

## Analysis of Need Response to the Development of E - Magazine on Static Fluid Material at Bengkulu City High School

Cahya Widya Gunawan<sup>1\*</sup>, Eko Risdianto<sup>2</sup>, Desy Hanisa Putri<sup>3</sup>

FKIP UNIB Physics Education Study Program

<sup>1\*</sup>Cahyawg2931@gmail.com

<sup>2</sup>Ekorisdianto@unib.ac.id

<sup>3</sup>Desyhanisaputri@unib.ac.id

### Abstract

*The purpose of this work is to analyze the needs of teachers and students for learning media from electronic magazines for high school students about static fluid material. The research data was taken from physics teachers and also students of class XI of SMA N 1, SMA N. 6, SMA N 7 PLUS Bengkulu city. The data sources used in this study were obtained from physics teachers and 139 XI class students. This research method is a descriptive study included in the Department of Research and Development (RND). The research and development phases used are based on the ADDIE model, i.e. analysis, planning, development, implementation and evaluation. The research phase used the needs analysis phase, where tools such as school observation, interview and needs surveys were used. Data analysis techniques using quantitative data analysis and qualitative analysis. The results of this study indicate that the instrument used is valid and reliable. The results of this study also show that high school students and teachers strongly agree that they need learning environments based on electronic magazines.*

**Keywords:** Development, E-Magazine, Learning Media

### A. Introduction

Education is a process that can be used to develop each person's own potential because it is made to meet the challenges of the future. Education can be used as a means of creating quality human resources and can be said to be a determinant of civilization [1]. Technological developments are now unavoidable [2]. The industrial revolution 5.0 is a concept where we have to humanize humans with technology [3]. The paradigm of revolution is growing very rapidly on a regular basis by advances in science and technology [4]. or just keep silent [6]. The development of science and technology has brought the millennial generation into the digital era to meet the skills of the 21st century [7]. Generation Z is a digital generation [8]. Generation Z uses more digital tools to learn [9]. The learning process must use teaching materials that follow technological developments which will make students interested in learning [10]. In essence, at 21-a jarcento, learning resources are whatever is used in providing learning material so that the learning process is experienced. There are several aspects that support a learning process, one of which is learning resources. Learning resources are everything that contains knowledge that has been arranged systematically and based on a curriculum according to the characteristics of students [11].

The 2013 curriculum has been developed on the basis of competency-based curriculum theory and standard-based education theory, where the 2013 curriculum is based on a philosophical basis, a sociological basis, a psychopedagogical basis, a theoretical basis which can be summed up in the curriculum objectives. 2013, namely to prepare the Indonesian generation to be productive, faithful, creative, affective and innovative which emphasizes the abilities of students [12]. The above chart explains that out of a total of 139 respondents viz. SMA 3 students ie. SMA N 1, SMA N 6, SMA N 7 PLUS Bengkulu City. The results of the above bar chart revealed that 125 students strongly agreed, 14 students agreed, 0 students disagreed and strongly disagree consisting of 0 students. Based on the graph, it can be concluded that the students of SMA N 1, SMA N 6, SMA N 7 PLUS Bengkulu City strongly agree with the development of e-journal based learning environment for static fluid material.]. Thanks to interesting learning environments, it increases students' learning motivation [16].

Motivation has an important position in achieving the objectives of learning activities. The emergence of motivation to learn is not solely from the students themselves but the teacher must be involved to motivate the learning of their students. The existence of motivation will give enthusiasm to students in learning [17]. Mass media is one of the success factors of the teaching and learning of students [18].

Learning media is one of the most important things [19]. In the teaching and learning process when delivering material from the teacher to students and acting as a learning resource [20]. The development of the current generation of learning media is interactive learning media [21]. Development of learning media by utilizing educational technology is one solution for developing teacher learning media. Physics is a branch of science that studies natural phenomena. The learning model is very helpful in using learning media.

Learning physics in the curriculum (2013) requires students to be active, critical, creative and innovative in the teaching and learning process. One of the physics materials taught in high school is static fluid material which is one of the physics learning materials for class XI senior high school in odd semesters. Static fluid is material that teaches about fluids in liquid form that cannot flow. This static fluid material often makes students experience misconceptions about its application in everyday life. It is better to use static fluid material using illustrations to make it easier to explain. Therefore, this satisfactory liquid material is very suitable to be used as a learning medium in a guided inquiry learning model in the form of an E-journal. The guided research learning model is a learning model that refers to the process of research activity and explains the relationships between objects and events by motivating students.

