

Problem Analysis and Requirement of Biology Materials by E-Module Based on Android in SMAN 3 Padang

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Abstract – The advances of technology have brought enormous changes in various fields, one of which is in the field of education. Among students, the use of gadgets (smartphone) carries a very big influence on the activities of students. Smartphones in school need to be maximized. One of the optimizations of the smartphone is the creation of an e-module based on android. E-module based on android expected to be a solution to overcome the problem of students to dependence on the use of the smartphone. The purpose of this preliminary research is to describe the problem and requirement of e-module based android at school. This type of research is descriptive research. The research objects consisted of a biology teacher, syllabus and biology learning material, and students of class XI MIPA in high school. The method used is data collection consisting of the results of the interview, the result of the questionnaire problem, and the requirement. Based on data analysis, the results of this study are 1) students in SMAN 3 Padang are allowed to use the smartphone in school. 2) electronic learning material based android in SMAN 3 Padang is not available yet. 3) student learning outcome is also unsatisfactory 4) students agree if there are learning materials in the form of e-module based android at school. 5) students agree if the e-module based android consists of several components that are arranged systematically. 6) students agree that if the e-module based android equipped with biological material and displayed interesting pictures and videos.

Keywords – Analysis, Android, E-Module Problems, Requirement.

I. INTRODUCTION

In the era of globalization, many important phenomena occur including bringing up of the generation millennial. According to Hasballah (2018), the millennial generation is an individual who has reached adulthood around the turn of the 21st century and lives in a world filled with electronic goods and activities on social media. Learning in the 21st century is also related to electronic learning systems (e-learning). Millennial generation becomes dependent on technology at an earlier age than other generations (Smith and Nichols, 2015). Deal et al. (2010) added that people who use technology at an earlier age are more proficient than people who learn later in life.

The millennial generation has various characteristics. In 2011, Boston Consulting Group (BCG) together with Barkley conducted a study with the theme of American Millennials: Deciphering the Enigma Generation. The results of the study revealed that one of the characteristics of the millennial generation, namely the generation is millennial less fond of reading conventionally, they prefer to read online using their smartphone (Fromm et al., 2011). For millennials, the use of technology and social media is very important and they must have it (Bannon et al., 2011). However, the use of technology also gives a negative value to the millennial generation because they hope to have everything instantly (Cahill and Sedrak, 2012).

Advances in information technology have brought enormous changes in human life in various fields, which is in the field of education. According to Guntarto (2011) students can spend their time using a smartphone, they use to socialize through social media, playing games, and browsing, so that, their time to study is very less.

The Advances of information technology have also been utilized as an effective medium in the learning process. For this purpose, it is putting learning material on a smartphone that makes it easy for students to access it when using a smartphone. The fact is suitable for the opinion of Calimag et al. (2014) which states that one of the devices that can be used for educational purposes is a smartphone. In line with this Teri et al. (2014) stated that a smartphone can be used to achieve various learning objectives and provide individual learning experiences. Gonzalez et al. (2015) added that smartphones can facilitate students in accessing multimedia resources and can learn anytime and anywhere.

According to Zheng et al. (2015) states that the rapid development of smartphones at this time, advances in technology are not only used by users as communication media but can also be used as reliable learning material. Smartphones can be converted with an electronic learning system (e-learning). Hapsari et al. (2016) state, e-learning is a learning process that uses electronic circuits to convey learning content, interactions or guidance.

E-learning includes several parts, which are learning with smartphones (m-learning) (Marta et al., 2018). M-learning which is part of the system e-learning can be used as a reference for innovating the display of learning materials such as modules. Modules which usually and originally is printed now can be as electronic form and more known as e-modules.

Electronic module (e-module) is a form of presentation of independent learning materials that arranged systematically into a particular learning unit, which is displayed in electronic format. Each learning activity in the e-module is linked by a link as navigation, and can also be equipped with video, animation and audio presentation to enrich the learning experience and is expected to attract student's interest and motivation to learn (Directorate of High School Development, 2017). E-modules as electronic learning materials will be supported by the operating system Android.

