The Development of an E-Module on Scientific Work Based on Science, Environment, Technology, and Society (SETS) for 11th Grade High School Students

Risky Robbyyansah[1], Edi Suyanto[2], Farida Ariyani[3], Siti Samhati[4], Sumarti[5]

[1,2,3,4,5] University of Lampung, Bandar Lampung, Indonesia

ABSTRACT: This research examines the development of an E-Module on Scientific Work based on Science, Environment, Technology, and Society (SETS) for 11th-grade high school students, as well as the feasibility of the E-Module. The objectives of this study are to generate an educational product in the form of an E-Module and to describe the feasibility of the E-Module on Scientific Work based on Science, Environment, Technology, and Society (SETS) for 11th-grade high school students. The study used the Research and Development method by adopting seven out of ten development steps according to Borg and Gall. The subjects of the investigation consisted of validators; two lecturers, including experts in content, media, and Indonesian language practitioners, as well as students from SMA Negeri 1 Bandar Lampung, SMA Negeri 16 Bandar Lampung, and SMA Al-Husna Bandar Lampung. The data collection techniques in the study included documentation, observation, interviews, and questionnaires. Data analysis was conducted using descriptive analysis, while the research instruments used were the Likert scale and a questionnaire. The research findings showed that: (1) the E-Module on Scientific Work based on Science, Environment, Technology, and Society (SETS) for 11th-grade high school students was successfully developed; and (2) the developed E-Module was categorized as highly feasible. The expert trial results showed a very feasible category, with content expert assessment at 85.8, media expert assessment at 88.6, and practitioner assessment at 91.1. In addition, the expert validation tests, the feasibility test based on the opinions and views of students as users of the E-Module received a score of 91, which also fell into the very feasible category. The feasibility assessment from students covered three aspects: the attractiveness, the ease of the implementation, and the usefulness.

KEYWORDS: E-Modul, Scientific Work, SETS

I. INTRODUCTION

The growth of teaching materials as a form of developing teaching strategies that align with various specific principles adapted from different learning theories. Syahid states that the development of teaching materials is not only based on the interests of the developer but also serves as an alternative solution to address learning problems. Learners not only interact with the teacher but also engage with the learning resources used to achieve the desired outcomes. Other reasons for developing teaching materials are based on the availability of materials in line with curriculum demands, the characteristics of the target audience, and the need to address learning problems (Syahid, 2003).

The SETS concept offers a holistic perspective that connects science with environmental issues of technology and their impact on society. By understanding this relationship, students can learn to analyze and evaluate the impact of decisions made in the context of science and technology and pay attention to social and environmental aspects that may be overlooked. For example, a deep understanding of climate change or natural resource management requires not only scientific knowledge but also an awareness of the social and technological implications of the policies taken. The objectives of education is in accordance with Law No. 22 of 2003 concerning the National Education System, where education is expected to be a conscious and planned effort that creates a learning atmosphere that supports the development of students' potential both spiritually, personality and skills.

In this context, one of the learning processes regulated in PERMEN 262 of 2022 is regarding the Indonesian Language subject as a compulsory subject in the independent curriculum at the elementary and secondary education levels. It shows the importance of integrating various subjects in building a comprehensive understanding including in the context of SETS. Thus, through the development of E-Modules that adopt the SETS approach, students will not only gain scientific knowledge but also critical skills in evaluating environmental and social issues which can ultimately prepare them to become responsible citizens and contribute positively to society.

The Development of an E-Module on Scientific Work Based on Science, Environment, Technology, and Society (SETS) for 11th Grade High School Students

In the learning of Scientific Work for class XI or Phase F, there are Learning Achievements: writing and reading. The two Learning Objectives are made from those Learning Achievements. Based on the Learning Objectives, students are expected to be able to: identify the systematics of scientific work; write scientific work according to its language variety; meet the rules of scientific work.

Teaching modules are one of the teaching materials from the evolution of printed media which contain various information sheets and instructions from teachers to students in order to achieve independent learning without or with teacher's guidance to carry out various activities to develop students' thinking levels (Arsyad, 2012). In the National Curriculum, the use of modules holds a significant position in the learning process, especially in student-centered learning, as modules are interconnected with other teaching resources. When using teaching modules, students are free to engage in activities according to the established flow, which facilitates the smooth progression of the teaching and learning process. The use of teaching modules is aligned with the Learning Outcomes and Objectives outlined in the National Curriculum, incorporating structured learning resources and activities to support and enhance students' comprehending of the material.

