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RESEARCH ARTICLE

Development of a Biology Module Based on Science Process Skills for Class XI Madrasah Aliyah Students

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Abstract

The development of a Science Process Skills Based Module for class XI Madrasah Aliyah students has been carried out and implemented in class XI of Masrasah Aliyah Nurul Hakim Tembung. This research development aims to produce capital based on science process skills that meets the criteria of being valid, practical and effective. This type of research is Research & Development (R&D) using the Borg & Gall procedure modified by Sugiyono. The test subjects in this research were class XI students, small-scale trials were carried out with 10 students and usage trials were carried out with 27 students. The research has reached the final stage, namely ten stages in R & D research, namely (1) Potential and Problems (2) Data Collection (3) Product Design (4) Design Validation (5) Design Revision (6) Product Trial (7) Revision Product (8) Use Trial (9) Product Revision (10) Mass Production. Based on the results of product validation from several experts, the assessment from media experts was 77% with very feasible criteria, and the material expert assessment was 79% with the category very suitable for use. The assessment results from educators were 94.31% with very suitable criteria and student respondents got a percentage of 87% with very suitable criteria for use. This learning module has met the effective criteria based on the N-Gain test results, a score of 75.81%.

Keywords
Module; Science Process Skills; Valid, Effective

INTRODUCTION

Education is an effort to prepare the lives of future generations who are growing and developing towards maturity. Quality human resources can be realized through education. National Education System Law No. 20 of 2003, formulates the goal of national education, namely the development of the potential of students so that they become human beings who have faith and are devoted to God Almighty, have noble character, are healthy, knowledgeable. , capable, creative, independent, and a responsible citizen. The educational process is carried out consciously and planned by educators for students to gain a range of knowledge and experience, all of this is done through teaching, guidance and training activities for the benefit of students in the future (Elza, 2018). National education objectives are operated through a Minister of Education and Culture Regulation by formulating Core Competencies and Basic Competencies in Primary and Secondary Education units, including core competencies and basic competencies for SMA/MA Biology which includes four competencies, namely (1) spiritual attitude competency, (2) social attitudes, (3) knowledge, and (4) skills. These competencies are achieved through intracurricular, co-curricular and/or extracurricular learning processes.

According to Government Regulation no. 19 of 2005 article 42 paragraphs 1 and 2 concerning standards for educational facilities and infrastructure that every educational unit is required to have facilities which include furniture, educational equipment, educational media, books and other learning resources as well as other equipment needed to support an orderly and organized learning process. sustainable. The existence of educational infrastructure is needed in the educational process, and components that must be fulfilled in implementing the learning process. Learning facilities in the form of media greatly determine

the success of the learning process, the lack of media used will hinder the learning process, and vice versa, when students are exposed to a variety of appropriate media, supporting facilities and infrastructure, the greater the possibility that educational values will be able to be accepted and absorbed by them. students (Sumiati, et al., 2018).

Print media is very commonly used by teachers, but very few teachers develop it. One of the contributing factors is that teachers are also used to using print media that is already available on the market. This action is not wrong, it's just that this dependency causes teachers to not be creative in writing and developing teaching materials according to the characteristics of the students they face. Because there is a uniformity of print media that has been used by all students throughout Indonesia, both in urban and remote areas (Riyana, 2009). One solution that can be taken to achieve educational goals is by developing teaching materials in the form of learning modules. Learning modules are teaching materials that are prepared systematically and interestingly which include material content, methods and evaluations that can be used independently to achieve the expected competencies. The aim of preparing the module is to provide teaching materials that are in accordance with curriculum guidelines by considering the needs of students, namely teaching materials that are in accordance with the characteristics of the teaching materials and the characteristics of the students.

The main things that need to be considered in developing a module are procedures, facts, events and ideas that are arranged in such a way as to achieve continuity of thinking. The development of modules based on science process skills still needs to be developed to hone students' science process skills. Science process skills (KPS) are scientific methods used by students to be directly involved in scientific activities and experiences in discovering and managing new information through thinking activities by following scientific procedures. The steps or scientific methods in learning basic science process skills (basic skills), these steps are (observe, classify, measure, conclude, predict and communicate) which can be applied in the biology learning process and can prove the truth of the concept learning. Students can also play an active and interested role in order to increase learning motivation and also learning outcomes.

