

**Response Analysis of SMA Regency Bengkulu Selatan Students and Teachers' Needs for the Development of E-Module of Alter Current Electricity Materials**

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**Abstract:** The purpose of this study was to analyze the response to the need for e-module learning media in Bengkulu Selatan Regency for physics teachers and students of SMA N 1, SMA N 6 and SMA N 7. The research data were taken from a population of physics teachers and students from SMA N 1, SMA N 6 and SMA N 7 in South Bengkulu Regency. The data collection technique in this study was using a questionnaire filled out via google form. The data analysis technique in this study is a quantitative analysis technique and concluded qualitatively by using validity and reliability tests to determine valid and reliable questionnaires. The results of this study indicate that the instrument used is valid and reliable. This can be seen from the results of the validity test there is no data excluded (Excluded). Based on the results of the study, it was stated that students and teachers strongly agreed if an android-based e-module was developed on alternating current electrical material.

**Keyword:** Learning Media, E-module, Android

## **1. Introduction**

The changing world is now entering the era of industrial revolution 4.0 where information technology has become the basis of human life. In its development,

the 4.0 industrial revolution provides challenges as well as impacts for the younger generation and also the world of education in Indonesia. The development of the industrial revolution 4.0 appeared marked by the start of the digitalization of the education system which directed every element in the education sector to be able to make adjustments to the pace of change that occurred (Siahaan et al., 2019).

Along with the development of curriculum technology in Indonesia, it is also experiencing development. The development of the 2013 curriculum is based on competencies in the context of 21st century education. The learning process in the 2013 curriculum is directed to equip students with four kinds of knowledge ranging from factual, conceptual, procedural, and metacognitive knowledge to achieve graduate competency standards. Through these four types of knowledge, it is hoped that students will be able to become someone who can think critically, creatively and innovatively (Handayani et al., 2018).

The era of civilization in the Covid-19 pandemic or what is often referred to as "New Normal", forcing education to leave the old learning concept that still relies on 100% face-to-face between educators and students to move to the use of information and communication technology (ICT) bases (Adri et al., 2021). The Ministry of Education and Culture enacts circular letter No. 4 of 2020 concerning the Implementation of Education Policies in the Emergency Period for the Spread of Corona Virus Disease (Covid-19). Based on the circular, the education unit decided to work from home (Work From Home) so that the learning process was carried out online or distance learning. Online learning is expected to be able to grow the ability, knowledge and potential of students as well as learning in the classroom. To support this, it is necessary to use learning media that are dynamic and able to explain conceptual material and apply it to facts (Nuriansyah, 2020).

The existence of technological developments that greatly affect the teaching and learning process. Moreover, in this COVID-19 pandemic, teachers and students are required to keep up with technological developments so that learning does not fall behind and to support the effectiveness of learning. To support the learning process, good facilities and infrastructure are needed. According to Kristiawan, et al (2017) facilities are all the facilities needed in the teaching and learning process, both movable and immovable so that the achievement of educational goals and runs smoothly, regularly, effectively and efficiently (N. D. Lestari & Yusmiono, 2018). Educational facilities function directly (its presence is crucial) to the Teaching and Learning Process (PBM), such as learning tools,

teaching aids, practice tools and educational media (Sairi & Safrizal, 2018). In line with this statement, this makes the development of learning media that provide convenience in carrying out the learning process. Media is one of the supports in the learning process. The success or failure of the learning process is largely determined by the media used. Media is anything that can be used to transmit messages from sender to receiver so that it can stimulate students' thoughts, feelings, concerns and interests in such a way that the learning process occurs (Atsani, 2020). With the media students will be more motivated to learn. The term media used in the field of teaching or education is called educational media or learning media (Putri et al., 2019). Through learning media can make the teaching and learning process more effective and efficient (Tafonao, 2018). Learning media is also closely related to technological advances as a tool that supports the learning process to achieve a learning goal (Khoir et al., 2020). One form of the development of learning media is about the development of teaching materials from printed teaching materials to electronic ones. Teaching materials are a set of subject matter that can help achieve curriculum goals that are arranged systematically and intact so as to create a pleasant learning environment, facilitating the learning process (Susanti, 2017). In its development, teaching materials will change to electronic teaching materials.

