The Development of Electronic Module Based on Discovery Learning in Writing Explanation Text

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ABSTRACT
This study aims to describe the process of developing an electronic module based on discovery learning for writing explanation text theory that is valid, practical, and effective. The type of study is Research and Development (R&D). The development model used in this research is the 4D model, which includes 4 steps of development, that is define, design, development, disseminate. This research uses qualitative and quantitative data. The validity test results show that the developed electronic module is considered to be very valid. Practicality test results show that the electronic modules developed are considered very practical by teachers and students. The effectiveness test results show that the electronic module is considered to be very effective to use, this is based on the value obtained from the knowledge and performance tests.

Keywords: electronic, module, discovery learning, explanation text

1. INTRODUCTION

Indonesian language learning in every level of education starting from elementary school into the next level is oriented towards improving the Indonesian language skills of the students. The mastery of language skills is still used as the main achievement in learning Indonesian (Agustina, 2017). The development of language knowledge and skills in schools emphasizes four language skills, namely listening, speaking, reading and writing. That skills are intact and interrelated. The development of the mastery level of skill will certainly affect to other language skills (Haryati, Wiryotinoyo, & Sudaryono, 2013).

Every renewal of the design of Indonesian language learning is carried out together with efforts to improve the curriculum. The change of curriculum certainly gives a different color to Indonesian learning. In the 2013 curriculum, the first feature of Indonesian language learning is text-based learning. Text-based learning can be interpreted as a learning process in Indonesian that starts from understanding text to producing text (Isodarus, 2017). The design of text-based Indonesian learning will let students know that language is not only be used as a means of communication but can also be used as a means to develop thinking skills. The more types of texts that are mastered, the more thinking structures are mastered by students (Mahsun, 2014).

One of the texts that studied in Indonesian language learning is explanation text. Explanation text is a text that explains the process of the occurrence of something related to the formation of natural, social, scientific, and cultural phenomenon (Priyatni, 2014, p.82). Based on the contents of the 2013 Indonesian Language Curriculum for SMA/MAK, one of the competencies that must be achieved by students is the ability to understand and produce explanation texts contained in Kompetensi Dasar 3.4 and 4.4.

The research that relating to explanation texts has been carried out by several researchers (Ting, Campbell, Law, & Poh, 2013; Kustina & Karlina, 2014; Sari, Suwandi, & Anindyarini, 2015; Saleh, 2016; Aprilia, Sholeh, & Setyorini, 2017 ; Hizati, Syahrul, & Arief, 2018). In general, the results of the study indicate that there are several obstacles felt by students in producing explanation texts, that is (1) lack to understanding the concept of the text, (2) difficulty in expressing ideas because lack of ability to develop imagination, (3) not accustomed to expressing experiences or events through texts or in written form, (4) lack of motivation in self, and (5) mismatches in the selection of teaching materials, methods, and learning media that are less innovative. Agustina, Syahrul, Utami, and Yulianti (2019) add that the issue of interest in writing is also a problem that underlies students writing skills. That thing shows the conditions that require efforts to overcome the problem of the low skills of students in writing explanation texts.

Based on the facts in the field, the writer seeks to find information about the learning outcomes that have been achieved by second-grade students of SMAN 2 Padang, especially in writing explanation text theory by conducting student analysis, teacher analysis, and concept analysis. In general, it can be concluded that students who can be categorized well in learning explanation texts have not reached the whole. Many students still have problems in

understanding the theory and producing explanation texts. Based on the teacher's analysis, it is obtained that the main obstacle in learning explanation text theory is the limited teaching material, in this case, the teacher only uses a textbook from the Kemendikbud. The concept analysis found the use of language that is still considered less communicative, and information that still seems abstract.

Regarding the problems that have been described, alternatives are needed for problem-solving in learning to write explanation texts. The main thing that needs to be done is to create a pleasant learning atmosphere. Psychologically, pleasant learning will bring learning situations to be comfortable and harmonious. A fun learning strategy application can be done if the teacher has understood the needs and desires of the students. There are several important things to consider, for example, the classification of age groups, characters, learning styles, and learning strategies (Mintasih, 2016). About the classification of age groups, Lancaster and Stillman (2002) divide human groups into 4 generations based on the age of birth, namely: 1) The Baby Boomer; 2) Generation X; 3) Generation Y; 4) Generation Z. Based on the birth age group, educators can find out that students who are currently attending high school are currently classified as Generation Z.