It is based on the analysis of the needs of students and teachers in the learning process in the form of learning environments, which can be determined by performing a needs analysis. Analysis of needs can be done by distributing questionnaires and interviews. 3 Based on the results of observations, interviews and surveys carried out in SMA N Bengkulu, the same problem is observed, namely that the teacher has always been the main center in the teaching and learning carried out until now. attention, in which students receive more information from the teacher than from the students themselves, as well as the teacher only uses simple teaching aids in the learning process, such as printed books, powerpoint and animated videos in conveying the material in such a way that it affects the activity of the students in learning, where students are usually less interested in learning. So, based on interviews with physics teachers in class X, XI, XII, it was found that there was a problem with the lack of available learning media for learning physics, especially static fluid material. Therefore, one of the learning media needed is the E-magazine based on the Canva application. E-magazine or electronic magazine is a learning resource that contains learning material that is displayed in an attractive way. Interesting learning media E-magazine which can help students to be able to think more optimally. E-magazine can be used as a learning medium because it fulfills practical benefits in learning media in the process of teaching and learning activities in class [20].

Based on the above explanation, the author conducts a study to analyze students' responses to the need to develop an E-journal learning environment for static fluid material in SMA N Bengkulu City.

## **B. Research Methods**

This type of study is a descriptive RandD (Research and Development) study using the ADDIE model. The ADDIE model consists of five phases, which are analysis, planning, development, implementation and evaluation.

This study uses the needs analysis stage. This study was conducted in three secondary schools namely SMA N 1, SMAN 6 and SMAN 7 PLUS Bengkulu City. IPA SMA students of class XI and physics teachers of classes X, XI and XII participated in this study. This study was conducted in July-August 2022 in SMA N 1, SMAN 6 and SMAN 7 PLUS Bengkulu City. In the analytical phase in this study data collection techniques using observational data, interviews and survey material. This study used observation sheets, interview forms, and student and teacher pages for electronic journal learning environments as tools.

Data analysis techniques in this study are quantitative analysis methods and qualitative analysis methods. The quantitative analysis technique is a statistical measurement of the needs of students and teachers, based on a survey completed by 139 students and teachers. Each question included in the survey was tested for validity and reliability to determine if the instrument used was appropriate. The steps to carry out this research started with the addition of research topics, ie. XI class IPA in the odd semester of the academic year 2022, a total of 139 students and physics teachers in classes X, XI, XII. The researchers then developed instruments in the form of observation and interview forms, as well as teacher and student questionnaires. The last step the researcher took was to analyze the data. Each questionnaire was scored on a Likert scale from 1 to [35], as shown in Table 1.

**Tabel 1.** Likert Scale of judgment

Information	Value
strongly agree (ss)	4
agree (s)	3
disagree (ts)	2
strongly disagree (sts)	1

Previously the average value sought and the relative frequency value then used the formula to find the average value as follows:

$$mx = \frac{\sum x}{N} \tag{1}$$

Information :

Mx = Mean (average)

x = total amount

n = Total score [36].

After that it is calculated using the formula above below:

$$P = \frac{\sum x}{\sum y} \times 100\% \tag{2}$$

Information:

P = Passing percentage

$\Sigma x$  = Total number of answers given by respondents

$\Sigma y$  = Total maximum score

The next step is to analyze the percentages. The needs of teachers and students regarding the E-journal learning environments [18] used in the evaluations are presented in Table 2.

**Table 2.** Assessment criteria

Persentase	Category
0% - 25%	Strongly Disagree
26% - 50%	Disagree
52% - 75%	Agree
76% - 100%	Strongly Agree

In this study, each item was tested using a validity test and a reliability test. Its purpose is to find out if the instrument used is suitable for use by researchers. Decision rules to determine whether the data are reliable or not are made: Reliable: If the value of Cronbach's alpha is greater than the value of the r-table (Cronbach's alpha > r-table). Not reliable: If the Cronbach's alpha value is less than the r-value of the table (the Cronbach's alpha table value. In addition, this study also used data management in the form of graphs and analyzed the relationships between student and teacher responses [20].

