Indonesian Journal of Education and Social Humanities

Indonesian Journal of Education and Social Humanities
Volume 1 (2) 20 – 32 June 2024
ISSN: 3047-9843
The article is published with Open Access at: https://journal.mgedukasia.or.id/index.php/ijesh

Development of E-Module Learning Media based on SETS (Science, Environment, Technology, and Society) on Sound Wave Material

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Abstract: Electronic Module (E-Module) is a type of interactive multimedia teaching material presented electronically which contains images, text and videos arranged systematically which are useful for forming a more creative learning process. The learning process at State Islamic Senior High School of 3 North Aceh currently still uses the conventional model and teachers have never conducted learning using interactive learning media such as e-modules. This research aims to determine the feasibility and practicality of SETS-based e-module learning media products as media that make it easier for students to learn sound wave material for class XI at the State Islamic Senior High School of 3 North Aceh. This development research method refers to Research and Development (R&D) with the ADDIE model (Analysis, Design, Development, Implementation and Evaluation). The research subjects were physics subject teachers at the State Islamic Senior High School of 3 North Aceh and students in class XI MIA 3 with a total of 16 students. The results obtained are: 1) The results of validation by the media obtained a percentage of 85.23% in the "Very Eligible" category, and the validation results from material experts obtained a percentage of 85.06% in the "Very Eligible" category. 2) The results of student responses (small scale) obtained a percentage of 89.08% in the "very practical" category. 3) The results of teacher responses obtained a percentage of 82.96% in the "Very Practical" category and the results of student responses (large scale) obtained a percentage of 86. 97% in the "Very Practical" category.

Keywords: electronic modules, SETS, learning media, sound waves.

Received April 21, 2024; **Accepted** June 20; **Published** June 27, 2024

Citation: Elistiana, V., Novita, N., & Ginting, F. W. (2024). Development of E-Module Learning Media based on SETS (Science, Environment, Technology, and Society) on Sound Wave Material. *Indonesian Journal of Education and Social Humanities*, *1*(2), 20 – 32.

INTRODUCTION

The rapid development of science and technology has an impact on various fields, including education. Teachers must adapt to technological developments by integrating them into the learning process and teaching materials (Lubis & Wangid, 2019; Mulyani & Haliza, 2021; Sinaga et al., 2024). With the development of science and technology, the current learning process allows students to learn independently. Apart from relying on technology, the very rapid development of industry in the 21st century also involves the field of science (Fatwa & Rofiq, 2019; Herdiana et al., 2021; Ningsih et al., 2023). The use

of technology in the learning process continues to be improved to improve the quality of education. Currently, learning does not only take place face-to-face, but can also be done online connected via digital platforms (Lubis & Lubis, 2024; Wahyuni & Ananda, 2022). The use of technology in teaching and learning activities is able to create an innovative educational environment that can adapt to various student learning styles. (Azizah et al., 2023). The use of technology in learning is an effective solution to overcome various difficulties in the learning process. (Sari & Hamami, 2022). Digital technology in education makes it easier for students to access study material more practically. (Adzkiya & Suryaman, 2021). Therefore, integrating digital technology provides positive benefits in improving quality and simplifying the learning process.

Physics as a product of science is formed by natural laws which can be described in mathematical relationships. Mathematical modeling of events, in general, can result in students having difficulty understanding the physical meaning of natural events that actually occur. Modeling like this students tend to only focus on the mathematical aspects of modeling, so they are less trained in thinking about solving problems related to concepts. Apart from that, students do not understand the use of the material they study in everyday life, this results in their weak ability to master science (Hidayani & Rusilowati, 2016; Nurliza et al., 2024; Simamora & Fatwa, 2022).

The development of science and technology has a significant influence on the preparation, strategy and implementation of education. The learning process in the classroom must be integrated with currently developing technology, such as integrating technology into learning media (Lubis, 2019; Muzijah et al., 2020; Silvia et al., 2023). According to Kustandi & Darmawan (2020) learning media is a means to improve teaching and learning process activities. The use of learning media in the teaching and learning process can generate new desires and interests, create motivation and stimulation in learning activities, and even provide psychology to students (Wulandari et al., 2023).