E-Module, or electronic module, is systematically designed to achieve specific Learning Objectives, incorporating audio, animation, and navigation that make students engage interactively in the learning process. With the presence of interactive learning materials such as electronic modules, which feature audiovisual displays, sound, videos, and other programs, users are able to easily grasp the content, making it an effective learning medium (Nur, 2017). Another definition declares that an electronic module is the digital version of a printed module, which can be read on a computer and is designed using the necessary software. It is a learning tool that contains content, methods, limitations, and evaluation techniques, systematically and attractively structured to achieve the desired objectives (Kadek, 2017). In pursuance of Cecep K. and Bambang S., the E-Module accessible to students offers various benefits and characteristics. In terms of its advantages, this can make the learning process more engaging, interactive, and capable of improving the quality of learning, while allowing it to be accessed anytime and anywhere (Gede, 2017).

The sense of teaching modules in learning activities can support students in processing the material to be studied, both individually and peers through group discussions. Furthermore, the use of modules provides students with a full opportunity to express their abilities in developing skills and affective competencies. In their role as educators, teachers are expected to propose innovative and engaging teaching models that promote student-centered learning activities (Depdiknas, 2008).

The Science, Environment, Technology, and Society (SETS) learning model is an educational approach that connects science with other elements: technology, environment, and society. According to Fatchan, the SETS learning model can enhance inquiry, problem-solving, and process skills. It emphasizes effective learning methods that encompass cognitive, affective, and psychomotor domains, while also highlighting the integration of science across different disciplines (Fatchan, 2014). When viewed from the perspective of teaching, it asserts student success and can be combined with various teaching strategies. From an evaluation standpoint, there is a connection between the objectives, processes, and learning outcomes, as well as differences in competencies, maturity, and student backgrounds, alongside the function of the program being evaluated.

II. METHODS

The development model applied in this study is the Research and Development (R and D) model proposed by Borg and Gall, which is later known as the Research and Development Research (RDR) model. The RDR model consists of three main activities: preliminary research, product development, and effectiveness testing. The procedure of this study followed the research and development model outlined by Borg & Gall, which included ten steps or stages (Sugiyono, 2015). The researcher adhered to the stages of Borg and Gall's research and development model, encompassing all ten stages, until the E-Module is ready for field testing.

This study began with a preliminary study aimed at gathering initial information regarding the needs and conditions of the learning environment, which would be used to expand teaching materials. The design of the E-Module started by establishing a needs map, which was composed based on the analysis of the material that required to be prepared. The evaluation of the E-Module development was carried out in four stages: expert or specialist testing according to the field of study, peer testing, small-scale trials, and large-scale trials. The data collection techniques applied were documentation, observation, interviews, and questionnaires.

The research instruments implemented included teacher and student needs interview sheets, expert validation sheets, peer or practitioner assessment questionnaires, and E-Module product trial questionnaires. The data analysis activities in this study were conducted using descriptive analysis, which involved evaluating the results from expert or specialist analysis and the data obtained during the product trials.

The Development of an E-Module on Scientific Work Based on Science, Environment, Technology, and Society (SETS) for 11th Grade High School Students

III. RESULTS AND DISCUSSIONS

This research encompassed two main aspects: the process of designing and developing an E-Module on Scientific Work material based on Science, Environment, Technology, and Society (SETS) for 11th-grade high school students and evaluating the feasibility of the E-Module product based on assessments from media experts, subject matter experts, practitioners (Indonesian language teachers), and trials conducted by students as users. The results of the study were explained through the design and implementation of the E-Module that had been carried out, with the following stages: (1) preliminary study that included an analysis of potential problems, (2) data collection for the development of the E-Module through curriculum analysis and literature review, (3) product design, (4) product validation (E-Module) by subject matter experts, media experts, and practitioners, (5) product revision, (6) product trials on a small scale and large scale, (7) final product, and (8) product feasibility calculation in its application in high schools.

