

## DEVELOPMENT OF E-MODULE BASED GEOGRAPHY TEACHING MATERIALS

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### ABSTRACT

This study aims to know the effectiveness of the use of e-module-based geography teaching materials with inserts of religious values. This type of research is development research (Research and Development) by adapting the ADDIE model. Validation of teaching materials is obtained from learning material experts, learning media experts, and learning design experts. The practicality of teaching materials is obtained from teachers and students. The effectiveness of teaching materials is obtained from student learning outcomes. The results showed that: 1) The quality of e-module-based geography teaching materials is very valid and very practical. The validity assessment from the learning material expert got the final score of 92.5%, the learning media expert got the final score of 91.25%, and the learning design expert got the final score of 85.71%. The practicality assessment got a final score of 88.33%; 2) Student learning outcomes data showed that there was a change in scores from pre-test to post-test with an average N-gain score of the experimental class of 77.07 belonging to the high category. Meanwhile, the average N-gain score for the control class is 60.05, which is included in the medium category. Based on the results of the t-test, it can be concluded that the significance value (2-tailed) is 0.000 so the significance value (2-tailed) of 0.000 < the significance value of 0.05. This means that there is a difference between experimental classes that are given special behaviors using module-based teaching materials and getting higher scores than control classes that do not use e-module-based teaching materials. So it can be concluded that the teaching materials developed can increase the effectiveness of learning.

*Keywords: Geography, Teaching, Materials, E-Modules, ADDIE.*



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## INTRODUCTION

Education is a pillar of human resource development (HR). According to the Law of the Republic of Indonesia No. 20/2003 concerning the National Education System, it is explained that education is useful for developing the potential of students so that they become human beings who are piety, knowledgeable, and have good character (Hadi, 2019). The Ministry of Education and Culture of the Republic of Indonesia has adopted the concept of 21st-century education to develop a new curriculum for elementary, middle, high school, and vocational schools. 21st-century learning is a learning transition that demands a change in the approach of teacher-centered learning to a student-centered learning approach (student-centered learning) (Sukmayadi & Yahya, 2020).

Learning activities generally only use printed teaching materials, such as textbooks and modules. Textbooks have come to the main teaching material in learning, while modules are still very rarely used. Modules are one of the teaching materials that support the student's learning process independently. Therefore, efforts are needed to design learning modules by collaborating computer and internet technology with the materials delivered in the process of learning.

## METHODS

This research is a Research and Development (R&D) model (Gustiani, 2019). The aim of development research in education is to develop effective products for use in schools. The development design used is the ADDIE development model with several development steps carried out, namely the analysis stage, the planning/design stage, the development stage, the implementation stage, and the evaluation stage. The data analysis technique used is a quality test (validity test is assessed by experts and practicality test is assessed by teachers and students) and the effectiveness test (student learning outcomes using N-Gainscore) (Branch, 2009).

## RESULTS

### Research Results

#### 3.1 Stages of research development procedures

##### 3.1.1 Analyze phase

Based on the 2013 curriculum of Geography class X subjects, obtained:

Basic competencies

- ☞ Analyzing the dynamics of planet earth as a living space.
- ☞ Presenting the characteristics of planet earth as living space by using maps, charts, images, tables, graphs, photos and/or videos.

Competency achievement indicators

- ☞ Explaining the phases of the formation of the earth.
- ☞ Describes the theories of the formation of the solar system and the theory of the formation of the earth.
- ☞ Explaining the development of the earth based on the history of life.
- ☞ Analyzing the rotational motion and revolution of the earth and their effect on life.

##### 3.1.2 Planning Stage

Planning phase (design phase); at this stage, the initial design design of the module began to be made such as (1) cover, (2) table of contents, (3) Glossary, (4) concept map, (5) learning materials. The material in the lesson module is integrated with the meaning of character education contained in the Qur'an and the sociated with daily life.