If generalized, Generation Y and Generation Z have many similarities. Barcelon (2010) states that the most important similarities between Generations Y and Z are developing in the era of computerization and internet networks. In this era, teachers are more difficult to teach if they do not immediately switch to forms of teaching that use technology (Mintasih, 2016). Therefore, to ensure that the learning styles of the current generation can be fulfilled, the strategies adopted must be tailored to their needs.

Many renewal efforts can be made by utilizing technology as tools of learning. Utilization of this technology is intended to improve the quality of students education. In this regard, ICT has proven to be an enabler that provides educators with flexibility and creativity. Rapid development can be a driving force for educators to innovate and improve their teaching and learning methodologies, and this certainly has an impact on progress towards higher levels of involvement of their students (Park, 2009).
Technological progress also has a role in creating more meaningful learning (Dembo & Seli, 2012). This is what underlies the assumption that the development of

2. METHOD

The type of study is Research and Development (R&D). Research and Development (R&D) methods are research methods used to produce certain products and test the effectiveness of these products (Sugiyono, 2010, p.407). In this regard, Putra (2012, p.67) added that the Research and Development (R&D) method is a method that intentionally and systematically aims is directed to find, formulate, develop, produce, improve, test the effectiveness of models, services, methods/strategies/ways, certain procedures that

technology and science can be used as an alternative to solving the problem of students' poor writing skills.

It can be understood that the objectives of learning will be more easily achieved by using appropriate teaching materials. The teaching material can be in the form of teaching materials developed by teachers that are adjusted to the needs of students (Ramadan, Asri, & Indriyani, 2018). Teachers must be able to make teaching materials that are easy to understand, interesting for students and can develop students' ways of thinking to be more creative and innovative (Indriyani & Ramadhan, 2017). Currently, technology-based teaching materials needed as a medium to support the learning process have been developed (Subarkah, Irwansyah, Ningsih, Darmalaksana, & Maylawati, 2018). The alternative chosen to support the 2013 curriculum-based explanation text learning is teaching materials in the form of electronic modules. The electronic module is a printed module that has changed into a module that is presented electronically, and combined with interactive multimedia applications (Sunismi & Fathani, 2015).

The use of media in learning can collaborate with learning models so that the results obtained can be more optimal (Istuningsih, Baedhowi, & Sangka, 2018). The development of this electronic module applies the discovery learning model. Discovery learning model is a learning model that requires students to find and search for a concept or principle that was previously unknown. The discovery learning occurs when students in their mental processes (observing, classifying, making guesses, explaining, and drawing conclusions) find several concepts or principles (Rahman and Maarif, 2014, p.40). This learning model provides an opportunity for students to be directly involved in learning activities. Such activities certainly have more role in generating motivation to learn, because they are adjusted to the interests and needs of the students (Arviyana, Syahrul, Tressyalina, 2017). Also, the use of discovery learning models also has an impact on the development of creative thinking skills of students (Tumurun, Gusrayani, & Jayadinata, 2016).

Based on the explanation that has been stated, the development of an electronic module for the explanation text writing theory based on discovery learning needs to be done. This electronic module is expected to help teachers and students in the creative, innovative and independent learning process by applying a learning model based on discovery learning.

are new, productive, effective, efficient, superior, and meaningful.

The development model used in this study is the Four-D (4D) development model who developed by Thiagarajan. Thiagarajan et al. (1974, p.5) explained that the development steps using the Four-D (4D) model were carried out in 4 steps, that is (1) define, (2) design, (3) develope, and (4) disseminate.

3. RESULTS AND DISCUSSION

Define

The *define* step is the first step in development. The purpose of this step is to establish and define the requirements needed to develop a product to be developed. Based on the results of the first analysis, was found a shortage associated with writing explanation texts, that is learning resources and learning activities that are still teacher-oriented, which has an impact on student inactivity in learning. Based on the results of the analysis, it can be concluded that students need resources by their learning characteristics, both in terms of material, communicative language use, use of pictures and videos, and the delivery of interesting material. Therefore, to overcome obstacles in the learning process, especially in writing explanation text

theory is an attempt to create the electronic module based on discovery learning models which can then be easily used by students independently wherever they are to support the success of learning. The existence of this electronic module is also intended to make it easier for teachers to build student-oriented learning activities, with the teacher as a facilitator.

Design

The *design* step is the step who carried out to prepare prototype electronic modules. There are two activities, that is (a) the design of the module framework, and (b) writing a draft module. The electronic module framework entitled "Mahir Menulis Teks Eksplanasi" is described in the following table.