Table 1. Results of the Interview with Teachers Regarding the Need of Learning Modules

No.	Aspects	The Questions	The Answers
1.	The availability of teaching materials.	Do you use instructional materials or modules as a guide for students in the learning activities related to scientific work?	Yes, I do.
		If so, is the module designed by you yourself?	No, it is not.
		If none, what learning guide for scientific work materials do you typically use?	The books provided by the school.
2.	The relevance to the learning goals.	Is the student learning activity guide used aligned with the Competency Standards (CP) and the Subject Matter Standards (TP) for scientific work?	Yes, it is.
3.	The presentation of the materials	Does the module used facilitate your achievement of the learning objectives for scientific work?	Yes, it is.
		Have you experienced any challenges while delivering the scientific work material using the available guides or instructional materials?	Yes, I have.
		If so, what are the underlying challenges that cause difficulties in teaching scientific work material to students?	The material is limited, a shortage of examples and types of scientific work, as well as a lack of references.
4.	The enrichment of the materials	Does the student learning activity guide used provide enrichment of the material?	Yes, it is.
		Does the student learning activity guide used provide enrichment of the material?	Not relevant yet.
		If none, what kind of enrichment is expected in the teaching of scientific work material?	Enrichment that is in line with scientific work material.
5.	The need of the materials	Do you need an activity guide in the form of an E-Module for learning scientific work material to add references and also help learn this material in order to achieve learning objectives?	As the scientific work material is complex, but and only the guidebook available at the school is used every year.

Table 2. Results of the Interview with Students Regarding the Need of Learning Modules

No.	Aspects	The Questions	The Answers
1.	The availability of teaching materials.	Do students use the module as a guide for learning activities related to scientific work material?	Yes, we use books to study scientific work material.
		If not, what learning guide is typically applied for scientific work material?	-

2.	The relevance to the learning goals	Is the learning activity guide relevant with the learning objectives for scientific work material?"	Yes, it is relevant.
		If not related, what are the shortcomings of the learning activity guide that still need to be improved or supplemented?	The improvements are needed in the form of more example sources, materials, and explanations related to scientific work material.
3.	The presentation of the materials	Does the instructional material used facilitate student learning??	Yes, it does. It makes It easier, but the references are still limited.
		Does the guidebook used provide guidance on the material being taught related to scientific work through real-life examples?	Yes, it does.
		Do students face challenges in understanding scientific work material?	Yes, it does.
		If so, what underlying difficulties contribute to the challenge of teaching students to comprehend scientific work material?	The challenges are related to the limited availability of books and reference materials and the presentation is not interesting.
		Do students require guidance in the form of learning materials or modules to assist them in studying scientific work content?	Yes, we need it. Its function is to add references for learning that can be used anywhere.

Based on the table, it can be summarized that instructional materials in the form of E-Modules are essential for teaching scientific work material, which includes the ability to identify, analyze, write, and present scientific work in accordance with the rules, creatively using technology. Hence, the development of a Science, Environment, Technology, and Society (SETS)-based E-Module for Scientific Work should be undertaken to support the achievement of students' competencies and to add references in the teaching of Scientific Work material in 11th grade high school classes.

Table 3. The Validation of Subject Expert

No.	Aspects	Results	
		Percentage Scores	**Characteristics**
1.	**Relevance**	82,4	Highly Feasible
2.	**Content**	87,2	Highly Feasible
3.	**Attractiveness of Presentation**	87,9	Highly Feasible
	Total	**85,8**	**Highly Feasible**

The validation results from subject experts on the Science, Environment, Technology, and Society (SETS)-based E-Module for Scientific Work for 11th-grade high school students show a percentage of 85.8%, which meets the 'Highly Feasible' criteria for production after revisions were made according to the expert's recommendations.

Table 4. The Validation of Media Expert

No.	Aspect	Results	
		Percentage Scores	**Characteristics**
1.	**Graphics**	88,6	Highly Feasible
	Total	**88,6**	**Highly Feasible**

The Development of an E-Module on Scientific Work Based on Science, Environment, Technology, and Society (SETS) for 11th Grade High School Students

The validation results from the learning media expert on the Science, Environment, Technology, and Society (SETS)-based E-Module for 11th-grade high school students showed a percentage of 88.6%, meeting the "Highly Feasible" criteria for production after it was revised according to the recommendations provided by the media expert.