### C. Result and Discussion

The purpose of this study was to analyze the analysis of the needs of students and physics teachers at SMA N 1, SMAN 6 and SMAN 7 PLUS Bengkulu City for e-magazine learning media on static fluid material.

#### Student Response

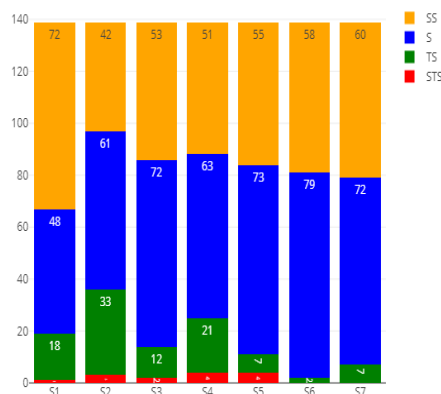
This study uses a survey-based instrument. In this study, an assessment was used according to a Likert scale with a maximum score of 4 and a minimum score of 1. Based on the results of students completing a questionnaire on the development of educational media in an electronic magazine. From 21 items divided into 3 aspects, students' responses to statement 1 "I have difficulties to understand physics teaching" resulted in 72 students choosing to strongly agree, 8 students choosing to agree, 18 students choosing to disagree. and 0 students decided to strongly disagree based on the results of statement #1. I can conclude that most of the students still have difficulties to understand physics lessons.

Statement 2 "I am interested in learning physics" results in no less than 2 students choosing to strongly agree, 61 students choosing to agree, 33 students choosing to disagree and 1 student choosing to strongly disagree. statement no 2, it can be concluded that the students' interest in the physics class is really high, although there were also fewer interested. The result of statement 3 "My teacher uses textbooks during

learning" was that no less than 53 students decided to strongly agree, 72 students decided to agree, 12 students decided to disagree and 2 students decided to strongly disagree, so based on the results of statement 3, it can be concluded that school teachers used textbooks in an average of lessons. Statement "I receive lesson information from the teacher more often" results in no less than 51 students choosing to fully agree, 63 students choosing to agree, 21 students choosing to disagree and students choosing to disagree, so statement no. it can be concluded that students receive lesson information from the teacher more often. Statement 5 "My teacher used educational media in the process of teaching and learning" resulted in no less than 55 students choosing to strongly agree, 73 students choosing to agree, 7 students choosing to disagree and students choosing to strongly disagree, statement no. 5 it can be concluded that students almost directly agree whether the teacher used educational resources in teaching and learning.

Statement 6 "The learning environments that the teacher uses in learning helped and supported me in learning" resulted in 58 students fully agreeing, 79 students agreeing, 2 students disagreeing and 0 students choosing to absolutely disagree, it can be concluded from the results of number 6, that the average student chooses to accept that the learning environments used by the teacher contribute to learning.

Statement 7 "The learning environments used by the teacher can motivate me in learning" results in no less than 60 students choosing to strongly agree, 72 students choosing to agree, 7 students choosing to disagree and 0 students choosing to strongly disagree. Based on the results of statement #7, it can be concluded that the average student agrees that media learning can help increase motivation in the learning process. These results are shown in Figure 1:

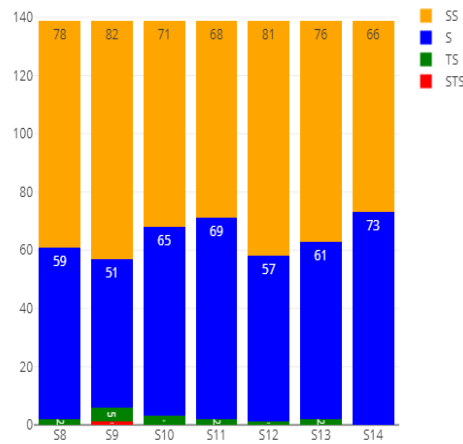


**Figure 1.** Response bar chart  
 Student Questions no 1 – no 7.

Then the results of the next aspect ie. Statement 8 "I can understand the learning material better by using learning resources" is obtained with 78 students strongly agree, 59 students agree and 2 students disagree. and 0 students strongly disagree, based on the results of statement number 8, it can be concluded that the majority of students strongly agree that the use of educational media can help to understand physics material. Statement 9 "I still cannot give a simple explanation for tests" resulted in 82 students deciding to strongly agree, 51 students deciding to agree, 5 students disagreeing, and 1 student strongly disagreeing. [which was learned because many students choose to fully agree. Statement 10 "I need other learning tools as an alternative to the currently available learning environments" has the result that no less than 71 students decided to fully agree, 65 students decided to agree, 1 student disagreed and 0 students strongly disagreed, based on the results of a statement No. 10, it can be concluded that students really need other learning tools to help them in learning. Statement 11 "I need educational media to help me in independent learning" results in 68 students choosing to strongly agree, 69 students choosing to agree, 1 student disagreeing and 0 students choosing to strongly disagree. statement no. 11 it can be concluded that students need educational resources that would help in independent learning. Statement 12 "Learning media I want to use simple and interesting language" is the result that up to 81 students decided to fully agree, 57 students decided to agree, 1 student decided to disagree and 0 students strongly disagree, based on the results of statement no. 12 , it can be concluded that students agree very much if there is any educational media that uses simple and interesting language.

Statement 13 "I need to learn media to make me more active" results in a total of 76 students choosing to strongly agree, 61 students choosing to agree, 2 students choosing to disagree and 0 students choosing to

strongly disagree. statement no. 13 it can be concluded that the students very much agree if there are other learning tools with which students can be active. Statement 1 on the subject "I need interesting and unique learning materials with appropriate colors and images" resulted in up to 66 students deciding to strongly agree, 73 students deciding to agree, 0 students deciding to disagree and 0 students deciding to strongly disagree with statement no. 14 it can be concluded that students fully agree because students need interesting learning environments with appropriate colors and images and not even one student who chooses to disagree. These results are shown in Figure 3 below:



**Figure 2.** Response bar chart  
 Student Questions no 8 – no 14.

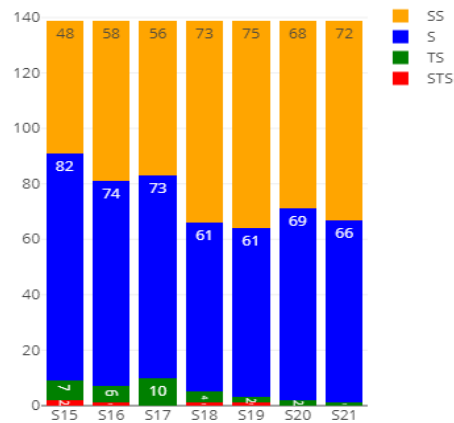
Then, the results of the next aspect, ie. statement 15 "Learning from media that I want is learning from media that can be accessed without restrictions", shows that a total of 8 students decided to fully agree, 82 students decided to agree, 7 students decided to disagree based on the results of statement #1, and 2 students did not completely agree. 15 it can be concluded that most students agree that there are learning materials that can be accessed without restrictions. Statement 16 "I need educational media to increase my motivation to learn physics" results in up to 58 students deciding to strongly agree, 7 students deciding to agree, 6 students deciding to disagree and 1 student deciding to strongly disagree. Based on the 16 results, it can be concluded that students need motivating learning environments to learn physics. Statement 17 "I agree if there are illustrated educational media because it is more fun and interesting" results in no less than 56 students decided to strongly agree, 73 students decided to agree, 10 students decided to disagree and 0 students decided to strongly disagree. with the statement based on No. 1 results. 17 it can be concluded that students strongly agree that apibala is a visual learning environment.

Statement 18 "My teacher used visual tutorials for static fluid material" resulted in no less than 73 students choosing to strongly agree, 61 students choosing to agree, students choosing to disagree and 1 student choosing to strongly disagree, Result of Statement #18 based on this, one can conclude that the teacher used visual teaching aids over static liquid material.

Statement 19 "I agree that educational media in image format can be accessed by smartphone, anywhere, anytime" results in no less than 75 students choosing to strongly agree, 61 students choosing to agree, 2 students choosing to disagree and 1 student choosing to agree. the student decided to strongly disagree based on the results of statement #1. 19 it can be concluded that students are very much in agreement about whether there are learning environments that can be used anywhere and anytime with a smartphone.

Statement 20 "My teacher related static liquid matter to everyday life" resulted in no less than 68 students choosing to strongly agree, 69 students choosing to agree, 2 students choosing to disagree and 0 students choosing to strongly disagree based on the results of statement #20 it can be concluded , that students agree if the teacher connected the topic to everyday life.

