

## Development Of Android-Based Electronic Module Using Sigil Application As A Learning Media

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### ABSTRACT

*This study aims to develop digital simulation learning modules and produce valid, practical and effective digital simulation learning modules. This research is a development research. The model chosen in this study is a 4-D model: define, design, develop, and disseminate. The subject was 10th grade students of the Genus Health Vocational School. The type of data used is primary data. The instruments used to collect data in this study were instruments of validity, practicality, and effectiveness. The research data were analyzed by descriptive statistics. Data were obtained through questionnaires from validators and student response questionnaires as well as teacher response questionnaires to the developed e-module. The results of the validity test analysis to media experts obtained a validation value of 0.84, so the android-based learning e-module was categorized as valid. Furthermore, the validation results from material experts obtained a validation value of 0.85, meaning that the material in the Android-based learning e-module is categorized as valid. The results of the practicality of Android-based E-Modules for teachers obtained an average of 82.3 with very practical categories, and students obtained an average of 85 with very practical categories. The results of classical completeness scores obtained that 20 students completed with a percentage of 93.67%, it was concluded that the android-based e-module media was said to be effective from a review of students' classical scores. The effectiveness of the product on learning outcomes based on classical completeness which reached 93.67% and the gain score value of 0.32 in the medium category, it can be concluded that the android-based learning e-module is declared effective.*

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## **1. INTRODUCTION**

Information and Computer Technology (ICT) which is growing rapidly is very helpful for humans in various aspects of life and work. Education as a field that utilizes ICT as a medium of learning to assist teaching and learning activities. Appropriate learning methods and media can support the delivery of material to students well so that it helps learning already. One of the good learning media is using interactive media that presents textually, animations, videos, and images so that students are more motivated and don't feel bored quickly.

Learning media has a function as a carrier of information from teachers to students. The function of the media can be known based on the advantages of the media and the obstacles caused in the learning process. Arief Sadiman (2014:17) says that the general use of learning media is as follows: a) clarifying the presentation of messages so that they are not too verbalistic; b) overcome the limitations of space, time and senses; c) appropriate and varied media can overcome the passive nature of students; d) assisting students and teachers in learning and teaching activities.

The use of media should be a part that must get the attention of the teacher/facilitator in every learning activity. Therefore, teachers/facilitators need to learn how to determine learning media in order to make the achievement of learning objectives effective in the learning process.

According to Sudjana (2008 :76) the learning method using media in learning is crucial to success in the learning process. The selection of the right media will result in a change in the teaching and learning orientation of the teacher as a source of information towards an active student learning orientation seeking information from various media. Of course, it takes high discipline, strong will and motivation to be able to achieve high achievements.

According to Djamarah (1997:136) in the teaching and learning process the presence of the media has a fairly important meaning. The ambiguity of the material conveyed can be helped by presenting the media as an intermediary. The complexity of the material to be delivered to students can be simplified with the help of the media. Media can represent what the teacher is unable to say through certain words or sentences. Even the abstraction of the material can be concretized with the presence of the media. Thus, it is easier for students to digest the material than without the help of the media.

Approaches and methods in the formulated media must be able to optimize learning motivation, make students think critically, make students trained to learn independently, streamline student learning processes and be able to keep pace with rapidly developing knowledge and technology.

One of the teaching tools is a computer, which can provide interesting illustrations, graphics and animations. It is hoped that it can be an alternative media for effective

learning because applications in computers are able to present a comfortable learning atmosphere and get a large enough positive response from students.

In fact, the use of computer-based learning media in schools is not in line with the development and progress of information technology that can be used to support the delivery of learning media. Submission of material that requires media, if delivered without media will make students bored quickly in the learning process.

The use of existing learning media does not support teaching materials, power point media is used by teachers in the learning process as additional media in classroom learning and students' independent learning. However, the media used has a drawback that it only contains learning material without any supporting animations and exercises/quizzes in it so that there is a lack of student interaction in learning.