In terms of increasingly diverse teaching media, several principles must be considered when choosing media. These principles include (1) clarity of the goals and objectives of media selection—whether for entertainment, general information, or learning, and so on; (2) familiarity with the media, which means you must know about the characteristics and properties of the media you will choose; and (3) comparison of the number of media that can be done because there are many choices that may be more appropriate to the teaching objectives. (Liliyafi, 2018).

Based on observations and interviews conducted by researchers with physics teachers at the State Islamic Senior High School of 3 North Aceh, information was found regarding the low level of scientific literacy among students. This can be seen in the results of the Minimum Competency Assessment (AKM) test where the percentage of students completing the AKM is still less than 50% and is included in the low category. Through interviews, researchers found that students had never received learning in the form of strategies or learning media that supported students' scientific literacy, and the existing learning process still tended to be teacher-centred. Apart from that, students' lack of interest in reading can also be a factor in low scientific literacy abilities, in line with the opinion of (Levianti et al., 2023) that factors that influence students' low scientific literacy abilities include low interest in reading, lack of evaluation tools. leads to the development of scientific literacy, and teachers' lack of knowledge about scientific literacy. The results of interviews conducted by researchers with students at the State Islamic Senior High School of 3 North Aceh found that their lack of interest in reading textbooks, especially physics, was because they thought that physics lessons were difficult to learn because the material was abstract and complicated.

As an effort to resolve the problems that have been described, researchers are trying to offer a solution, namely by developing digital teaching materials, namely in the form of e-modules. In line with the opinion of (Kimianti & Prasetyo, 2019) that to improve students' scientific literacy skills in understanding physics material and concepts, it is necessary to develop unique and flexible learning tools, namely in the form of modules in

electronic form. E-module is a media used for teaching so that students can learn independently to achieve certain competencies, arranged systematically in the form of learning materials, learning activities, exercises and evaluations. This media can be accessed via smartphone, which makes it easy to access e-modules anytime and anywhere (Kholisah & Susanto, 2024). This is beneficial for teachers and students in developing the skills and knowledge needed in the 21st century era (Dasopang et al., 2023; Faridah & Afridiani, 2021; Lubis, 2023). E-modules present material that is arranged systematically, providing the characteristics of independent instruction, which allows students to learn independently and not depend on others. E-modules also contain practical things such as images, audio, YouTube links, etc., which makes it interesting for students to learn. (Ilhami et al., 2023). Therefore, learning science, especially physics, can attract students' interest so that they do not feel bored during the learning process.

One of the efforts made to prevent the e-modules being developed from becoming monotonous and to make them more focused, structured and systematic, the integrated learning approach must be in accordance with scientific principles, such as the SETS approach. (Novitasari & Dian Tiara, 2022). According to Dewi et al. (2020) The SETS approach is an integrated educational methodology that involves science, technology, the environment and society. This approach focuses more on students' daily lives, so that students can relate what they learn to real-world situations in the field. The SETS approach also creates a learning atmosphere that remains relevant, thereby helping to develop students' professionalism in thinking, scientific abilities and social skills (Safitri & Sari, 2022). The assistance application that researchers will use to design e-modules is the Canva application, where Canva is an online-based application that offers practical designs in the form of templates, features and categories provided in it. In line with the opinion (Farhaini, Nurul, 2023) that audio-based visual learning media with the Canva application is very suitable for use in learning. Apart from being easy for new users to use, Canva's advantage is that it saves time in designing practical learning media (Zulkan, 2023).

Researchers are interested in conducting research by developing SETS-based e-modules, to find out how to develop SETS-based e-module learning media that meet feasible and practical criteria. This SETS-based e-module has never been implemented in the State Islamic Senior High School of 3 North Aceh. From the results of observations that researchers obtained, the State Islamic Senior High School of 3 North Aceh has adequate facilities and infrastructure, and students are permitted to bring smartphones with the aim of supporting the learning process, so that they can support the implementation of this research later. It is hoped that this research will help teachers in developing learning innovations in the future. Based on the description above, the solution that researchers use to answer this problem is that researchers are interested in conducting research on "Development of SETS (Science, Environment, Technology, and Society) Based E-Module Learning Media on Sound Wave Material".

