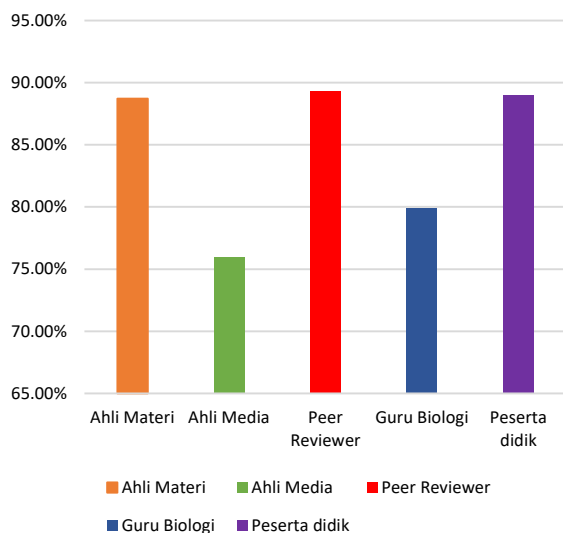


Figure 1. percentage ideals Module by experts and peer reviewers.

Based on the results of the overall study of Expert Materials, Media Experts, peer reviewers, Biology teacher and Response learners, it can be seen that the overall product modules biology that has been developed is declared fit for use as a medium of learning by category Very Good and Response learners Strongly agree Page this indicates that the module Biology has several advantages, namely the absence module Biological systems immune-served Bilingual (Bilingual) and the aspects of Islam that is contained in the module can encourage learning more grateful for the favors of Allah that is expected to provide benefits as Media learning and a positive impact on the spiritual aspects of learners, thus supporting the learning activities to be better because according to the research objectives under development (Setyosari, 2013) was to assess the changes that occur within a certain time.

CONCLUSION

Module Development Biology Material Immune System Loaded Values Keislaman made through several steps: (1) the stage of preparation of the Outline Module (2) Data Collection, (3) Writing Material Content immune system and gave the charge of Islamic-related materials

to the immune system of each learning from relevant sources. Islamic existing cargo, belonging to the technical level that is expected to have a positive effect on the spiritual aspects of learners, written using Microsoft Word, and (4) the design content using Corel Draw X7.

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SUGGESTION

The results of the research and development of products is hoped to be provide benefits for learning, it is advisable for teachers to develop this product with a wider range of material or in any other material.

The Development Research carried out until the stage of product quality testing so that the effectiveness of the product as a Media Learning unknown, therefore it needs to be done so that the effectiveness of the experimental research as Media and Learning Biology products can be known.

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