Electronic teaching materials are teaching materials whose content is contained in electronic form, which can be in the form of audio, audio-visual, or in the form of interactive multimedia. Referring to the previous understanding of teaching materials, electronic teaching materials are a set of materials that are arranged in a sequential and systematic manner and display the needs of the competencies that will be mastered by students in the learning process that are mixed in interactive multimedia (Sriwahyuni et al., 2019).

One of the electronic teaching materials is e-module. E-Module is one of the learning media that can make learning more interesting and interactive (Sulthon et al., 2020). The development of this e-module is in line with the challenges in the era of disruption so that the e-module that is developed and will be used in the learning process is certainly an e-module that has been developed using advances in communication and information technology that is developing in society by utilizing the internet and the sophistication of android. E-modules that collaborate with the android system in the form of applications that are easily accessible by students who have smartphones.

Smartphones are certainly not foreign to us, especially among students and educators because now the learning process uses cellphones more often. Android is an operating system that runs on smartphones or tablet PCs that are open source so that many programmers want to make their own applications, one of which is a medium that can be used in the learning process, namely learning media based on Android (Yanindah & Ratu, 2021).

Physics is a branch of natural science which basically aims to study and provide a quantitative understanding of various natural processes and the properties of matter and their applications. Physics learning has a lot to do with formulas, so in the learning process the teacher must explain the formulas and provide examples of their application in everyday life (F. F. S. Lestari et al., 2020). Based on this, online learning is very difficult for teachers to explain physics material.

The results of observations that have been made at SMA N 1, SMA N 6, and SMA N 7 Bengkulu Selatan district that schools implement the 2013 curriculum, students can also be said to have all smartphones, every school implements online learning in accordance with government recommendations but based on interviews with teachers they stated that it was very difficult to teach physics material online because physics lessons used a lot of formulas and also a lot of material that had to be practiced. This is also in line with the statement of students who said that the material taught online was very little that they could understand. According to them in class XII, the material is quite heavy and difficult to understand because it discusses a lot about electricity and magnetism and they say the material should be explained face-to-face or hands-on practice so that they can understand. The average learning media used by the 3 SMA N studied online were WhatsApp, zoom meeting and classroom. The three media must be used online and require internet data. In addition, some students also stated that in carrying out the learning process they were constrained by signals and to access learning requires quite a lot of internet data. The hope is that there is a learning media that can be used by students and teachers to support the learning process effectively with easy access to do.

Based on the descriptions and statements above, the purpose of this study is to analyze the response to the need for e module learning media in South Bengkulu Regency for physics teachers and students of SMA N 1, SMA N 6 and SMA N 7. On alternating current electrical materials.

## 2. Methods

This research is a Descriptive research and is part of the R&D (Research and Depelovment) research with the ADDIE model, which is at the needs analysis stage. The ADDIE model research procedure consists of 5 stages, namely Analysis, Design, Development & Implementation, And Evaluation. Analysis is the initial stage of the development process which is carried out by analyzing needs. This research was conducted in South Bengkulu Regency in August 2021 with a population of physics teachers and students from SMA N 1, SMA N 6 and SMA N 7. The data collection technique in this study was using a questionnaire filled out via google form to determine the level of the needs of physics teachers and high school students for android-based e-module learning media on alternating current electrical material. The data analysis technique in this study is a quantitative analysis technique and concluded qualitatively. The quantitative analysis technique in this case is the statistical measurement of the needs of physics teachers and high school students referring to the answers to research questionnaires filled out by 6 physics teachers and 116 high school students. Each question item used in the questionnaire was tested for validity and reliability to find out whether the instrument was suitable for use to obtain the data needed by the researcher.