##### 3.1.3 Development phase

At the development stage, validation of the research instrument was carried out. After designing the product, then the product in the form of geography teaching materials that were developed was validated by the validator from each expert. The results of the validation of teaching materials developed from field validators are as follows:

Expert validation data of learning materials

Table 1. Learning material expert validation results

No	Aspects	Validation score
1	Curriculum	20
2	Material	31
3	Language	8
4	Evaluation	15
Sum		74
Percentage		92.5%

The results of the assessment of the learning material expert validators on the module in general are good with a percentage of 92.5%, but there needs to be a revision regarding the addition of images.

#### Learning media expert validation data

Table 2. Learning media expert validation results

No	Aspects	Validation score
1	Text Message Design	28
2	Image Message Design	17
3	Video Message Design	15
4	Module Organizing	13
Sum		73
Percentage		91.25%

The results of the assessment of the learning media expert validators on the module are generally good with a percentage of 91.25%, but there needs to be revisions to the addition of images, the KEMENDIKBUD and UNP logos, and the distance between paragraphs.

#### Learning design expert validation data

Table 3. Learning design expert validation results

No	Aspects/questions	Validation score
1	Curriculum Aspects	20
2	Aspects of the Method	24
3	Evaluation Aspects	16
Sum		60
Percentage		85.71%

The results of the assessment of the learning design expert validators on the module are generally good with a percentage of 85.71%, but revisions need to be made to adjust to the systematics of the module.

#### Overall validation data (material expert and education technology expert)

Table 4. Overall expert validation results

No	Validators	Score	Information
1	Learning Material Expert	92.5%	Well deserved
2	Learning Media Expert	91.25%	Well deserved
3	Learning Design Expert	85.71%	Well deserved
Average		89.82%	Well deserved

Based on the table above, it is obtained that the level of validity of the teaching materials that have been developed is very feasible with an average score of 89.82% so that the teaching materials do not require significant revisions. However, the comments of learning experts are used as material for improving teaching materials.

### 3.1.4 Implementation phase

Teaching materials that have been declared valid by material experts, media experts, and learning design experts, are then revised according to the validator's suggestions, then the developed teaching materials will be given to students.

### 3.1.5 Evaluation phase

Test the practicality of teaching materials by giving a practicality test questionnaire that aims to see whether the teaching materials developed are practical or if there are still errors. The following are the results of the practicality test of teaching materials.

Table 5. Practicality test results

No	Aspects	Level of practicality	Category
1	Learning Media	90,00	verypractical
2	Material	88,33	verypractical
3	Benefit	86,67	verypractical
Overall percentage		88,33	verypractical

Based on table 5, it can be seen that the percentage of assessment on the practicality test is very practical with a percentage score of 88.33%.

The effectiveness test aims to determine whether the teaching materials developed are effective or not. The instrument used in the effectiveness test is a question of students' ability tests before and after being given teaching materials. The following are the results of students' ability tests and after using teaching materials.

Table 6. Learning outcomes of control class students

No	Student name	Before value	After grades
1	Ahmad Candra	30	75
2	Alfaini Risky	15	60
3	Alhan Al Fahri	25	80
4	Aqilah Rifa Zein	20	70
5	Arsalna Amelia	30	75
6	Ayu Safitri	30	75
7	Dian Permata Sari	25	85
8	Dovi Zola Dadang P	20	75
9	Fatimah Zara	20	75
10	Fikri Yaldi	30	75
11	Diamond Syascia Heriana	25	85
12	Irshadul Afdol	25	75
13	Laura Mailia	25	85
14	M. Al Aqra	20	75
15	M. Fadhil	30	75
16	M. Ihsan	30	75
17	M. Mustofa Akmal	10	60
18	M. Nabil Saputra	15	60
19	M. Regi Adrian	30	75

No	Student name	Before value	After grades
20	Jasmine Zulfi	10	60
21	Miskatul Aulia	30	75
22	Muhammad Fauzan Zulmi	20	75
23	Muhammad Toha	10	60
24	Nurul Atikah	30	75
25	Pazrur Rahman	30	75
26	Reski Ade Putra	25	85
27	Rika AndriYani	20	75
28	Silvi Oktaviani	20	70
29	Rudi Salam	20	75
30	Tiara Cantika Princess	30	75