The average learning process is still done conventionally, where the learning process is still centered on the teacher, which causes students to be less motivated to find new things for themselves that can be used as experiences in the learning process. This results in less interesting and less optimal learning. Thus the learning process becomes hampered and affects the value of student learning outcomes.

Based on the factors that are suspected to be problems that affect student learning outcomes are the lack of motivation, interest, interest and activeness of students towards the material presented by the teacher. The main factor that causes the low quality of learning is the lack of precise selection of learning media by the teacher. Therefore, in the teaching and learning process, one thing that needs to be prepared to support the delivery of learning materials and the success of an education is to use the right learning media.

By using this media, it is expected to be able to create interactive learning media so that the material presented can be responded positively by students. One of the media is a module. The learning module is the smallest unit of teaching and learning program, which is studied by students themselves individually or taught by students to themselves (self-instructional) (Winkel, 2009:472). Learning modules are learning media that are systematically and attractively arranged which include material content, methods and evaluations that can be used independently to achieve the expected competencies (anwar, 2010; 135).

The modules developed are electronic modules or e-modules. According to Haritz C.N (2013: 3), a digital book or also called an e-book is a publication consisting of text, images, and sound and published in digital form that can be read on computers or other electronic devices. And I Wayan Santyasa (2009) also mentions some of the advantages gained from learning with the application of the module are as follows (a) Increase student motivation, because every time they do a lesson task that is clearly defined and in accordance with abilities, (b) After an evaluation, teachers and students know well in which modules students have succeeded and in which parts of the module they have not succeeded, (c) learning materials are divided more evenly in one semester, and (d)

education is more efficient, because learning materials are arranged according to academic levels

The e-module used is the Sigil application. According to Harit C.N (2013:6) Sigil is an open source software editor for epub. Some of the features of sigil are free and open source with GPLv3 license, Muktiplatform: can run on Windows, Linux and Mac, Multiple view, can directly edit epub view in book view, table of contents generator with support for multiple level headings, and metadata editor.

By using this electronic module learning media, students better understand digital simulation learning and improve student learning outcomes and will also help and make it easier for teachers to deliver learning and also add variety in delivering learning to students. Therefore, the author conducted research on the Development of an Android-Based Electronic Module Using the Sigil Application as a Learning Media.

This study aims to develop a digital simulation learning module and produce a valid, practical and effective digital simulation learning module.

This research is useful for developing learning concepts by using digital simulation learning modules in increasing student learning activities which have an impact on improving the quality of learning outcomes. For schools as a medium for teachers in providing learning to students who are more varied through learning activities by utilizing these media.

For teachers, this research is an alternative learning model in the use of learning media in schools, so that teaching will be more varied and more interesting, while for students it creates enthusiasm for learning for students, because students are given alternatives in learning activities and also to arouse students' interest in learning. basic computer and network learning.

## **2. RESEARCH METHOD**

This type of research is research and development (Research and Development). In this development research, the product that is advertised is in the form of learning media using the sigil application. According to Sugiyono (2008:297), "development research is research that is used to produce certain products and test the effectiveness of these products". According to Putra (2012: 67), research and development methods (Research and Development) are research that is deliberate, systematic, aims to find findings, formulate, improve, develop, produce, test the effectiveness of products, models, methods / strategies / methods, services, certain procedures that are superior, new, effective, efficient, productive, and meaningful.

The model chosen in this study is the 4-D (four-D) model because the development model has a systematic procedure, in accordance with the problems that underlie this

research. The procedure for developing interactive learning media using this model uses a 4-D (four-D) development model.

The development process consists of 4 stages, namely: (1) define (determination of material); design (design); (3) develop (development); (4) disseminate (spread) (Trianto 2009:189).

### **2.1 Defining Stage (Define)**

This Define stage aims to raise and define the basic problems encountered in learning, so that a development of teaching materials is needed. With this analysis, an overview of facts, expanses and alternative solutions to basic problems will be obtained, which will facilitate the determination or selection of the teaching materials developed.

This stage is a needs analysis where at this stage an analysis of the learning conditions that occurred before the development was carried out. It aims to find out the solution and choose the appropriate strategy as the basis for developing the expected digital simulation learning module. At this stage there are three steps of activities, namely; needs analysis, curriculum analysis, and student analysis.