METHODS

In this research, researchers used research and development research methods with the ADDIE model. The ADDIE development model includes five research phases, namely: (1) Analysis Phase, (2) Design Phase, (3) Development Phase, Implementation Phase, and Evaluation Phase (Arofah & Cahyadi, 2019). The product resulting from this research is learning media in the form of SETS-based e-modules. (Science, Environment, Technology, and Society) with material on Sound Waves. The following is a schematic of the development procedures in this research.

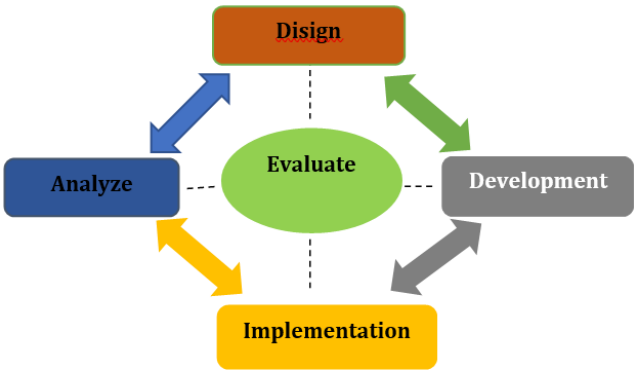

Figure 1. *Research Design*

The ADDIE model has five research stages, as seen in the picture above. The five stages are analysis, design, development, implementation and evaluation. Analysis is the first step taken before designing SETS-based electronic module learning media. The analyzes carried out at this stage are: curriculum analysis, analysis of student characteristics, and analysis of learning materials. In the second stage, namely the design stage, where researchers begin to design and compile the product to be developed, starting from designing learning content or scenarios, designing teaching material competencies, and designing learning evaluation tools. Once designed, the next stage is to develop media that fits the specified format. The development of e-module learning media was carried out using two software, namely Canva and flippingbook. Canva is a free design platform that allows users to easily create designs with professional design results (Harida et al., 2023) while flippingbook is an online PDF to flipbook converter website that provides an electronic book effect that can be opened on each page like a book (Manzil et al. al., 2022). After the e-module design is developed according to the specified format, then the product is validated to get a better product. At this stage the researcher validates the product with validators who are media and material experts and conducts product practicality trials with small-scale students. The e-learning media product SETS-based modules will be revised after being assessed by media experts and material experts. The next stage is the implementation stage, at this stage the product that has been developed will be implemented in experimental classes and physics subject teachers at the State Islamic Senior High School of 3 North Aceh. The final stage is the evaluation stage. At this stage the researcher will evaluate the e-module that has been developed to determine the level of product success. Researchers evaluated the results of product validation and analyzed the results of the practicality of SETS (Science, Environment, Technology and Society) based e-module learning media products on sound wave material.

The data collection technique used in this research is a questionnaire. According to Sugiyono, (2020) A questionnaire is a data collection technique that is carried out by giving several questions or written statements to research subjects according to the topic of discussion to be researched. The questionnaire conducted in this research was a direct questionnaire with a Likert scale. The Likert scale is a scale that was first introduced by Rensis Likert to express opinions with various answer choices such as agreeing to disagreeing with the statement (Budiastuti & Bandur, 2018). The questionnaire used in this research was given to media experts and material experts, practicing teachers and students. The data obtained was quantitative and qualitative data which was then processed using descriptive statistics. The data obtained is quantitative and qualitative data which is then processed using descriptive statistics. Quantitative data is used to measure the achievement of feasibility tests and product practicality. Meanwhile, qualitative data is used to analyze suggestions or input from product feasibility and practicality testers, then becomes the basis for making revisions to improvements to the product being developed (Zalukhu et al., 2023).