Biology as a field of science provides various learning experiences to understand scientific products and processes and it is hoped that by studying science science skills will also be formed. Because the scientific process is a total of directed skills (both cognitive and psychomotor) that can be used to discover concepts, principles and theories to develop previously existing concepts or to refute discoveries.

METHODS

A. Type of Research

The type of research used is research and development, namely the method used to produce certain products and test the effectiveness of these products (Sugiyono, 2015). The research steps begin with an assessment of the research findings of the product to be developed, product development based on needs found in the field, then conducting trials on the product, and revising the product in order to produce a more viable product.

B. Research Methods

According to Amir, research and development (R&D) methods are neither quantitative nor qualitative and are not a combination of the two (mixed). If there are quantitative or qualitative work procedures in the product testing section, this does not mean that research and development is a qualitative or quantitative method. According to Sugiyono, research methods can be interpreted as a scientific way to obtain valid data with the aim of finding, developing and proving certain knowledge so that in turn it can be used to understand, solve and anticipate problems in the field of education.

C. Research and Development Procedures

The teaching material development model used in this research is the development model proposed by Sugiyono which consists of 10 stages. The method steps (R&D) are shown in the following chart in Figure:

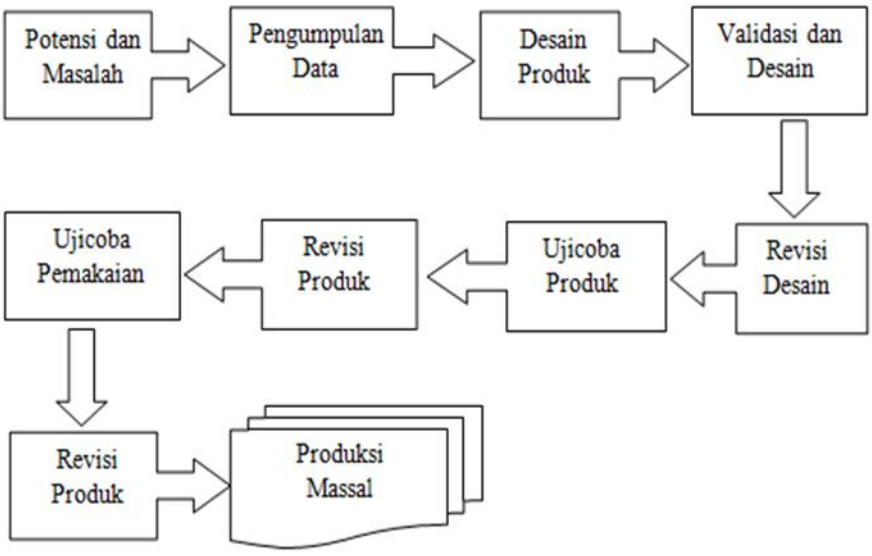


Figure 1. Research and Development (R&D) method steps

D. Research Instruments

Accurate research data collection is collected through the development of research instruments. Table 1 below lists the types of instruments that are adapted to the data to be obtained based on research needs.

Table 1. Research Instruments

NO	Data	Sumber Data	Instrumen Penelitian
1	Penilaian ahli/validasi	Ahli materi	Lembar validasi materi
2	Penilaian ahli/validasi	Ahli Media	Lembar validasi media
3	Tanggapan guru terhadap modul biologi hasil pengembangan	Guru Biologi	Lembar angket respon guru Biologi
4	Tanggapan peserta didik terhadap modul biologi hasil pengembangan	Peserta didik	Lembar angket respon peserta didik

E. Data Collection Techniques

The data collection techniques used in this research are:

1. Questionnaire/questionnaire, is a data collection technique that is carried out by giving a set of questions or written statements to respondents to answer. This research questionnaire was used to collect data regarding student needs, a product validation questionnaire given to media experts, material experts and language experts. Apart from that, it also took the form of a response questionnaire from biology teachers and subject students in the trial.
2. Interviews are used as a data collection technique if the researcher wants to conduct a preliminary study to find problems that must be researched and also if the researcher wants to know things from the respondents in more depth and the number of respondents is smaller. The interviews in this research were aimed at biology subject teachers at schools, with the aim of finding out how biology learning was carried out and the data obtained was used as initial data for product needs analysis.