Table 5. The Validation of Practitioner

No	Aspects	Results	
		Percentage Scores	**Characteristic**
1.	**Relevance**	94,1	Highly Feasible
2.	**Content**	88,7	Highly Feasible
3.	**Attractiveness of Presentation**	93,2	Highly Feasible
4.	**Graphics**	88,6	Highly Feasible
Total		**91,1**	**Highly Feasible**

The validation results from practitioners (Indonesian Language teachers) regarding the E-Module on Scientific Works based on Science, Environment, Technology, and Society (SETS) for 11th-grade high school students revealed a percentage of 91.1%, meeting the "Highly Feasible" criteria for production after being revised in accordance with the guidance provided by the practitioners.

Table 6. The Trials of Small-Scale

Subject of The Research	Results					
	Aspects A		Aspects B		Aspects C	
	Scores	**Criteria**	**Scores**	**Criteria**	**Scores**	**Criteria**
Subject 1	**94,2**	**Highly Feasible**	**88,6**	**Highly Feasible**	**94,8**	**Highly Feasible**
Subject 2	**93,4**	**Highly Feasible**	**93,4**	**Highly Feasible**	**93,4**	**Highly Feasible**
Subject 3	**96,5**	**Highly Feasible**	**88,6**	**Highly Feasible**	**97,4**	**Highly Feasible**
Subject 4	**78,5**	**Feasible**	**77**	**Feasible**	**98,5**	**Highly Feasible**
Subject 5	**98,6**	**Highly Feasible**	**88,4**	**Highly Feasible**	**97,3**	**Highly Feasible**
Subject 6	**91,3**	**Highly Feasible**	**95,7**	**Highly Feasible**	**94,5**	**Highly Feasible**
Subject 7	**95,7**	**Highly Feasible**	**88,4**	**Highly Feasible**	**97,2**	**Highly Feasible**
Subject 8	**84,4**	**Highly Feasible**	**88,4**	**Highly Feasible**	**94,4**	**Highly Feasible**
Subject 9	**97,8**	**Highly Feasible**	**97,7**	**Highly Feasible**	**97,7**	**Highly Feasible**
Subject 10	**96,3**	**Highly Feasible**	**98,4**	**Highly Feasible**	**96,6**	**Highly Feasible**
Avarage	**92,6**	**Highly Feasible**	**90,4**	**Highly Feasible**	**96,1**	**Highly Feasible**

Table 7. The Trials of Large-Scale

No.	Aspects	Results					
		The Students of State Senior High School 1 Bandar Lampung		The Students of State Senior High School 16 Bandar Lampung		The Students of Al-Husna High School Bandar Lampung	
		Percentage Scores	Criteria	Percentage Scores	Criteria	Percentage Scores	Criteria
1.	The Attractiveness of The E-Module	91	Highly Feasible	88,6	Highly Feasible	93,4	Highly Feasible
2.	The Ease of The E-Module Implementation	88,5	Highly Feasible	83,4	Highly Feasible	90,3	Highly Feasible
3.	The Usefulness of The E-Module	92,5	Highly Feasible	78	Feasible	84,7	Highly Feasible
Total		90,6	**Highly Feasible**	83,3	**Highly Feasible**	89,4	**Highly Feasible**

The primary need in the learning activities was the availability of teaching materials that in accorance with the learning targets or outcomes in each school. Another issue in the implementation of the learning material for scientific work was the limited availability of teaching materials that addressed the topic in a comprehensive manner and provided practical guidance in

The Development of an E-Module on Scientific Work Based on Science, Environment, Technology, and Society (SETS) for 11th Grade High School Students

studying scientific works. Given the lack of interest among students in studying scientific work, which were quite complex in nature, this became a significant reason for developing an E-Module on scientific works based on Science, Environment, Technology, and Society (SETS), which was designed with consideration for the potential and learning conditions of the Indonesian language in high schools in Bandar Lampung.