RESULTS

The results of this research are e-module learning media regarding sound waves. This media has been validated by 3 validators, namely lecturers from the university physics education study program and 2 physics subject teachers from the State Islamic Senior High School of 3 North Aceh. The e-module learning media developed in this research uses the ADDIE model developed by Robert Maribe Brance with stages, namely analysis, design, development, implementation and evaluation.

Analyze

Tahap analisis pada penelitian ini di awali dengan dilakukannya observasi di state islamic senior high school of 3 Aceh Utara. Berdasarkan hasil wawancara peneliti menemukan bahwa minimnya media pembelajaran yang digunakan guru pada pelajaran fisika disekolah dan rendahnya minat siswa dalam membaca. Analisis merupakan langkah awal yang dilakukan sebelum merancang media pembelajaran modul elektronik berbasis SETS. Analisis yang dilakukan pada tahap ini adalah:

1) Curriculum analysis

The curriculum is an important part that is really needed in the education system (Ripandi, 2023). At this stage, analysis is carried out to find out the curriculum implemented in the school. The aim is that the development carried out is in accordance with the applicable curriculum requirements. The curriculum implemented at the State Islamic Senior High School of 3 North Aceh is Curriculum 13. K-13 emphasizes several competencies which aim to form students with character, knowledge and 21st century skills (Andrian & Rusman, 2019). Some of these competencies include: scientific literacy competencies, digital literacy competencies, mathematical literacy competencies, critical thinking and problem solving competencies and so on.

2) Student Analysis

The second analysis was carried out to analyze student competence. Based on interviews, information was obtained that students' scientific literacy abilities at State Islamic Senior High School of 3 North Aceh were still less than optimal and students had never received learning resources that led to the development of students' scientific literacy. To increase students' scientific literacy in physics classes, the first step taken was to analyze the character of students at State Islamic Senior High School of 3 North Aceh, by paying attention to various aspects such as interests, motivation, learning styles, and their level of basic understanding of science. This is important to determine the most effective teaching approaches and methods, so that the material presented can be more easily understood and applied by students. By understanding student characteristics, researchers can design learning media and learning activities that are more practical and relevant (Septianti & Afiani, 2020), which will ultimately help improve students' scientific literacy.

Based on interviews conducted by researchers with students at the State Islamic Senior High School of 3 North Aceh, it was found that students' interest in reading was still low, especially physics textbooks, this was because they thought that physics textbooks were difficult to understand. Based on the results of the analysis, it can be concluded that to overcome these problems a practical innovation such as learning media is needed. One of the media that can increase students' scientific literacy in physics learning is SETS-based e-module media which is supported by the Canva and flippingbook applications, so that the presence of pictures, videos, animations and educational games in this e-module media can stimulate and provide interest and impression. which are fun.

3) material analysis

At this stage the researcher analyzes the concepts and procedures of the material studied by students, so that the researcher can prepare learning material in the media process being developed. The material that will be developed and combined with the SETS approach in the e-module is sound wave material. Sound waves are material that discusses basic concepts and phenomena related to sound propagation. Sound wave material can be used as teaching material in e-modules for several reasons, namely this material is relevant to everyday life so that students will be more interested and motivated to learn and the connection with everyday experiences helps students understand the material more easily (Permatasari et al. al., 2021). The relevance of sound wave material to everyday life makes e-modules more effective in increasing scientific literacy, because students can link theory with real practice, which deepens their understanding and application of science.

Design

The activity in this stage is designing e-module learning media which was developed with the help of Canva and flippingbook. The design of a SETS-based e-module on sound wave material at the State Islamic Senior High School of 3 North Aceh consists of 3 parts, namely introduction, core activities and conclusion. The SETS-based e-module is structured based on the Najuah guidebook, (2020) which consists of a cover, foreword, table of contents, glossary, introduction (core competencies, basic competencies, competency achievement indicators, learning objectives, and instructions for using the e-module). Learning stages, concept map, material, evaluation, summary, bibliography and author biodata. The e-module design is designed using Canva software and downloaded in PDF form then inserting the PDF into the flipping book application. The following is the e-module product design process:

1) Create an e-module cover and determine the background that will be used using Canva software;
2) Develop e-modules with reference to the K-13 curriculum consisting of (Core Competencies, basic competencies, learning indicators, learning objectives, and instructions for using SETS-based e-modules) and learning stages;
3) Arranging learning materials according to the stages of the SETS approach;
4) Including previously designed evaluation questions;
5) Adjusting the font shape and image layout in the e-module;
6) Download e-modules that have been systematically arranged in Canva software into PDF form;
7) Open the flipping book application and insert the PDF that was downloaded in the Canva software previously;
8) Click the edit menu to add video, audio, animation, link or QR code according to your needs;
9) click finish to end editing;
10) Click the save menu to save the e-module
11) Copy the product link to be shared.

Development

The Development Stage is the time where previously planned concepts and designs are transformed into real learning products and ready to be implemented through several tests by validators. Product validation was carried out by media and material experts consisting of lecturers and physics teachers at the State Islamic Senior High School of 3 North Aceh. Then the product is revised according to the validator's suggestions and input.

1) Media Expert Validation

Media expert validation carried out on the products being developed aims to ensure that the products being developed meet the quality standards and design guidelines required to achieve the learning objectives that have been set (Saputri, 2023). Through media

expert validation, the validator can assess aspects of display appropriateness, graphic appropriateness, and linguistic appropriateness. The media expert validators consist of two validators, namely lecturers at Malikussaleh University. As for the results from the two media expert validators, the total percentage of media validation results obtained per aspect is as follows:

Table 1. *Media Expert Validation Results*

No.	Validator Assessment Aspects	Average	Persentage %	Criteria
1.	Graphic Eligibility	4,35	87,14%	**Very Good**
2.	Language Eligibility	4,16	83,33%	**Very Good**
	Average amount	**4,35**	**85,23%**	**Very Good**

Based on the results of the media expert validation assessment aspect in table 1, the graphic feasibility aspect obtained an average score of 4.35 with a percentage of 87.14%, and language feasibility obtained an average score of 4.16 with a percentage of 83.33%. Thus obtaining an average score from all aspects of 4.35 with a percentage of 85.23% with the criteria "Very Eligible".

2) Material Expert Validation

Material expert validation was carried out by five material experts consisting of two expert lecturers in physics education at Malikussaleh University and three physics subject teachers at the State Islamic Senior High School of 3 North Aceh. As for the results from the five material expert validators above, the total percentage of material validation results obtained is as follows:

Table 2. *Material Expert Validation Results*

No.	Validator Assessment Aspects	Average	Persentage %	Criteria
1.	Eligibility of content	4,23	84,6%	**Very good**
2.	Feasibility of presentation	4,48	89,6%	**Very good**
3.	Contextual assessment	4,05	81%	**Very good**
	Average amount	**4,25**	**85,06%**	**Very good**

Based on the results of the material expert validation assessment aspect in table 2, in the content feasibility aspect, the average score was 4.23 with a percentage of 84.6%, presentation feasibility obtained an average score of 4.48 with a percentage of 89.6%, contextual assessment obtained an average score of 4.05 with a percentage of 81%, thus obtaining an average score from all aspects of 4.25 with a percentage of 85.06% with the criteria "Very Decent".

3) Student response results (small scale)

Student responses were taken from 14 first semester physics students at Malikussaleh University as respondents. To obtain student responses to the quality of SETS-based e-modules, this was done using a student response questionnaire. As for the results from the 14 respondents above, the total percentage of student response results obtained is as follows:

Table 3. *Results Aspects of the teacher response questionnaire*

No.	Validator Assessment Aspects	Average	Persentage %	Criteria
1.	Practicality of use	4,55	91,07%	**Very good**
2.	Ease of use	4,45	89,04%	**Very good**
3.	Usefulness	4,35	87,14%	**Very good**
Total amount		**4,45**	**89,08%**	**Very good**

Based on the results of the student response questionnaire on a small scale above, it can be seen that the practical aspect obtained an average score of 4.55 with a percentage of 91.07%, the convenience aspect obtained an average score of 4.45 with a percentage of 89.04%, and in the usefulness obtained an average score of 4.35 with a percentage of 87.14%, so that the overall average score for the aspect was 89.08% with the criteria "very practical". After product validation is carried out by experts in each field, suggestions and input are obtained to revise the product that has been developed.