Statement 21 "I agree that if there are tutorials to create and develop static fluid material, the result is that 72 students decided to strongly agree, 66 students decided to agree, 1 student decided to disagree and 0 students decided to strongly disagree, statement no Based on the results of 21, it can be concluded that students are very pleased with the creation and development of learning environments of static course materials. These results are shown in Figure 4 below :



**Figure 3.** Response bar chart  
 Student Question no 15 – no 21.

The feasibility of each question is tested with a validity test and a reliability test to find out whether the instrument used is usable or not. The data validity calculation results are shown in Table 3. From Table 3, we can see that the r-count value of all the items is greater than that in the r-table, which means that all the items in the box are valid from the table 3 below:

**Table 3.** Item Validity Test Result

Number of items	r-count	r-table	information
1	0,620		
2	0,587		
3	0,560		
4	0,510		
5	0,520		
6	0,531		
7	0,548		
8	0,571		
9	0,475		
10	0,570		
11	0,591	0,172	Valid
12	0,590		
13	0,539		
14	0,432		
15	0,506		
16	0,486		
17	0,521		
18	0,542		
19	0,526		
20	0,478		
21	0,480		

**Table 4.** Case Processing Summary

		N	%
Casse	Valid	139	100.0
	Excluded	0	.0
	Total	139	100.0

Based on the results of the validity test, the results are as Table Case processing summary describes the number of valid respondents (N) is 139 respondents with a percentage of 100%. The table then also explains the excluded data and amount. With the omitted data, this number is zero, while the total data

has 139 respondents (N) for a ratio of 100%. After that, the data reliability test results can be seen in Table 5 below:

**Table 5. Reliability Statistics**

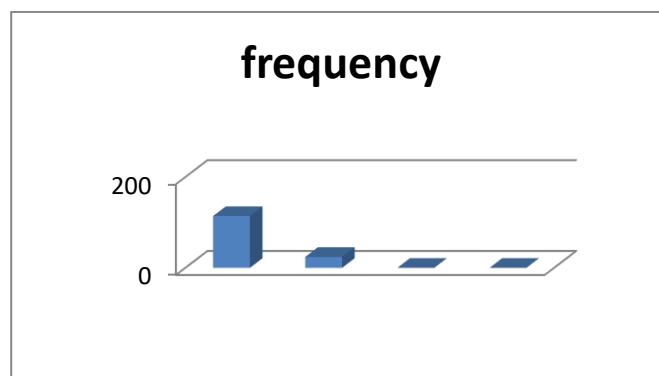
Alpha Cronbach	N of items
.871	21

Based on the results of the reliability test, the results are shown in Table 5. The reliability statistics show that there are 21 items calculated by Cronbach's alpha method, the result is 0.871. The obtained Cronbach Alpha score is compared with the table of current values of the product. Using the  $r$  table distribution = 0.05 we get = 0.165. This is then compared to a Cronbach's alpha of 0.871. So it can be determined that Cronbach's alpha is  $0.871 > 0.165$ , so the data is said to be reliable or trustworthy. The response rate of students is shown in Table 6.

**Table 6. Results of Student Needs Response Data**

Respondents	Average score	Highest score	Persentase %	Category
139	9933	11676	85,07	SS

It can be seen from Table 6 that students are very comfortable with e-journal based learning environment, this is shown by the percentage of 85.07%. Based on the interpretation table of the Likert scale, for data with a percentage of 76% to 100%, the quotes are completely in line. This study is consistent with the study conducted by [21], which revealed that student response scores for all E-magazine media content were 70% very good and 30% very good. Then the reactions of students to the existence of an e-magazine that can be developed very well and can help students and motivate themselves to learn [1]. Based on the results of data analysis of , the results range from 76% to 100%, indicating that students strongly agree In this study, there are categorical indicators of student needs for electronic journal-based learning environments, as well as bar graphs of student research results.



**Figure 4.** Student bar chart to category items

The above chart explains that out of a total of 139 respondents viz. SMA 3 students ie. SMA N 1, SMA N 6, SMA N 7 PLUS Bengkulu City. The results of the above bar chart revealed that 125 students strongly agreed, 2 students agreed, 0 students disagreed and strongly disagree consisting of 0 students. Based on the graph, it can be concluded that the students of SMA N 1, SMA N 6, SMA N 7 PLUS Bengkulu City strongly agree with the development of e-journal based learning environment for static fluid material.