The results of the observation conducted on the teachers described that the presentation of textbooks and student modules commonly implemented was in line with the Learning Outcomes and Learning Objectives. However, there were several challenges faced by both teachers and students. The student modules used did not present the material in an engaging way, as the content was merely brief text, which made the students less interested. Additionally, the module did not present the scientific work material in a comprehensive and contextual manner, which should have helped students develop ideas in the learning process. As a result, the knowledge and concepts related to scientific work were not well understood by the students.

The validation by the subject expert included a feasibility test in three aspects: Aspect A (the relevance with Learning Outcomes and Learning Objectives); Aspect B (the relevance of the teaching content); Aspect C (engagement of the presentation). The results of the validation by the subject matter expert on the Science, Environment, Technology, and Society (SETS)-based E-Module for Scientific Work represented a percentage of 85.8%, indicating that the product met the criteria of being "highly feasible" for production after revision in accordance with the expert's suggestions. The validation results for this E-Module stated that the product was "highly feasible" for trial implementation on both a small and large scale, provided that revisions were made according to the expert's recommendations.

From the media expert, through a rating questionnaire for the Science, Environment, Technology, and Society (SETS)-based E-Module for 11th grade high school students, yielded a percentage of 88.6%. Overall, it was declared "highly feasible" to be trialed on both small and large scales, after revisions and improvements were made by media expert's suggestions. The validation results from the practitioner for the Science, Environment, Technology, and Society (SETS)-based E-Module for 11th grade high school students showed a percentage of 91.1%, which was also described "highly feasible" for trial implementation, after revisions were made according to the practitioner's suggestions.

Based on the results of the small-scale trial that was conducted, these got highly feasibility range for each aspect. The average scores from those fields were as follows: Aspect A (attractiveness of the E-Module) received a score of 92.6%; Aspect B (the ease of the E-Module implementation) obtained a score of 90.4%, although some improvements were necessary; the evaluation of Aspect C (usefulness of the E-Module) gained a score of 96.1%.

The detail scores of the highly feasibility range which got by the E-Module on the 11th-grade students at SMA Negeri 1 Bandar Lampung were as follows: Aspect A (attractiveness of the E-Module) gained a score of 91%; The evaluation of Aspect B (ease of implementation) got a score of 88.5%; Aspect C (usefulness of the E-Module for learning) received a score of 92.5%. The total percentage scores for those aspects were calculated: Aspect A (attractiveness) reached 91%, Aspect B (ease of use) scored 88.5%, and Aspect C (usefulness for learning) scored 92.5%, all rated as "highly feasible." Overall, the final result across all aspects was 90.6%.

The feasibility level of the E-Module according to 11th-grade students at SMA Negeri 16 Bandar Lampung in Aspect A, concerning the attractiveness of the E-Module, received a score of 88.6%, categorized as "highly feasible." The evaluation of Aspect B (ease of use) received a "highly feasible" category with a score of 83.4%. Further, it was different in Aspect C, concerning the usefulness of the E-Module in learning, was rated as "feasible" with a score of 78%. This score was derived from the following sub-indicators: (1) The E-Module helped increase students' interest in studying the material, (2) The E-Module made it easier for students to study the material, and (3) The evaluations or exercises in the E-Module helped students understand the extent of the concepts they had mastered. Overall, the final result for all aspects was 83.3%, with the "highly feasible" category.

A large-scale trial was also conducted with 11th-grade students at SMA Al Husna Bandar Lampung. In Aspect A, concerning the attractiveness of the E-Module, the score obtained was 93.4%, categorized as "highly feasible." The evaluation of Aspect B (ease of use) received a "highly feasible" category with a score of 90.3%. The evaluation of Aspect C, concerning the usefulness of the E-Module in learning, was rated as "highly feasible" with a score of 84.7%. This score was derived from the following sub-indicators: (1) The E-Module helped increase students' interest in studying the material, (2) The E-Module made it easier for students to study the material, and (3) The evaluations or exercises helped students understand the extent of the concepts they had mastered. Overall, the final result for all aspects was 89.4%, with the "highly feasible" category.