F. Data Analysis Techniques

After the data is collected, the next step is to carry out analysis. The analytical methods used in this research include:

1. Analysis of Due Test Data

The research was carried out using a development research measurement scale which was modified by Ridwan.

2. Practicality Test Data Analysis

Teacher and student response questionnaire after product trial. The response questionnaire was used to collect data about teacher responses to the biology module based on science process skills that was developed. The response questionnaire is filled in by educators and students.

3. Analysis of Effectiveness Test Data

In this research, researchers will also use effectiveness test data analysis to observe students' activities and learning outcomes regarding learning activities after using the learning modules that have been developed. Activity data and student learning outcomes regarding learning activities were analyzed using the Normalized gain test (N-Gain score).

RESULTS

The result of this research and development is a biology module based on KPS (Science Process Skills) on the circulatory system material to empower students to act and think in science. This research and development was carried out at the Nurul Hakim Tembung Islamic Boarding School to determine the feasibility, effectiveness and practicality of a biology module based on science process skills on the circulatory system material. The following results were obtained:

1. Potential and problems

The research began by making observations at MA Nurul Hakim Tembung. Based on the results of observations and interviews with biology subject teachers, the problem was discovered that there had never been any development of learning resources in the form of blood circulatory system material modules based on science process skills at the school. Based on the problems found by the researchers, the researchers developed a product in the form of a biology module based on science process skills on the circulatory system material.

2. Data Collection

After carrying out potential and identifying problems, continue with collecting information that can support the preparation of the module. Examination of the material in the module is carried out by combining references, sources and images related to the blood circulatory system.

3. Product Design

After finding potential and problems and gathering information, the next step is to develop a biology module based on science process skills on the circulatory system material to train students' science processes that are adapted to the core competencies and basic competencies in the 2013 curriculum. This module uses A4 paper size, 1 spaced, 5; 12 pt font; Cambria and Adobe Garamond Pro typefaces. The appearance of the module cover can be seen in Figure 2 below:

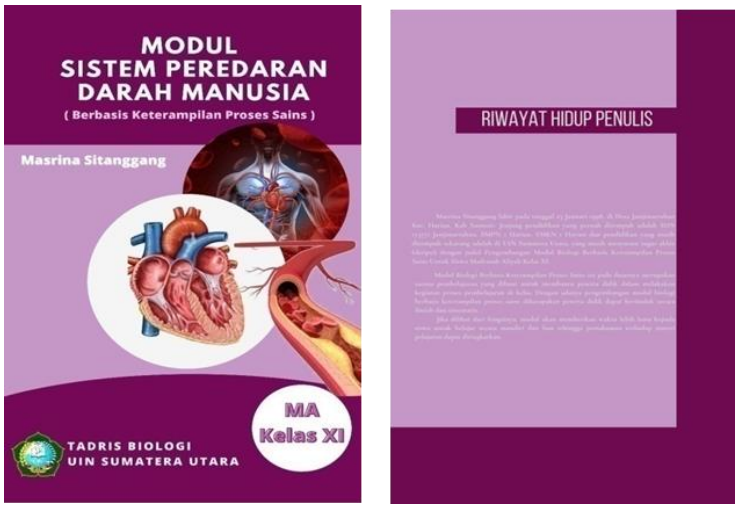


Figure 2. Module Cover View

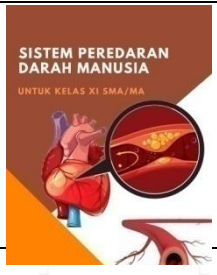
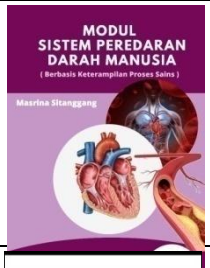
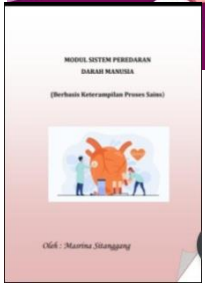
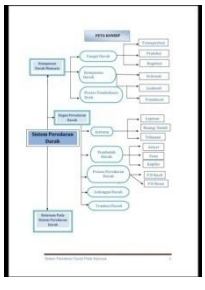
4. Design Validation

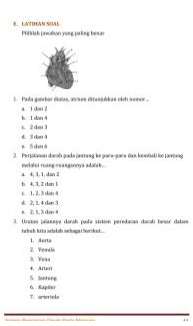
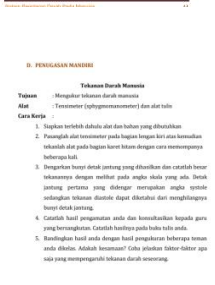
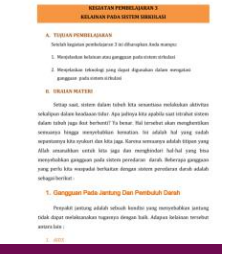
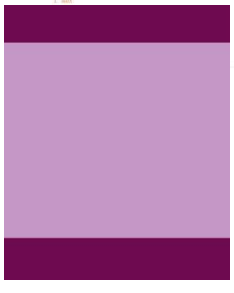
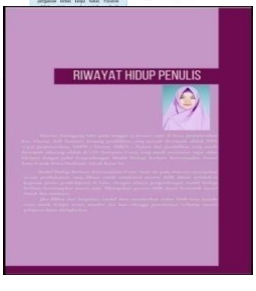
The result of the development is a biology module based on science process skills on the human circulatory system. The module is finally validated by media experts and material experts. This validation aims to determine the experts' assessment of the module in terms of feasibility, effectiveness and practicality of the module being developed to be tested at the next stage.

5. Design Revision

Products that have been completed are validated by validators, media experts and material experts and then receive suggestions and input from expert lecturers whose input is used to improve the initial product being developed. Regarding the revisions from media experts by Mrs. Miza Nina Adlini, M.Pd, namely reducing variations in types of writing, enlarging images in modules, including image sources, adding interesting information such as "Did You Know?", tidying up the composition of writing and paragraphs, improving writing wrong. Meanwhile, the results of the revision from the material expert, namely Mr. Roni Afriadi, M.Pd, are: condensing and focusing the material, ordering the presentation of the material according to learning objectives, adding a column for the results of the science process practicum, adding image sources, consistently placing the did you know column, clarifying the image, changing cover color according to the development of students, which at the MA stage is usually magenta, combining the summary at the end of the module, adding question sentences that can be answered quickly by students in the module paragraph which can bring out students' scientific thinking processes, adding ways to prevent HIV/AIDS, namely by stay away from dating, check and correct problems. Images of products that have been validated can be seen in Table 2.

Table 2. Module appearance before and after revision

Keterangan Revisi	Sebelum Revisi	Setelah Revisi
1. Menambah kata “modul” dalam judul buku 2. Mengganti warna cover dengan warna yang lebih sesuai dan menarik		
Menambah warna dan gambar yang menarik		
Memperbaiki susunan peta konsep sesuai urutan isi modul		

1. Memperbesar gambar 2. Menyertakan sumber gambar		
Menambar simbol agar lebih menarik		
1. Mengubah penugasan mandiri menjadi keterampilan proses sains 2. Menambah simbol, dan shape berwarna 3. Menambah pertanyaan yang mendukung		
1. Menambah informasi penting seperti kotak “Did You Know” 2. Memperbesar gambar 3. Menyertakan sumber gambar		
Menambahkan penjelasan ayat Al-Qur’an terkait materi penyakit AIDS		
Menambahkan informasi data pribadi penulis		

6.
Product Trial
Practicality Assessment of Learning Tools

After the product has been improved based on suggestions and input from experts, the product is then tested on teaching staff and students. Trials were carried out to see the responses of teaching staff and students regarding the practicality of the products that had been developed. The use of the product was tested on the Biology teacher class XI Mandrasah Aliyah Nurul Hakim Tembung, namely Mrs. Rogaya, S.Si. The results of this assessment can be seen in table 3 below.