Test the validity using questionnaire data. According to Sugiyono (2007) in (Liana et al., 2019) Each item in the questionnaire is assessed using a Likert scale rating points 1 to 4 as shown in table 1.

**Table 1. Likert Scale for Assessment**

Alternative Answer	Score Weight
Strongly agree	4
Agree	3
Disagree	2
Strongly Disagree	1

To test the validity of the research instrument, it can be declared valid if each question item in the questionnaire can be used to reveal something that will be measured by the questionnaire. Indicators in the questionnaire can be said to be valid if the value of  $r$  count  $>$  from  $r$  table (Dewi & Sudaryanto, 2020).

The reliability test in this study used the Cronbach Alpha Coefficient statistical test. The results of the Cronbach Alpha Coefficient test will show

whether the questionnaire is reliable or not (Alfian & Putra, 2017). Decision-making criteria for reliability testing:

**Reliable:** if the Cronbach Alpha value is greater than the r table value (Cronbach's Alpha > r table)

**Unreliable :** if Cronbach's Alpha is less than r table value (Cronbach's Alpha < r table) (Risdianto et al., 2021).

To find out how many respondents strongly agree, agree, disagree and strongly disagree, questionnaire data management is carried out by making data intervals and the results are presented in graphical form.

In addition to testing the validity, reliability and data management in the graph, an analysis of the percentage of teacher and student responses was also carried out. Each item of the questionnaire based on the answers of the teacher and students is processed using the following formula:

$$P = \frac{\sum \text{Score}}{\text{Score Maksimum}} \times 100\%$$

After obtaining the percentage of the teacher's answers through the above formula, then the next step is to analyze the results of calculating the percentage (Warsah & Nuzuar, 2018). The results of the validity of the known percentage can be matched with the interpretation criteria in the table (Siahaan et al., 2019).

**Table 2. Criteria for Validity Results**

Percentage	Interpretation
0%-25%	Strongly Disagree
26%-50%	Disagree
51%-75%	Agree
76%-100%	Strongly agree

### 3. Results and Discussion

The purpose of this study was to analyze the needs of physics teachers and students of SMA N 1, SMA N 6 and SMA N 7 in South Bengkulu Regency for android-based e-module learning media. In this study, the questionnaire respondents consisted of 116 students and 6 physics teachers from 3 schools in South Bengkulu Regency. The questionnaire used in this research is a student and teacher needs analysis questionnaire with 4 answer choices. The assessment of the

answers to the questionnaire uses a Likert scale with a maximum score of 4 and a minimum of 1. Each question item used in the questionnaire is tested for validity and reliability to determine whether the instrument is suitable for use to obtain the data needed for research.

The results of the validity test of the teacher needs analysis questionnaire can be seen in table 3.

**Table 3. Case Processing Summary**

		N	%
Cases	Valid	6	100,0
	Excluded <sup>a</sup>	0	0,0
	Total	6	100,0

**Table 4. Reliability Statistics**

Cronbach's Alpha	N of Items
0,889	26

In the case processing summary table for the teacher needs analysis questionnaire, it can be seen that there are 6 valid respondents (N). There is no data excluded (Excluded). A total of 6 respondents' data (N) were processed or 100% of the data were processed. In table 4 reliability statistics shows the results of the calculation of data reliability for 26 questions (N) using the Cronbach alpha method with a score of 0.889. The value obtained (0.889) is compared with the value of the r product moment table. The distribution of the r table used is for = 0.05, then the value is 0.7067, then compared with the Cronbach alpha value of 0.889. Based on the decision rules on the research method in the research method it was decided that the alpha value of  $0.889 > 0.7067$  the data can be said to be reliable or reliable.

The results of the validity test of the student needs analysis questionnaire can be seen in table 5.