Table 1. The Preliminary Framework of Electronic Module

Preliminary Framework	Contents of Preliminary Framework
A. KI dan KD	Core Competencies and Basic Competencies are used as a reference for compiling the contents of electronic modules.
B. Precondition	Requirements that must be met before studying the electronic modules.
C. Orientation	Presentation of important points learned by students.
D. Time	The amount of time needed to study electronic modules.
E. Instructions	Guide on using electronic modules for teachers and students.
F. Concept Map	Information about the order of material to be studied.

Table 2. The Learning Activates Framework of Electronic Module

Learning Activities Framework	Contents of Learning Activities Framework
A. Basic Competencies	Basic competencies that are used as a reference for compiling the contents of electronic modules.
B. Indicator	Competencies that must be achieved by students every learning activity.
C. Purpose of Learning Activites	Statement to be achieved by students every learning activity.
D. Benefit of Learning Activities	Forward-looking statements will be achieved by students after doing learning activities.
E. Theory	Contains the theory relating to the indicators.
F. Conclusions	Contains conclusions that have been mastered at the end of every learning activity.
G. Resumes	Contains a summary of knowledge, concepts, principles about competencies contained in the description of the theory.
H. Practices	Contains questions that aim to provide students with an understanding of the concepts they have just learned.
I. Self-assesment	Assessment of student attitudes and behavior to measure strengths and weaknesses in achieving learning goals.

Table 3. The Evaluation Framework of Electronic Module

Evaluation Framework	Contents of Evaluation Framework
A. Performance Test	Contains instructions on performing performance tests, that is writing explanation texts.
B. Assesment Rubric	The table contains aspects assessed, weighting, and level of performance, and a description of the level of score acquisition.
C. Sheets	A blank sheet where students write texts.
D. Assesment Guide	Contains ways that can be used to calculate scores into values, formulas used, and benchmark reference assessment tables.

Table 4. The Supporting Information Framework of Electronic Module

Supporting Information Framework	Contents of Supporting Information Framework
A. References	The sources of information included in the electronic module.
B. Glossary	A list of difficult words accompanied by their meanings.
C. Tips	The supporting instructions to do something.

After compiling the electronic module framework, the next step is to develop an electronic module framework by including learning material that has been adapted to the order of the electronic module framework.

Develop

The development step is carried out to test the draft modules that have been prepared. Activities carried out include three-step, that is (a) validity test, (b) practicality test, and (c) effectiveness test.

Validity Test

Electronic modules that have been prepared are validated by experts to find out their eligibility. The completed electronic module was validated by two predetermined experts. Both experts are experts in the field of Indonesian language learning and literature, and experts in the field of educational technology. The aspects assessed in the validity test consist of 4 aspects, that is the appropriateness of content, language, presentation, and graphic.

Table 5. The Results of Validity Test

No.	Aspects	Score	Validity (%)	Category
1.	Contents of Electronic Module	86,5	90,1	Very Valid
2.	Language of Electronic Module	28,5	89,1	Very Valid
3.	Presentation of Electronic Module	93	93	Very Valid
4.	Graphic of Electronic Module	53,5	95,5	Very Valid
Total		261,5	92,1	Very Valid

Based on data analysis, the validity value of the electronic module "Mahir Menulis Teks Eksplanasi" is 92.1% with a very valid category. The validity value description for every aspect that is validated is as follows. *First*, the validation of the electronic module content eligibility aspects is 90.1% with a very valid category. *Second*, the validation of language aspects of electronic modules is 89.1% with a very valid category. *Third*, the validation aspects of the presentation of electronic modules is 93% with a very valid category. *Fourth*, the validation

aspects of the electronic module graphics is 95.5% with a very valid category.

Practicality Test

The electronic module "Mahir Menulis Teks Eksplanasi" based on discovery learning that has been declared valid by the expert, and has been revised according to the advice of the expert is then tried out in the learning process to find out the practicality of the developed learning electronic module. The practicality of this electronic module was assessed by the teacher and students.

Table 6. The Description Data of Practicality by Teacher

No.	Aspects	Score	Percentage (%)
A.	Ease of use	56	93,33
B.	Time used	11	91,67
Total		67	93,06

After analyzing the practicality questionnaire of the electronic module that filled out by the teacher, a practicality score of 93.06% was obtained with a very practical category. This value is obtained from the calculation of the score of every practical indicator. First, based on the ease of use, a practicality value of 93.33% was obtained with a very practical category. Secondly, based on the time used, it obtained a practical value of 91.67% with a very practical category.