Table 3. Tabulation of Biology Teacher Assessments

No	Aspek	Jumlah Skor	Skor Maksimal	Persentase (%)	Kriteria
1	Kesesuaian materi dengan SK, KD dan tujuan	12	12	100%	Sangat Layak
2	Keakuratan materi	7	8	87,5%	Sangat Layak
3	Kemutakhiran materi	3	4	75%	Sangat Layak
4	Kesesuaian KPS	4	4	100%	Sangat Layak
5	Kesesuaian Kaidah Bahasa Indonesia	4	4	100%	Sangat Layak
6	Kesesuaian dengan perkembangan peserta didik	4	4	100%	Sangat Layak
7	Komunikatif	3	4	75%	Sangat Layak
8	Dialogis dan interaktif	4	4	100%	Sangat Layak
9	Urutan penyajian	4	4	100%	Sangat Layak
10	Desain modul	8	8	100%	Sangat Layak
11	Ilustrasi, gambar atau foto	8	8	100%	Sangat Layak
Rata-rata				**94,31%**	**Sangat Layak**

From the data in table 3, you can see the results of the biology teacher's assessment of each aspect. The results obtained from the biology teacher assessment were 94% with very appropriate criteria. According to Sudjana and Ibrahim, who stated that a value of 94.31% obtained the practicality criteria as very good/very feasible because it was ≥81% (Suci, et al., 2018). Based on the results of this assessment, the biology learning module product based on science process skills that has been developed was declared feasible and received a good response from the biology teacher to be tested for use on students, to find out students' responses to the biology learning module based on science process skills and also find out the learning outcomes of students after using the learning module, whether it is effective or not. The trial was carried out on a small scale consisting of 10 students and 1 Biology teacher. Regarding the product testing results are as follows:

Small-scale trials were carried out to see the practicality and review the effectiveness of the modules that had been developed. This small-scale trial was carried out with the aim of seeing students' responses to the biology module based on science process skills on the circulatory system material that had been developed. The product trial included 10 students from MA Nurul Hakim Tembung class XI-A. students are selected randomly without paying attention to the genre and skills of the students. before doing a pre-test, then the module is distributed to students, as well as carrying out the activities contained in the module. Then it ends with a post-test and distribution of questionnaires. Students are asked to fill out a student response questionnaire regarding the modules that have been distributed. Regarding the results of small-scale trials, it can be seen in table 4 below:

Table 4. Tabulation of Small Scale Student Responses

Jumlah siswa	Skor yang diperoleh	Skor maksimal	Persentase	Kategori
10	521	600	87%	Sangat layak

Source: Primary data that has been processed.

From the data in table 4.5 above, it can be seen that the results of the assessment of the 10 students in class XI-A obtained a percentage of 87% with very adequate criteria. This is in accordance with research conducted by Rizky S, regarding validity and practicality, the percentage of 82%-100% is in the very good/very feasible category (Rizky, et al., 2020). So in testing this module on a small scale it can be said to be very practical because it obtained results of >82%.

7. Product Revision

After carrying out small-scale trials and teacher and student assessment responses, the result was that the biology module based on science process skills on the circulatory system material received the criteria of "very feasible", so it could be said that this module was ready to be developed. To further maximize the product, researchers revised the imperfect parts and then carried out the next stage, namely usage trials to determine the suitability of the product on a larger scale.

8. Trial Use

The next stage is large-scale trials. This trial was carried out to confirm the data and to determine the practicality and effectiveness of the product at large. This trial was carried out on 27 class XI students. The results of the field trials are presented in table 5 below:

Table 5. Tabulation of large-scale trial student responses.