### **2.2 Stage of design (design)**

The results of the analysis from the definition stage will be used for the next stage, namely the design stage. The steps taken are media selection, designing prototypes, and making media.

### **2.3 Development Stage (Develop)**

The development stage aims to produce valid, practical, and effective interactive learning media. The development stage in question includes the validation stage, practicality test, and effectiveness test.

### **2.4 Stage of Dissemination (Disseminate)**

After all the steps in the development stage are completed and the interactive learning media developed are valid, practical, and effective, then proceed to the stage of distributing interactive learning media. The dissemination stage is the stage of using learning media that has been validated and tested limited to the development stage. The distribution was carried out in class X Pharmacy with the aim of knowing the implementation of the use of interactive learning media. Data obtained from student learning activity data and student cognitive learning outcomes.

The trial implementation of media products will be carried out after the initial draft product design is validated by experts. The product trial is an assessment stage with the aim of finding out whether the resulting product is valid, practical and effective for use in learning activities or not by considering the suitability of media products and users in solving problems in simulation and digital communication subjects and to find out to what extent the resulting media can achieve the desired learning objectives. The test results are also to find out in terms of the attractiveness of the media.

The subject of the trial was carried out on class X students of the Genus Health Vocational School of West Sumatra. This product trial is intended to collect data on the quality of learning media to achieve effective competency standards and to see student responses to the media that have been developed. These data are used to improve and enhance the interactive learning media which is the product of this research.

The type of data used in the development of this interactive learning media is primary data. Primary data taken directly such as data in the form of the results of the validity of interactive learning media given by the validator, media practicality test questionnaires filled out by teachers and students and data from observation sheets. The data referred to here is data from qualitative research results given by experts, teachers and students through a questionnaire given then the results are analyzed using statistical formulas

The instruments used to collect data in this study were instruments of validity, practicality, and effectiveness. The research data were analyzed by descriptive statistics. Data were obtained through questionnaires from validators and student response questionnaires and teacher response questionnaires to the developed e-module. Data analysis techniques for each research data can be described as follows: Content validity, design, practicality and effectiveness analysis techniques are based on categorial judgments modified from Boslaugh (2008:11). In categorial judgments, the validator is given a statement to then give an assessment of each of these statements and the sheet given is in the form of a questionnaire.

### **3. RESULT AND DISCUSSION**

The development of android-based learning e-modules on digital simulation subjects is a series of processes or activities carried out to produce android-based learning e-modules based on development theory .

The purpose of developing android-based learning e-modules in digital simulation subjects is to produce valid, practical and effective android-based learning e-modules. The developed e-module is based on a 4D development model consisting of four stages, namely: define, design, develop, and disseminate.

In the first stage, namely define, a needs analysis is carried out, both in the form of curriculum needs, material analysis, student characteristics analysis, and learning achievement analysis, where at this stage an analysis of learning conditions that occur before development is carried out. This needs analysis is carried out to find out the problems and obstacles faced in the learning process, the aim is to create solutions that are in accordance with the circumstances and conditions in the school. The curriculum analysis carried out refers to the 2013 curriculum. The subjects developed are digital simulations on search engine competencies. Student analysis is carried out to see the ability of students, background knowledge to students' thinking abilities. Material analysis and learning achievement analysis were carried out to see the ability of students, background knowledge to students' thinking abilities. Material analysis aims to see the basic competency materials used in the development of android-based learning e-modules. Then the analysis of learning achievement is to see the results of student achievement in learning both theory and practice using Android-based learning e-modules on digital simulation subjects.

Furthermore, the second stage, namely design, is carried out by designing e-modules by paying attention to the appropriate subject matter of KI, KD, material and digital simulation learning objectives. The main activities at this stage are writing, reviewing, and editing e-modules that are designed by paying attention to language, word order, pictures, videos. The design of the e-module is adjusted to the results of the analysis of needs, curriculum, materials, students and learning outcomes that are loaded on Android so that it can be used anywhere and anytime.