Some feedback about E-Module came from 11th-grade students at SMA Negeri 1 Bandar Lampung, SMA Negeri 16 Bandar Lampung, and SMA Al Husna Bandar Lampung. In general, the students' responses were greatly enthusiastic, and they expressed enjoyment in learning using the Science, Environment, Technology, and Society (SETS)-based Scientific Work E-Module because it featured an attractive cover and images that connected with the material. From this feedback, it was also clear that students were able to increase their engagement in learning, particularly concerning Scientific Work content. It can be seen during the learning process, where students eagerly discussed Scientific Work in great detail, and the discussions went smoothly. Additionally, students stated that this E-Module introduced new material that could be used to broaden their knowledge in

The Development of an E-Module on Scientific Work Based on Science, Environment, Technology, and Society (SETS) for 11th Grade High School Students

Indonesian language learning. The Science, Environment, Technology, and Society (SETS)-based Scientific Work E-Module also received evaluations and suggestions for improvements from students after its use.

This Science, Environment, Technology, and Society (SETS)-based Scientific Work E-Module is used in Indonesian language instruction as a teaching material that incorporates character-building dimensions, purposed at teaching students to distinguish between good and bad actions in everyday life. The E-Module is created with an interactive and communicative approach to address the shortcomings or enhance the scope of teaching materials used in schools. Furthermore, this E-Module is developed with consideration of the characteristics of high school students to ensure it functions effectively, efficiently, engagingly, and relevant with their needs.

Table 8. The Feasibilty of The Products

No.	Aspects	Results					
		The Students of State Senior High School 1 Bandar Lampung		The Students of State Senior High School 16 Bandar Lampung		The Students of Al-Husna High School Bandar Lampung	
		Percentage Scores	Criteria	Percentage Scores	Criteria	Percentage Scores	Criteria
1.	The Attractiveness of The E-Module	91	Highly Feasible	88,6	Highly Feasible	93,4	Highly Feasible
2.	The Ease of The E-Module Implementation	88,5	Highly Feasible	83,4	Highly Feasible	90,3	Highly Feasible
3.	The Usefulness of the E-Module	92,5	Highly Feasible	78	Feasible	84,7	Highly Feasible
Total		90,6	Highly Feasible	83,3	Highly Feasible	89,4	Highly Feasible

Based on the feasibility from the table above, it was evident that the average usage of the product met the criteria and could be considered highly feasible for use. The attractiveness aspect of the E-Module from the three research sites received an average score of 91, the ease of use aspect received an average score of 87.4, and the usefulness aspect of the E-Module in learning obtained an average score of 85, resulting in an overall average score of 87.8. Therefore, it could be concluded that the product "Science, Environment, Technology, and Society (SETS)-based E-Module for 11th Grade High School Students" was highly feasible to be applied in the learning process.

CONCLUSIONS

Based on the research findings and discussion above, it can be recapitulated that the Science, Environment, Technology, and Society (SETS)-based E-Module for 11th grade high school students that has been developed falls into the category of highly feasible and can be implemented in the learning process. This is evidenced by the following details:

First, the development process of the Science, Environment, Technology, and Society (SETS)-based E-Module for 11th grade high school students utilized a Research and Development (R and D) approach through several stages: (1) potential and issues were developed by considering the needs of the Indonesian language learning conditions in high schools, particularly in the 11th grade; (2) data collection began with an analysis of the curriculum, followed by a review of various recent references related to the development of the E-Module; (3) product design, which involved (a) reviewing existing materials and analyzing them to align with the SETS-based Scientific Work E-Module, (b) creating E-Module exercises that aligned with the Learning Outcomes, Learning Objectives, and indicators, consisting of individual exercises and evaluations, (c) designing the E-Module; (4) design validation through expert testing to evaluate the initial product, assessing the content and presentation aspects of the E-Module; (5) revisions by the subject experts, media experts, and practitioners were made after gathering feasibility assessments of the SETS-based Scientific Work E-Module from students at SMA Negeri 1 Bandar Lampung, SMA Negeri 16 Bandar Lampung, and SMA Al Husna Bandar Lampung; (6) product trials were conducted with a small group consisting of 10 randomly selected students, followed by a trial with a large group of 35 randomly selected students; and (7) the final product was the E-Module.