No	Nama	Nilai yang diperoleh	Nilai maksimal	Persentase	Kategori
1	Afdila Zulkarnain	42	60	70%	Layak
2	Cahaya Fadhilah	45	60	75%	Layak
3	Windy Annisa Husnida	42	60	70%	Layak
4	Ninda Tsaqiya nst	45	60	75%	Layak
5	Zahara Munthe	60	60	100%	Sangat Layak
6	Halimah	60	60	100%	Sangat Layak
7	Syadina Widia	60	60	100%	Sangat Layak
8	Barbara asty Eirifiena	60	60	100%	Sangat Layak
9	Ayu Diah Aftri	60	60	100%	Sangat Layak
10	Jelita Pajriani	51	60	85%	Sangat Layak
11	Nabila Fatimah	60	60	100%	Sangat Layak
12	Nurul Khairunnisa	55	60	92%	Sangat Layak
13	Wanda Sari	56	60	93%	Sangat Layak
14	Dian Puspita sari	47	60	78%	Sangat Layak
15	Debi Siti Aysah	47	60	78%	Sangat Layak
16	Annisatul jannah	44	60	73%	Layak
17	Abadi Sibarani	47	60	78%	Sangat Layak
18	Aroiz Azhari Rambe	54	60	90%	Sangat Layak
19	Arya Samudra	44	60	73%	Layak
20	Bima Fahidz Hanafi	55	60	92%	Sangat Layak
21	Bismi Ilham A.R	51	60	85%	Sangat Layak
22	Dahfa Maifandi	54	60	90%	Sangat Layak
23	Farhan Rizki Noor H	53	60	88%	Sangat Layak
24	Ikhasn Alfreza	55	60	92%	Sangat Layak
25	Ilham Dani	54	60	92%	Sangat Layak
26	Indra Gunawan B	53	60	88%	Sangat Layak
27	Irham Azrai lubis	60	60	100%	Sangat Layak
Rata-rata				**87%**	**Sangat Layak**

Average 87% Very Eligible

Source: Primary data that has been processed

Based on usage trials with a sample of 27 students, it is known that the results of students' responses to the biology module based on science process skills that have been developed as a whole obtained an assessment percentage of 87% with the interpretation criteria being "very feasible" because it is greater than 81%. This situation shows that the module that has been developed by researchers has received a very suitable category for use as teaching material in the learning process of human circulatory system material for class XI MA and equivalent. To review the total results of trials for teaching staff, small-scale students and large-scale students, it can be seen in the bar chart in Figure 2 below:

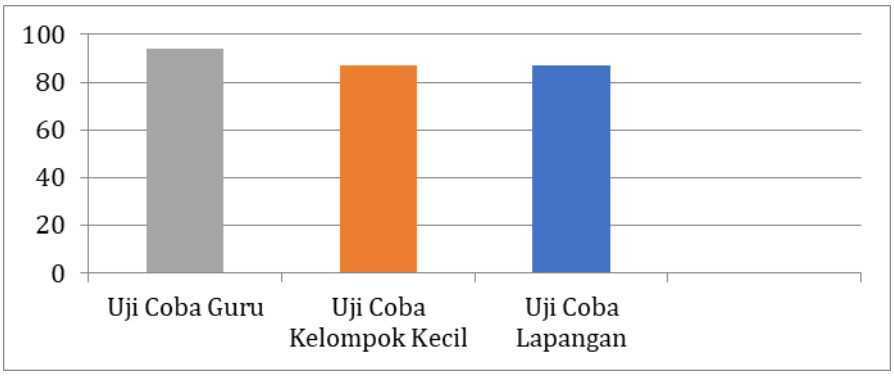


Figure 2. Practicality Test Results Diagram

Assessment of the Effectiveness of Learning Tools

Effectiveness can be seen from the results of student responses and increased student learning outcomes after using learning media. In line with this, Nieveen also stated that to determine the effectiveness of the product being developed, it must be seen from student learning outcomes and the level of appreciation given by students (Suci, et al., 2018).