**Table 5. Result of Validity Test Item**

Number of Item	r-Count	r-Table	Notification
1	0,684		Valid
2	0,704		Valid
3	0,290		Valid
4	0,691		Valid
5	0,291		Valid
6	0,511		Valid
7	0,485		Valid
8	0,597		Valid
9	0,598		Valid
10	0,629		Valid
11	0,629		Valid
12	0,709		Valid
13	0,770	0,1809	Valid
14	0,725		Valid
15	0,536		Valid
16	0,601		Valid
17	0,724		Valid
18	0,738		Valid
19	0,703		Valid
20	0,533		Valid
21	0,719		Valid
22	0,711		Valid
23	0,683		Valid
24	0,685		Valid
25	0,684		Valid
26	0,642		Valid

Based on the results of processing the data items, there are 26 statements that are declared valid, where according to the decision-making criteria, the statement is declared valid if r-count is greater than r-table.

**Table 6. Case Processing Summary**

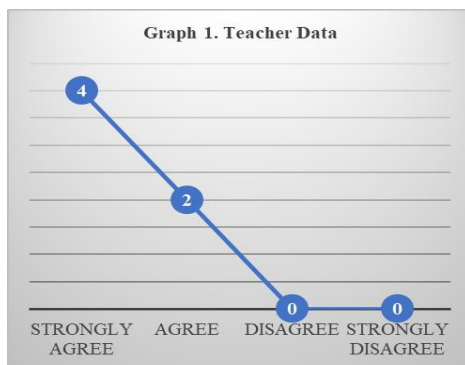
		N	%
Cases	Valid	116	100,0
	Excluded <sup>a</sup>	0	0,0
	Total	116	100,0



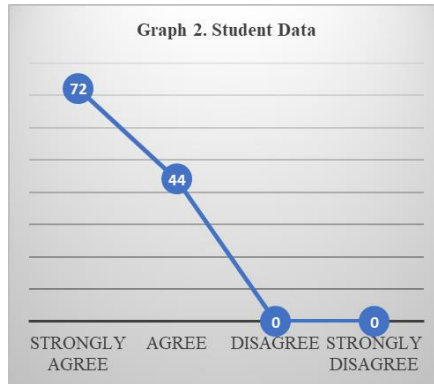
**Table 7. Reliability Statistics**

Cronbach's Alpha	N of Items
0,912	116

In the case processing summary table for the teacher needs analysis questionnaire, it can be seen that there are 116 valid respondents (N). There is no data excluded (Excluded). A total of 116 data (N) were processed or 100% of the data were processed. In table 7 reliability statistics shows the results of the calculation of data reliability for 26 questions (N) using the Cronbach alpha method with a score of 0.912. The value obtained (0.912) is compared with the value of the product moment r table. The distribution of the r table used is for = 0.05, then the value is 0.1809, then compared with the Cronbach alpha value of 0.912. based on the rules of decision making in the research method it was decided that the alpha value was  $0.912 > 0.1809$ , so the data can be said to be reliable or can be trusted.



From graph 1 provides information that of the 6 physics teachers from SMA N 1, SMA N 6 and SMA N 7 Bengkulu Selatan who filled out the questionnaire there were 4 physics teachers who were categorized as strongly agree, 2 physics teachers agreed, 0 physics teachers disagreed and strongly disagreed. agree. Thus, it means that teachers or educators agree with the development of this Android-based e-module learning media.



From graph 2 provides information that of the 116 students from SMA N 1, SMA N 6 and SMA N 7 Bengkulu Selatan who filled out the questionnaire there were 72 students who were categorized as strongly agree, 44 students agreed, 0 physics teachers disagreed and strongly disagreed. As is the case with teachers, students from 3 high schools in South Bengkulu also agreed to the development of android-based e-module learning media.

Furthermore, to find out the percentage of teacher and student responses to the Android-based e-module, it can be calculated using the percentage formula  $P = \frac{n}{N} \times 100\%$ .