Table 7. Learning outcomes of experimental class students

No	Student name	Before value	After grades
1	Alya Sakinah	15	70
2	Amanda Syafitri	20	85
3	Arni Nazira	35	95
4	Prayoga Star	15	85
5	Chintia Marsyah Princess	25	85
6	Della Safitri	20	85
7	DesfinaWulandari	25	85
8	Deslina Ainur	20	80
9	Ghebriella Princess Miandra	25	70
10	Hafis Yuliandri	30	85
11	Herwendi Darus	30	85
12	Hay Kunas	20	80
13	Herlinda	15	65
14	Inspiration Muhammad	20	85
15	M. Akil Aktori	20	85
16	Miftahul Jannah	25	80
17	M. Alfin	20	85
18	M. Dedek Nuryar S	15	70
19	M. Nabil	20	80
20	Nabila Salsabila	20	85
21	Nuramrina Rosyada	35	95
22	Regina Syakilla	20	80
23	Resky Akmal	35	95
24	Robi Alfarizi	20	85
25	Sabrina Azzahra	25	80
26	Saipul Andri	25	85
27	Salsabila Azzahra	20	80
28	Sintia Rahma	20	65
29	Thora Love	25	85
30	Ulfa Rahmayanti	25	85

Based on table 6 and table 7 shows that there is a change in the value from pre-test to post-test. Furthermore, the values obtained are analyzed to find the average N-gain score, which is as follows.

Table 8. Gain score value

	Control class	Experimental class
Average	60,05	77,07
At least	31,25	53,33
Maximum	83,33	100

Based on the results of the N-gain test calculation, it shows that the average N-gain value of the experimental class is 77.07 which is included in the high category. With a minimum N-gain score of 53.33% and a maximum of 100%. While the average value of N-gain for the control class is 60.05 which is included in the medium category. With a minimum N-gain score of 31.25% and a maximum of 83.33%.

### 3.2 Data analysis of learning outcomes

Learning outcomes data in this study were obtained through test instruments. Testis is a series of questions or exercises used to measure skills, knowledge, intelligence, abilities or talents possessed by individuals or groups (Arikunto, 2010).

#### 3.2.1 Normality test

The normality test aims to determine whether the distribution of the data obtained with the help of the SPSS application is by looking at the normal probability plot that compares the cumulative distribution of the actual data with the normal distribution. If the distribution is normal, then the line that represents the actual data will follow the diagonal line. The results of the normality test can be briefly seen in table 9 below.

Table 9. Normality test results

Tests of normality							
Class		Kolmogorov-smirnov <sup>a</sup>			Shapiro-Wilk		
		Statistics	Df	Sig.	Statistics	Df	Sig.
Learning outcomes	Experimental class	,131	30	,198	,945	30	,123
	Control class	,154	30	,066	,950	30	,170

a. Lilliefors Significance Correction (Source: SPSS Calculation)

Based on the table of normality test results obtained a significance value of 0.198 for the experimental class and 0.66 for the control class. In accordance with the rules, values 0.198 and  $0.66 > 0.05$  then the data is normally distributed.

#### 3.2.2 Homogeneity test

The homogeneity test aims to determine whether the variance of samples taken from the same population is uniform or not. Homogeneity test using Levene Test. The results of the homogeneity test can be summarized in the following table 10 below.

Table 10. Homogeneity test results

Test of Homogeneity of Variance					
		Levene statistics	df1	df2	Sig.
Learning outcomes	Based on Mean	,066	1	58	,798
	Based on Median	,100	1	58	,753
	Based on Median and with adjust	,100	1	57,770	,753
	Based on trimmed mean	,053	1	58	,819

Source: SPSS calculation

The calculation results obtained a significance value of 0.798. so it can be concluded that the sig value is  $0.798 > 0.05$ , which means that the distribution of the data is homogeneous. The learning outcomes obtained from the post-test of the experimental class and the control class were carried out with a different test to determine the significance value using the t-test.