Table 6. Effectiveness Test Tabulation

No	Nilai		*Posttest-pretest*	Skor ideal (100)-*pretest*	*N-Gain score*	*N-Gain score* (%)
	Pretest	*posttest*				
1	30	90	60	70	0,86	85,71%
2	40	100	60	60	1	100%
3	30	80	50	70	0,71	71,42%
4	40	90	50	60	0,83	83,33%
5	40	80	40	60	0,67	66,66%
6	20	90	70	80	0,88	87,50%
7	30	80	50	70	0,71	71,42%
9	40	80	40	60	0, 67	66,66%
10	20	60	40	80	0,50	50%
11	30	90	60	70	0, 86%	85,71%
12	30	70	40	70	0,57%	57,14%
13	40	100	60	60	1	100%
14	30	90	60	70	0, 86	85,71%
15	20	80	60	80	0,75	75%
16	20	60	40	80	0,67	66,66%
17	30	70	40	70	0, 57	57,14%
18	20	90	70	80	0,88	87,50%
19	20	80	60	80	0,75	75%
20	40	90	50	60	0, 83	83,33%
21	50	100	50	50	1	100%
22	30	100	70	70	1	100%
23	30	80	50	70	0,71	71,42%
24	20	90	70	80	0,88	87,50%
25	30	70	40	70	0,57	57,14%
26	20	80	60	80	0,75	75%
27	40	100	60	60	1	100%
Rata-rata					0,76	75,81

Source: Primary data that has been processed

The table above shows the results of calculating the N-Gain score test for 27 students after using the biology module based on science process skills. The average value of the N-Gain score observation results in the use of the science process skills-based learning modules developed is in accordance with the N-Gain score division category. According to Hake, R.R, 1998 is 0.76 so it is included in the high category. From the data analysis above, it can be stated that the use of learning modules based on science process skills is in the high category in improving student learning outcomes in the circulatory system material.

Based on the results of the N-Gain score calculation above, it can also be seen that the average value of the N-Gain score when using the biology learning module based on developed science process skills is 75.81%. If you pay attention to the table of categories for interpreting the effectiveness of N-Gain according to Hake, R.R, 1998, the biology learning module based on science process skills that has been developed can be categorized as effective for improving student learning outcomes because it is > 70%.

9. Product Revision

After testing the use of the module on a large scale, the researchers also distributed student assessment questionnaires regarding the modules that had been used in learning. From the questionnaire collection, a score was obtained in the "very appropriate" category, in this case the researcher made small revisions to writing errors in the module and the appearance of the module in order to increase students' attractiveness when looking at the external appearance of the module so that the module was ready for mass production.

10. Mass Production

After the final revision has been completed, the module has received the title of being very worthy of development. So, to provide the required teaching materials, the author printed 10 biology modules for class XI Madrasah Aliyah on the circulatory system and handed them over to class XI students. To meet the shortage in the number of products available, the author also distributes modules using technology in the form of smart phones in soft copy form.

DISCUSSION

This research and development will form a biology learning module based on science process skills. This research intends to produce a biology module based on scientific process skills on human circulatory system material, as well as to determine the feasibility, practicality and effectiveness of the module that researchers have developed. This research and development model refers to the Borg and Gall development model modified by Sugiyono which consists of ten steps. However, researchers only limited the research stages to 7 steps, considering limited time and costs.

Data from module validation results were obtained from 2 validator experts, namely 1 material expert validator, 1 media expert validator and 1 biology study teacher at MA Nurul Hakim Tembung. The data obtained is in quantitative and qualitative form. Quantitative data was obtained from assessment questionnaires and qualitative data in the form of responses to suggestions and general conclusions regarding the module being developed.

Quantitative data is obtained from input and also suggestions that will be used as material for revising biology modules based on science process skills. Then the quantitative data will be analyzed by calculating the average value of the assessment scale of 1,2,3,4. The scores from expert validators are searched for the average results for aspects and indicators to produce the final percentage of a validator's assessment. After obtaining the average value, then selecting the interval criteria for the product module that has been developed.