The third stage, namely develop, is carried out by developing the e-module in accordance with the revisions and suggestions of the validator, so as to obtain a valid e-module that deserves to be tested. In this third stage, the validity, practicality and effectiveness of the e-module were tested. A media can be said to be valid if the validity results processed using the Aiken's formula show a value that is in the valid interpretation range according to the provisions. Based on the validity test by the validator, the results of the material validity test are valid, this is the average of three aspects, namely the display aspect, programming aspect, and utilization aspect. Furthermore, the results of the material expert validity test obtained e-modules in the valid category based on the average of three aspects of content, learning and summary.

Material validation was carried out by one lecturer in informatics engineering and one teacher for digital simulation subjects at the Genus Health Vocational School of West Sumatra. From the results of the validation of media experts and material experts as well as suggestions and comments that have been revised, the e-module developed has met the valid requirements as a suitable learning media.

After the e-module is declared valid, it is followed by testing the practicality of the e-module through the distribution of practicality questionnaires to teachers and students. A media can be declared practical, if it obtains practicality values from students and teachers

who are in practical interpretation. The questionnaire was distributed to one teacher/practitioner (digital simulation subject teacher) and 30 students in the trial class. The practicality test from the teacher/practitioner gets a percentage score in the very practical category and the practicality test score obtained from the student in the very practical category. Based on the results of the analysis of practicality questionnaires filled out by teachers and students, it can be concluded that the e-module developed provides convenience in several aspects, namely product quality, material presentation, and benefits.

These three aspects are evidenced by the results of student responses to the developed e-modules that can be read clearly, the material presented is easy to understand by teachers, easy to use and students are interested in using e-modules in learning. In conclusion, the Android-based learning e-module developed is very practical to use as one of the digital simulation learning materials that is easy to use.

After the e-module was declared very practical according to the teacher and students, it was continued with testing the effectiveness of the e-module. A media can be said to be effective through the assessment of student learning outcomes. With the provision that if there are differences in student learning outcomes after using learning media, then the media is declared effective. There is a significant difference in the pretest and posttest scores and see the completeness of learning classically, so it can be concluded that the android-based learning e-module developed has been effective. These results can be seen in the following table:

Table 1. Result

No	Activity	Total Student	Study Result		Percentage	
			Complete	Not Complete	Complete	Not Complete
1	Pretest	23	13	10	56,52%	43,48%
2	Posttest	23	20	3	86,96%	13,04%

The results showed that the e-module with an android-based learning model is one of the learning media innovations that can create active learning for students, and can affect student creativity. The application of Android-based learning e-modules has been successfully implemented and can improve student learning outcomes and is suitable for use as learning media.

The results of developing an Android-based learning e-module using the sigil application in the learning process can help students understand the material faster and increase teacher and student interaction because students already have the material to be discussed. E-modules that provide text that are easy to understand, as well as images that are closer to the real form of a component help students remember more easily. In addition to text and images that are easy to understand for students, the videos available in the e-module also provide references for students in solving the problems they find.

After carrying out the define, design and develop stages, the last stage that the researcher did was the disseminate stage. At this stage, the e-module that has been developed is distributed. The requirements for dissemination are if the e-module developed is valid, practical and effective from the validators and trials that have been carried out.

#### 4. CONCLUSION

The development research resulted in an Android-based e-module on valid, practical and effective digital simulation subjects in class X of the Genus Health Vocational School of West Sumatra.

The research resulted in an android-based e-learning module that was valid, practical and effective. The results of the validity of the e-module are based on the responses of media experts, and material experts in the valid category. Practical e-modules are seen based on the responses of subject teachers in the very practical category and based on the responses of students in the very practical category. The effectiveness of the e-module seen based on student learning outcomes is categorized as effective.

Student learning outcomes are seen based on the value of classical completeness with the percentage categorized as effective. Based on the difference in the results of the pretest and posttest, it obtained a low significant value so that it was declared effective. Based on the gain-score test from the use of project-based e-modules, it gives a moderate effect value.

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