Table 11. t-test results

Independent samples test					
	Levene's test for equality of variances		t-test for equality of means		
	F	Sig.	t	Df	Sig. (2- tailed)
Equal Variances Results	,066	,798	4,665	58	,000
Learning to assumed Equal variances not assumed			4,665	57,872	,000

Source:SPSS calculation

Based on the results of the different tests using the t-test, it can be concluded that the significance value (2-tailed) is 0.000 so the significance value (2-tailed) is  $0.000 < 0.05$  significance value. This means that there is a difference between the experimental class that is given special behavior using module-based teaching materials and gets a higher score than the control class that does not use e-module-based teaching materials. So it can be concluded that the development of e-module-based geography teaching materials is proven to increase the effectiveness of learning for students.

## Discussion

The validation results were obtained from the validity of the instrument which was filled in by the lecturer as an expert in learning materials, an expert in learning media, and an expert in learning design. The validation results show that the e-module-based geography teaching materials are very valid to be used as teaching materials. This is in accordance with the theory put forward by Krippendorff (2018) which states that the criteria for assessing the validity of a learning resource must include the evaluation of content analysis, language, presentation, and graphics. Practicality results are obtained from practicality instruments filled out by teachers and students. The results of the practicality test show that the e-module-based geography teaching materials are very practical to use as learning resources. The results of this study are in accordance with the theory explained by Sudjana & Rivai (2002) that the benefits of learning media in the learning process, namely learning using learning media will attract more students' attention so that it can foster learning motivation in these students. The results of the effectiveness obtained from student learning outcomes. Giving material by the teacher regarding the earth as a living space using e-module-based teaching materials for the experimental class and without e-module-based teaching materials for the control class, then gave post-test questions to students to measure students understanding after getting the material. Student learning outcomes data showed a change in scores from pre-test to post-test. Furthermore, the values obtained were analyzed to find the average N-gain score for the experimental class, which was 77.07 which was included in the high category. While the average value of N-gain for the control class is 60.05 which is included in the medium category. Based on the results of the t-test, it can be concluded that the significance value (2-tailed) is 0.000. So the significance value (2-tailed) is  $0.000 < 0.05$  significance value. This means that there is a difference between the experimental class that is given special behavior using e-module-based teaching materials and gets a higher score than the control class that does not use e-module-based teaching materials. The results of this study are in accordance with the theory of Gülbahar et al (2010) that technology is used in education for two main reasons: as a tool to increase teaching effectiveness and to integrate technology into the curriculum.

## DISCUSSION

Based on the results of the research described in the discussion chapter, the following conclusions can be drawn: 1) Development of e-module-based geography teaching materials on earth as a living space for class X SMA through five stages, namely the analysis stage, the planning/design stage, the development, implementation phase), and implementation phase. . evaluation/evaluation stage; 2) The level of validity of e-module-based geography teaching materials is known from learning material experts, learning media experts, and learning design experts. Assessments from learning materials experts got a final score of 92.5% in the "very valid" category, assessments from learning media experts got a final score of 91.25% in the "very valid" category, and assessments from learning design experts got a final score of 85.71% with "very valid" category; 3) The level of practicality of e-module-based geography teaching materials is known from the teachers and students. The practicality assessment scored 88.33%, in the "very practical" category; and 4) The level of effectiveness of the e-module-based geography teaching materials is obtained from student learning outcomes. Student learning outcomes data showed a change in scores from pre-test to post-test. While the average value of N-gain for the control class is 60.05 which is included in the medium category. Based on the results of the t-test, it can be concluded that the significance value (2-tailed) is 0.000. So the significance value (2-tailed) is  $0.000 < 0.05$  significance value. This means that there is a difference between the experimental class that is given special behavior using e-module-based teaching materials.

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