Potential problems and data collection are the first steps to carry out direct observations with the aim of finding out the existing facilities and infrastructure at the school through interviews with teachers in the field of biology studies in accordance with the researcher's interests. It is known that MA Nurul Hakim Tembung has not used modules for student teaching materials. Based on the results of interviews with the biology teacher, Mrs. Rogaya was appreciative and supported the development of biology modules based on science process skills. Module development is carried out with the aim of making the learning process easier, and students can practice science process skills. The material presented is in accordance with core competencies, basic competencies. Data obtained from interviews will be used to identify and understand students' needs in the learning process.

Next is product design, as a reference in module development are the syllabus and package books used at MA Nurul Hakim Tembung, with additional references that can support the preparation of modules related to the human circulatory system.

After developing the first product, the next step is to discuss the module with the supervisor to obtain information and input to be improved and revised before being validated. Then the product is validated by

experts in their fields who are experts in carrying out evaluations of teaching materials. The validation expert consists of 1 media expert and 1 material expert. The media validator is Mrs. Miza Nina Adlini, M.Pd. The validator for the material expert is Mr. Roni Afriadi. M.Pd. The average result obtained from media expert validation was 77% with very feasible criteria. Things that must be improved from the results of media expert validation are enlarging the images in the module, adding sources, and providing interesting information related to the material.

Material expert validation assesses the appropriateness of the material content, appropriateness of presentation and linguistic suitability of the module. The material expert who was the validator in this research was a biology lecturer at the Faculty of Tarbiyah and Teacher Training, UIN North Sumatra. Data was obtained using a questionnaire which was then filled in by material experts. The average result obtained from the material expert assessment was 79% with very feasible criteria. However, revisions still need to be made in order to obtain a more optimal module.

The next stage is design revision after an assessment by the validator. Product revisions are carried out if there are components that are deemed not to meet the eligibility criteria based on suggestions and input obtained from experts. After improvements have been made, and have been declared suitable and have received permission for trial use, then the module is tested on teachers and students to determine the success of the product that has been developed. The trials carried out were small scale trials and field scale trials. The results of the biology teacher's assessment response were 94.31%, while in the small group trial with 10 people the practicality percentage was 87% with very feasible criteria. According to Sudjana and Ibrahim, who stated that the practicality score obtained was 94.31%, which received very good/very feasible criteria because it was ≥81%. This is in accordance with Riduwan's opinion that it is said to be very good if the score is ≥81%. The results of field trials with 27 people, obtained an average practicality percentage of 87% with very feasible criteria.

The N-Gain score test results obtained a value of 75.81 which was rounded up to 76% in the effective category. From the results of product trials, it can be concluded that the biology module based on science process skills on the human circulatory system material is feasible and effective for use in the student learning process. Thus, the biology learning module based on science process skills is declared quality because it meets three criteria, namely valid, practical and effective.

CONCLUSION

1. Development of a biology module based on science process skills developed with circulatory system material using the Sugiyono method with 10 stages. Among them are potential and problems, data collection, product design, product validation, product revision, product testing, and product revision, use trials, product revision and mass production
2. The feasibility of a biology module based on science process skills on blood system material has previously been validated by media experts with a percentage result of 77% with very feasible criteria. And the assessment results from material experts were 79% with very feasible criteria.
3. The practicality of the biology module based on science process skills on the human circulatory system material after conducting trials on teachers and students of Madrasah Aliyah Nurul Hakim Tembung class XI was obtained in the very practical category. This is known from the teacher assessment results of 94.31% and the average student assessment response results of 87%
4. The effectiveness of the biology module based on science process skills in the circulatory system material is categorized as high, this can be seen from the results of the average N-Gain score in the field group trial of 0.76. Apart from that, this biology learning module based on science process skills is categorized as very effective in improving student learning outcomes. This is known from the N-Gain score percentage, which is 75.81%. So it can be concluded that the biology learning module based on science process skills that was developed is effectively used for learning about the circulatory system material.

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