Second, the product generated in this development research was the E-Module, which included material and exercises to enhance understanding of the Scientific Work material. The feasibility of the E-Module containing SETS-based Scientific Work material for 11th grade high school students was evaluated based on expert opinions. The evaluation results revealed that the subject expert gave a score of 85.8% with the category "highly feasible," the media expert gave a score of 88.6% with the category " highly feasible," the Indonesian language practitioner gave a score of 91.1% with the category " highly feasible," the students

The Development of an E-Module on Scientific Work Based on Science, Environment, Technology, and Society (SETS) for 11th Grade High School Students

from SMA Negeri 1 Bandar Lampung gave a score of 90.6% with the category " highly feasible," the students from SMA Negeri 16 Bandar Lampung gave a score of 83.3% with the category " highly feasible," and the students from SMA Al Husna Bandar Lampung gave a score of 89.4% with the category "highly feasible." Overall, all evaluations of the SETS-based Scientific Work E-Module achieved results in the " highly feasible" category, thus this E-Module was categorized as "excellent" based on the evaluation conversion.

REFERENCES
1) A. Syahid. (2003). *Pengembangan Bahan Ajar Matakuliah Rancangan Pembelajaran Dengan Menerapkan Model Elaboras*i. Tesis, Tidak Diterbitkan, UM: PPS.
2) Anandari, Qalbi Shanaz et al. (2019). *Development of Electronic Module: Student Learning Motivation Using the Application of Ethnoconstructivism-Based Flipbook Kvisoft*. Jurnal Pedagogik, Vol. 6, No. 2, hal 416-436.
3) Arifin, A. (1998). *Ilmu Komunikasi: Sebuah Pengantar Ringkas*. Jakarta: Raja Grafindo Persada.
4) Arsyad. (2012). *Media Pembelajaran*. Jakarta: Grafindo Persada.
5) Asmi, Adhitya Rol et al. (2019). *Pengembangan E-Modul Berbasis Flip Book Maker Materi Pendidikan Karakter untuk Pembelajaran Mata Kuliah Pancasila MPK Universitas Sriwijaya*. Jurnal Pendidikan Ilmu Sosial, Vol. 27.
6) Borg, W.R. & Gall, M.D. (2003). *Educational research: an introduction (7thed)*. New York: Longman, Inc.
7) Charles, M. Reigeluth, Alison A. CarrChellman-. (2009). *Intructional-Design Theories and Models*. New York: Routledge Volume III.
8) Creemers, Bert P.M, Kyriakides, Leonidas. Sammons, Pam. (2010). *Methodogical Advances in Educational Effectiveness Research*. New York: Routledge.
9) Darmuki, Agus, Ahmad Hariyadi dan Nur Alfin Hidayati. (2021). *Peningkatan Kemampuan Menulis Karya Ilmiah Menggunakan Media Video Faststone di Masa Pandemi COVID-19*. Jurnal Education, Vol. 7, No. 2.
10) Daryanto dan Dwicahyono, Aris. (2014). *Pengembangan Perangkat Pembelajaran (Silabus, RPP, PHB, Bahan Ajar)*. Yogyakarta: Gava Media.
11) Depdiknas. (2008). *Panduan Pengembangan Bahan Ajar*. Jakarta: Departemen Pendidikan Nasional.
12) Diana, Purwati Zisca & Denik Wirawati. (2021). *Pengembangan E-Modul Mata Kuliah Pembelajaran Bahasa Indonesia*. Alinea: Jurnal Bahasa Sastra dan Pengajaran, Vol. 10, No. 2.
13) Dikdasmenum, Ditjen. (2004). *Pedoman Umum Pemilihan Dan Pemanfaatan Bahan Ajar*. Jakarta: Depdiknas.
14) Dimyati. (2013). *Belajar dan Pembelajaran*. Jakarta: Rineka Cipta.
15) Fatchan, Ahmad. (2014). *Pengaruh Model Science, Environment, Technology, Society (SETS) terhadap Kemampuan Berkomunikasi Secara Tertulis Berupa Penulisan Karya Ilmiah Bidang Geografi Siswa SMA*. E-Jurnal Pendidikan dan Pembelajaran, Vol. 21, No. 1.
16) Gagne, R. M., and Briggs L. J. (1992). *Principles of Instruction Design*. New York: Holt Renehart and Winston Inc.
17) Harjanto. (2008). *Perencanaan Pengajaran*. Jakarta: Rineka Cipta.
18) Hamalik, Oemar. (1994). *Sistem Pengajaran Jarak Jauh*. Bandung: PT Trigenda Karya.
19) Januszewski, Molenda. (2008). *Education Technology A Definition with Commetary*. New York: Lawrence Erlbaum Associates Taylor & Francis Group.
20) Kadek Aris Priyanthi et al. (2017). *Pengembangan E-Modul Berbantuan Simulasi Berorientasi Pemecahan Masalah Pada Mata Pelajaran Komunikasi Data (Studi Kasus : Siswa Kelas XI TKJ SMK Negeri 3 Singaraja)*. Kumpulan Artikel Mahasiswa Pendidikan Teknik Informatika (KARMAPATI), Vol. 6, No. 1, hal 40.
21) Laba, I Nengah & Ni Made Rinayanthi. (2018). *Buku Ajar Bahasa Indonesia Berbasis Karya Tulis Ilmiah*. Yogyakarta: Deepublish.
22) Limatahu, Nur A et al. (2017). The Influence of Practicum Video with Electronic Module Toward Process Skills for Stoichiometry Materials of the Grade X of SMAN 2 Tidore Islands. Jurnal Pendidikan Kimia, Vol. 9, No. 1, hal 225-228.
23) Majid, Abdul. (2013). *Perencanaan Pembelajaran*. Bandung: PT Remaja Rosdakarya.
24) Poedjiadi, A. (2010). *Sains Teknologi Masyarakat Metode Pembelajaran Kontekstual Bermuatan Nilai*. Bandung: PT Remaja Rosdakarya.
25) Pradeep, M. Dass. (2005). *Using a Science/Environment/Technology/Society Approach To Prepare Reform-Oriented Science Teachers*. North Carolina: Appalachian State University.
26) Prasetya, I Gede Agus Saka et al. (2017). *Pengembangan E-Modul Pada Mata Pelajaran Pemodelan Perangkat Lunak Kelas XI Dengan Model Problem Based Learning Di SMK Negeri 2 Tabanan*. Jurnal Pendidikan Teknologi dan Kejuruan, Vol. 14, No. 1, hal 96-105.
27) Riyanto. (2010). *Teori Belajar dan Pembelajaran*. Yogyakarta: Pustaka Pelajar.