**Table 7. Results of Physics Teacher Response Data on Android-Based E Module**

Respondent	Total Score (n)	Max Score (N)	Percentage	Category
6 High School Physics Teacher	548	624	87,82%	Strongly agree

From table 7 we get information that the percentage of teacher responses to android-based e-modules is 87.82% of the maximum percentage of 100%. In accordance with the Likert scale interpretation table for data with a percentage of 76%-100% categorized as strongly agree.

**Table 8. Results of Student Response Data on Android-Based E Module**

Respondent	Total Score (n)	Max Score (N)	Percentage	Category
116 High School Students	10298	12064	85,36%	Strongly agree

While from table 8 we know the results of the percentage of student responses to android-based modules. The percentage obtained is 85.36% of the maximum percentage of 100%. The same as the percentage of teacher responses according to the Likert scale interpretation table for data with a percentage of 76%-100% categorized as strongly agree. So from the data it can be said that the percentage of teacher responses and the percentage of student responses to this android-based module is strongly agree.

On the indicators of the importance of e module teaching materials, the statement "I always use textbooks in the physics learning process and I need teaching materials that can be accessed online" the percentage agrees is 88.0% and for the statement "I always use textbooks in the physics learning process" and I need teaching materials that can be accessed online" getting a percentage of 97.4%. This is in line with research conducted by (Saputri & Fransisca, 2020) on the statement "teachers have used technology media in digital simulation learning media" with a percentage of 53.85% followed by the statement "if the answer is NO, do teachers need to use technology media, especially android learning media in digital simulation learning" with a percentage result of 92.31% and on the statement "do you agree if an android-based learning media is designed for digital simulation subjects" with a percentage result of 94.23%.

The statement on the e-module characteristic indicator, "My favorite learning resource is the one that has an attractive cover, appropriate images and colors and interesting language" results in the percentage agreeing to 98.5% of 116 students. From the statement "I want teaching materials that have instructions for use, have a summary, are arranged systematically, neatly and directed specifically to the material, and teaching materials that have interesting features and can be accessed offline and online" get a percentage of 99.1% of 116 students. This statement is in accordance with the results of research (Yuliawati et al., 2020) conducted at SMK Pasundan 2 Serang City also found that 77.2% of 28 students stated difficulties in receiving material because the media the teacher used was less attractive and students wanted media. learning is more interesting with multimedia.

The results of this study are also supported by various previous studies, including (Saputri & Fransisca, 2020) which states the results of the analysis of student needs for android learning media in digital simulation subjects show the results that the media is needed by students. This is concluded based on student habits and student needs with the use of android smartphones accompanied by the facilities provided by the school. The last statement in the questionnaire also

shows the desire and interest of students to use android learning media in their learning activities, with a percentage of 94.23% agreeing with the existence of android learning media for digital simulation subjects. Other research (Sidiq & Najuah, 2020) which states that the developed Android-based interactive E-module has been effectively used to improve student learning outcomes in the learning process. This can be seen from the analysis of student learning outcomes using Android-based learning media more efficiently, where the posttest value is greater than the pretest.

From previous research, it has been proven that android-based e-modules are efficient for use in the learning process. In this study, the electronic module that will be developed is based on Android where this module can be accessed easily on a smartphone. The E-Module that will be developed has several components, namely cover, opening page, application menu consisting of instructions for use, introduction, material, information, evaluation in the form of practice questions, and reference material content obtained. This module can also build an understanding of physics concepts in it and is equipped with interactive demonstration images and videos so that it can be used as an independent learning medium for high school students. In addition, this android-based module can be used both online and offline.

#### **4. Conclusion**

Based on the analysis that has been carried out on the response to the needs of teachers and students for android-based modules on alternating current electrical material, it can be concluded that the quality of the response questionnaire to the needs is very good. So that it can be used to test all the data used. The conclusion of this study is that physics teachers and high school students strongly agree that an android-based e-module is needed for alternating current electrical material. Android-based modules are one of the efficient learning media to support the learning process, especially during the COVID-19 pandemic. With the Android-based e-module, students can do structured independent learning and understand physics concepts that have been presented with interactive demonstration images and videos on the e-module.

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