Implementation

The results of product practicality trials based on teacher and student response questionnaires (large scale) include the following results:

1) Teacher response test results

Teacher responses were carried out by 3 physics subject teachers at the State Islamic Senior High School of 3 North Aceh. The aim is to assess the level of practicality of the SETS-based e-module that has been developed by researchers in terms of material quality, media quality and presentation. As for the results from the three physics subject teacher respondents at the State Islamic Senior High School of 3 North Aceh, the total percentage of teacher response results obtained is as follows:

Table 4. *Results Aspects of the teacher response questionnaire*

No.	Assessment Aspects	Average	Persentage %	Criteria
1.	Material suitability	4,33	86,66%	**Very good**
2.	Media quality	4,1	82,22%	**Very good**
3.	Media presentation	4	80%	**Good**
	Total amount	**4,13**	**82,96%**	**Very good**

Based on the results of the teacher response questionnaire aspect in table 4.8, the material suitability aspect obtained an average score of 4.33 with a percentage of 86.66%, the media quality aspect obtained an average score of 4.1 with a percentage of 82.22%, the presentation aspect obtained an average score of 4 with a percentage of 80%, so that the average score for all aspects was 4.13 with a percentage of 82.96% with the criteria "very practical".

2) Student response results (Large Scale)

To see the responses of class The total percentage of student response test results obtained is as follows:

Table 5. *Percentage of Total Student Response Test Results (Large Scale)*

No.	Assessment Aspects	Average	Persentage %	Criteria
1.	Practicality	4,51	90.31%	**Very good**
2.	Convenience	4,28	85,62%	**Very good**
3.	Usefulness	4,25	85%	**Very good**
	Average	**4,34**	**86,97%**	**Very good**

Based on the results of student response tests in class The average score was 4.28 with a percentage of 85.62% and in the usefulness aspect, the average score was 4.25 with a percentage of 85%, thus obtaining an overall average score of 4.34 with a percentage of 86.97%, which was included in the criteria " very practical."

Teacher and student response data was obtained based on the results of a questionnaire that was given to teachers and students after the process of using SETS-based e-modules in physics learning. The response index is calculated using a rating scale as in table 6 below:

Table 6. *Assessment score*

Score	Category
5	Very good
4	Good
3	Middle
2	Not good
1	Bad

Source: (Sugiyono, 2019)

Calculate the percentage with the following formula:

Validity Percentage = $\frac{jumlah\ skor\ hasil\ pengumpulan\ data}{jumlah\ skor\ kriterium} \times 100\%$.....(1)

Total criteria score = highest score x number of items x number of respondents

Table 7. *Rating Scale Rating Category*

Skor Persentase (%)	Kategori
0 – 20%	Bad
21– 40%	Not good
41 – 60%	Middle
61 – 80%	Good
81 – 100%	Very good

Source: (Sugiyono, 2019)

Evaluation

Evaluation is carried out at each stage of development. Evaluation is carried out to ensure that the development product meets needs. After the product was developed and implemented in physics lessons in class XI MIA 3 State Islamic Senior High School of 3 North Aceh, good results and responses were received from XI MIA 3 students and physics subject teachers. This e-module is considered practical and easy to use in physics learning. Thus, it can be concluded that the SETS (Science, Environment, Technology, and Society) based e-module on Sound Wave Material has been successfully developed and completed, producing a satisfactory final product.

DISCUSSION

This research uses the Research and development (R&D) method. The model used is the ADDIE model. The ADDIE development model includes 5 research phases, namely: (1) Analysis Phase, (2) Design Phase, (3) Development Phase, Implementation Phase, and Evaluation Phase. The product produced in this research is an e-module learning media based on SETS (Science, Environment, Technology, and Society) on Sound Waves material.