28) Ruhimat, Toto dkk. (2011). *Kurikulum dan Pembelajaran*. Jakarta: PT Raja Grafindo Persada.

29) Samidah, Ida. (2014). *Pedoman Penulisan Karya Ilmiah*. Jakarta: Raja Grafindo Persada.

30) Siagian, Sondang P. (2001*). Manajemen Sumber Daya Manusia*. Jakarta: Bumi Aksara.

31) Sudjana, Nana. (2010). *Penelitian Hasil Proses Belajar Mengajar*. Bandung: PT. Remaja Rosdakarya.

32) Sugiyono. (2015). *Metode Penelitian dan Pengembangan*. Bandung: Alfabeta.

33) Susilawati. (2013). *Pembelajaran IPA di Madrasah Ibtidaiyah*. Pekanbaru: Benteng Media.

34) Wulandari, Tri Nanik, Ashadi dan Sri Yamtinah. (2015). *Pengembangan Modul Pereaksi Kimia Berbasis SETS pada Mata Pelajaran Analisis Kimia Dasar Kelas X SMK Kimia Industri*. Jurnal Inkuiri, Vol. 4, No. 4.

35) Wulansari, Evi Wahyu et al. (2018). *Pengembangan E-Modul Pembelajaran Ekonomi Materi Pasar Modal Untuk Siswa Kelas XI IPS MAN 1 Jember Tahun Ajaran 2016/2017*. Jurnal Pendidikan Ekonomi: Jurnal Ilmiah Ilmu Pendidikan, Ilmu Ekonomi, dan Ilmu Sosial, Vol. 12, No. 1, hal 1.

36) Yager, Robert E, dkk. (2008). *Comparison of Student Learning Outcomes in Middle School Science Classes with an STS Approach and a Typical Textbook Dominated Approach*. Research in Middle Level Education Journal, Vol. 31, Iowa University.