Table 7. The Description Data of Practicality by Students

No.	Aspects	Score	Percentage (%)
A.	Ease of use	1172,62	83,76
B.	Time used	250	83,33
Total		1422,62	83,55

After analyzing the practicality questionnaire of the electronic module that filled out by students, a practicality score of 83.55% was obtained with a very practical category. This value is obtained from the calculation of the score of every practical indicator. First, based on the ease of use obtained 83.76% practical value

with a very practical category. Secondly, based on the time used obtained 83.33% practical value with a very practical category.

Effectiveness Test

Electronic module effectiveness test is the final step of development. The effectiveness of electronic modules is done in two ways. First, conduct a knowledge test to assess students understanding of the theory that they have learned. Second, conduct performance tests to assess the quality of students skills in writing explanation texts.

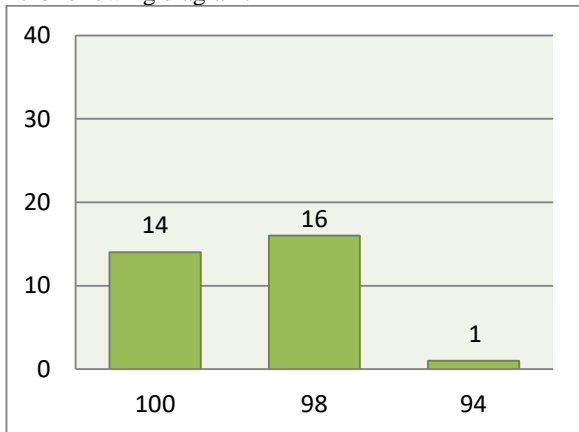The results of the knowledge test assessment can be seen in the following diagram.

Figure 1. Diagram Results of Explanation Text Knowledge Test

Overall the average value of the cognitive test obtained by students is 98.77% with the value of change A. So, it can be concluded that through explanation text learning using electronic modules, students can achieve learning outcomes that meet the standards above KKM.

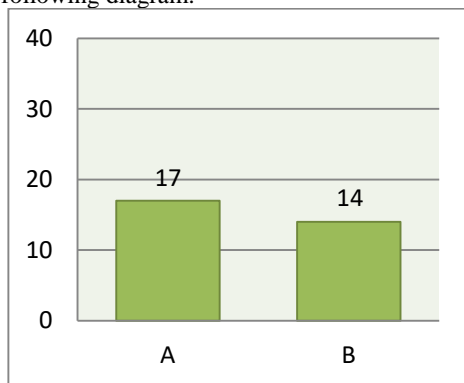The results of the performance test assessment can be seen in the following diagram.

Figure 2. Diagram Results of Explanation Text Performance Test

Furthermore, overall the mean of the skills obtained by students based on the results of the performance test was 88.49% with the value of change A. Thus, the results of the analysis of the performance test of writing explanation texts showed that the electronic

module used by students proved effective for maximizing writing explanation text skills. This can be seen in the results of the performance test analysis for each indicator and the acquisition of an average final value that exceeds the KKM.

Disseminate

The disseminating of electronic modules is done in three-step. The first stage is the limited disseminating of electronic modules to teachers other than collaborators in the main class. The teacher accepts the folder and android application of the electronic module "Mahir Menulis Teks Eksplanasi". The second step is the disseminating of electronic modules to students. How to share folders and android application electronic modules "Mahir Menulis Teks Eksplanasi" on every student by copying the folder and application using a data cable, flash disk, USB OTG to the students' smartphones and laptops. The third step is the disseminating of electronic modules to Indonesian language teachers from other schools. The teacher receives an electronic module folder and android application by copied via USB OTG.

4. CONCLUSIONS

Based on the results, it can be concluded as follows. First, the electronic module "Mahir Menulis Teks Eksplanasi" based on discovery learning is considered to be very valid. The validity of the electronic module is seen from 4 aspects, the aspects of the feasibility of the content, language, presentation, and graphic. Second, the electronic module "Mahir Menulis Teks Eksplanasi" based on discovery learning is considered very practical. The practicality of electronic modules is seen from two aspects, namely ease of use and suitability of time usage. The ease of use can be seen from the ease felt by the teacher and students when using electronic modules in learning. Third, the electronic module "Mahir Menulis Teks Eksplanasi" based on discovery learning is considered to be very effective. The effectiveness of electronic modules seen from student learning outcomes. Based on observations of the value of student learning outcomes obtained, it can be concluded that students have mastered explanation text theory and can apply their knowledge in writing explanation text activities.

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