### Teacher Response

Based on the results carried out using instruments in the form of observation sheets, interview sheets and questionnaire sheets on the responses of physics teachers in class X, XI, XII SMAN 1, SMAN 6 and SMAN 7 PLUS Bengkulu City Observations were obtained that physics teachers at SMAN 1, SMAN 6 and SMAN 7 PLUS Bengkulu City still uses the 2013 curriculum. In the teaching and learning process activities the teacher uses printed books, LKPD, and other supporting teaching materials. As for the learning media, teachers often use PowerPoint and sometimes animated videos, this depends on what material will be taught to students.

However, the teaching materials and learning media provided by the teacher still make students less interested in participating in the teaching and learning process. This can be seen from students who are

less enthusiastic, active and less enthusiastic in answering or giving questions to the teacher. Therefore, to support the results of this observation, a needs analysis and interviews were carried out with physics teachers in class X, XI, XII at SMAN 1, SMAN 6 and SMAN 7 PLUS Bengkulu City.

The results of the questionnaire that was conducted for 4 physics teachers showed that physics teachers really needed other learning media as an alternative to assist in the teaching and learning process in class with this learning media. In addition to using the teacher's needs questionnaire to provide more support, interviews were conducted with physics teachers in class X, XI, XII at SMAN 1, SMAN 6 and SMAN 7 PLUS Bengkulu City.

Results of interviews with 4 physics teachers for grades X, XI, XII at SMAN 1, SMAN 6 and SMAN 7 PLUS Bengkulu City consisting of physics teachers for grades X, XI, XII from SMAN 1 Bengkulu City, namely Mrs. Nori Asnita S.Pd and Mrs. Yumni Hanina S.Pd and Mrs. Eliya Yatmi S.Pd from SMAN 6 Bengkulu City and Mrs. Neni Triana S.Pd from SMAN 7 Plus Bengkulu City. This interview sheet consists of 25 questions with 4 answers that have been summarized, namely number 1, what do you think about the available internet network facilities? The four teachers said that the network facilities available in each school were a wifi network which was quite smooth where only a few places could use it, such as the teacher's room, principal's room, private room and specific sections, but for each class no wifi network was provided.

Then question number 2, what cellular network provider is good to use? Based on the results of the answers, of course, it varies depending on where the school is, for SMAN 1 Bengkulu City, the strong providers are Axis and Tri while for SMAN 6 Bengkulu City, namely Telkomsel and Axis providers, and for SMAN 7 Plus Bengkulu City are Telkomsel and IM3 providers. Next, question number 3, is there a physics laboratory available? The overall answer for the physics teacher is that the laboratory room is available.

Question no 4 In your opinion, are the tools available in the physics laboratory adequate? The answer is that these three schools already have laboratory equipment, but it is not sufficient because after the pandemic, laboratory rooms and equipment were rarely used, so some of the equipment was damaged and could no longer be used.

Question number 5, what is your opinion about the management of the physics laboratory, has it been managed optimally? The answer is that the laboratory space is well managed but not optimal yet.

Question number 6 Do you carry out learning activities in the classroom (indoor and outdoor) specifically for physics subjects? The answer is that on average the teacher uses the classroom more often than outside the classroom but for outside the classroom it is sometimes but rarely .

Question number 7 according to you, are the students active in learning physics both in the classroom (indoor) and outside the classroom (outdoor)? The answers from the four teachers all chose in class.

Question number 8 Are there any difficulties for you in teaching physics in the classroom (indoor) or outside the classroom (outdoor)? The answers of all the teachers clearly had difficulties because the students were diverse so that there were some students who already understood and some did not understand so they had to be able to understand the students.

#### **D. Conclusion**

Based on the results of research data analysis that has been carried out using instruments in the form of observation sheets, interviews, and questionnaire analysis to respond to the needs of students and physics teachers at SMAN 1 Bengkulu City for the development of E-magazine learning media on static fluid material. So that the research results are in the form of the percentage of students was 85.07% and the four physics teachers also strongly agreed. teaching in schools.

#### **E. Acknowledgments**

I thank the physics teacher and all the XI MIPA students of SMA Negeri 1, SMA Negeri 7 and SMA Negeri 6 from Bengkulu city who were willing to help to complete the needs analysis survey and interview the development of the E-magazine. Canva based learning environments to improve motivation to learn static fluid material in SMA N Bengkulu City.



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