In the initial stage, researchers analyzed various problems that existed at the State Islamic Senior High School of 3 North Aceh, namely that students' scientific literacy abilities in physics lessons were still less than optimal, this was seen from the results of the students' Minimum Competency Assessment (AKM) test which was still below 50%. Apart from that, at the State Islamic Senior High School of 3 North Aceh there is no learning media that leads to the development of scientific literacy and only learning uses textbooks from the government. And students' lack of interest in reading is one of the factors in the low scientific literacy of students at the State Islamic Senior High School of 3 North Aceh. After that. researchers analyze the curriculum, analyze student characteristics and analyze the material. The results of the analysis obtained are based on existing problems. The researcher offers a solution by developing learning media that can increase students' scientific literacy and increase students' interest in reading, namely in the form

of learning media - electronic modules (E-Modules). This is in line with Kimianti & Prasetyo's (2019) opinion that to improve students' scientific literacy skills in understanding physics material and concepts, it is necessary to develop unique and flexible learning tools, namely in the form of modules in electronic form.

The design stage is the stage where researchers begin to design the e-module that will be developed, starting from designing learning content or scenarios, designing teaching materials, designing learning tools that will be used and designing evaluation tools in the form of test questions that will be included in the e-module. designed. The design of the e-module uses the help of Canva and flipping book software so that the resulting module is more practical and interactive because it contains various interesting images, animated videos, learning videos, various interactive links and interactive quizzes that can be accessed directly by students. The e-module designed is adapted to the syntax of the SETS (Science, Environment, Technology, and Society) learning approach.

Development stage, at this stage the researcher validates the product through experts, namely lecturers from Malikussaleh University and physics subject teachers at the State Islamic Senior High School of 3 North Aceh. The results of material expert validation carried out by 5 validators obtained results with the criteria "very suitable" for use in learning with a percentage of 85.06%, which means that the material presented is in accordance with the KI and KD as well as the learning objectives to be achieved. The results of media validation carried out by 2 validators obtained results with the criteria "very suitable" to be used with a percentage of 85.23%, which means that the media design developed is relevant or appropriate to the context to be conveyed. After the product is validated, the e-module is revised according to the suggestions and input provided by the validator. The e-module product was tested on a small scale and obtained a percentage result of 89.98% with the criteria "very practical".

Implementation stage (application), practical trials involving physics subject teachers and class XI MIA 3 students at the State Islamic Senior High School of 3 North Aceh. As for the results obtained in the practicality test through the teacher response questionnaire, the e-module product developed was declared "very practical" for application with a percentage of 82.96% and in the large-scale student response test, the same results were obtained, namely the e-module was stated "very practical" with a percentage of 86.97% assessed from the aspects of practicality, convenience and product usefulness.

This research has been planned as well as possible and observations of the treatment have been carried out carefully. However, there are still parts of this research that do not overall go according to plan. During the research, there were several obstacles or problems that the researchers encountered in the field. The obstacles that researchers found during the research were that there were some students who did not bring gadgets so they had to look at their friends, so students were less focused on learning and when learning was taking place, maximum supervision was needed to ensure that students actually used gadgets to learn. and not for other activities. Apart from these obstacles, there were no other obstacles that researchers experienced in the field.

The final stage is the evaluation stage, the evaluation stage is carried out at each stage of development carried out by researchers. The evaluation stage is carried out with the aim of obtaining product results that are appropriate and useful in learning. So that through this stage an e-module product is obtained that suits students' needs.

CONCLUSION

Based on the results of research conducted by researchers at the State Islamic Senior High School of 3 North Aceh with the research title "Development of SETS (Science, Environment, Technology and Society) Based E-Module Learning Media on Sound Wave Material" it can be concluded that the results of the validation Experts regarding the e-module product developed were declared very suitable for use in physics learning and

based on the results of practical tests carried out by researchers using teacher and upper class student response questionnaires, the results showed that the e-module developed was very practical to be used as a learning media that could facilitate students in learning.

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