Statcounter data shows that the utilization of the system android as a supporting operating system used in Indonesia has grown to 93,69% in July 2019 and controls the smartphone market (Statcounter, 2019). Android system

which developed as a learning application is expected to be able to produce based learning materials m-learning representative, which has audio or visual multimedia elements that can facilitate students in understanding learning material (Lee et al., 2013). One of the applications that can make effective applications such as e-modules based on android is Adobe Flash Professional CS6. In Adobe Flash Professional CS6 there is the program AIR For Android.

Adobe Flash Professional CS6 is one of the software which the most widely used to create multimedia. This software can do all things related to multimedia (Pranowo, 2011). The development of an e-module based on Android Adobe Flash Professional CS6 is expected to be able to overcome the low activity and student learning outcomes because of the student's time are spent by using smartphones in daily activities.

Several previous studies relating to the development of e-modules based Android that has been successfully carried out include research from Afifah et al. (2018), e-modules were based Android developed as learning material on plant world material (Plantae) to improve learning activities and learning outcomes grade X students of Mataram high school. Research from Aminatun et al. (2016), e-module based on Android was used as teaching material, especially on Nusa Tenggara local ecosystem lesson, to improve the student's thinking skill.

The main focus of the objectives in this study is to the analysis of the problems and requirement will be done. The results obtained will be used as a basis for developing e-modules based on Android. Same with the statement, Rahmi et al. (2018) stated that a teacher must prepare everything before they start learning activities so that the learning process becomes systematic, effective and interesting for students. One component that must be prepared by teachers before starting learning activities is learning the material. This is reinforced by the statement of Nova et al. (2018) who said that in the learning process, there is must have a variety of teaching materials to stimulate student's motivation

II. RESEARCH METHODS

This research well done in SMAN 3 Padang. The subject of this study is one biology teacher and 35 students in grade XI MIPA 5. Data collection uses a list of questions for interviews and a close questionnaire for problems and requirements. Data analysis was performed descriptively qualitative which included data collection, data analysis, data presentation, and the conclusion.

III. RESULTS AND DISCUSSION

A. Result

The results of the interview with a biology teacher in SMAN 3 Padang on April 23, 2019, found that:

1. Students in SMAN 3 Padang are allowed to use a smartphone at school to find references in learning, but in fact, students are more active using the smartphone that they have for activities on social media.
2. The students learning biology by using books, modules, worksheets, and articles originating from the internet.
3. Electronic learning materials based android such as e-module that can be used in student devices are not available yet.
4. Students learning outcomes are also unsatisfactory because only a portion of all students in one class are satisfying their grades or have reached the minimum completeness criteria (KKM) that have been set.

The results of the problem analysis questionnaire distributed and filled out by 35 students of Class XI MIPA 5 in SMAN 3 Padang.

1. In the implementation of learning in schools, students are allowed to carry a smartphone, as many as 97,14% of class students XI MIPA 5 SMAN 3 Padang has smartphone based android shown in Figure 1.

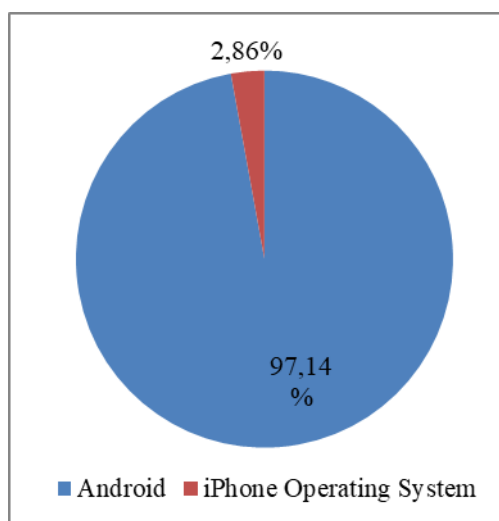


Figure 1. Students who have an based smartphone android.

2. Students are allowed to bring a smartphone with the aim of adding references in learning through the internet, but in fact, students are more active using their smartphones for activities such as chatting, playing games, browsing than learning with the results of the

questionnaire that is 29,17%, 26,67%, 23,33%, and 20,83% are shown in Figure 2.

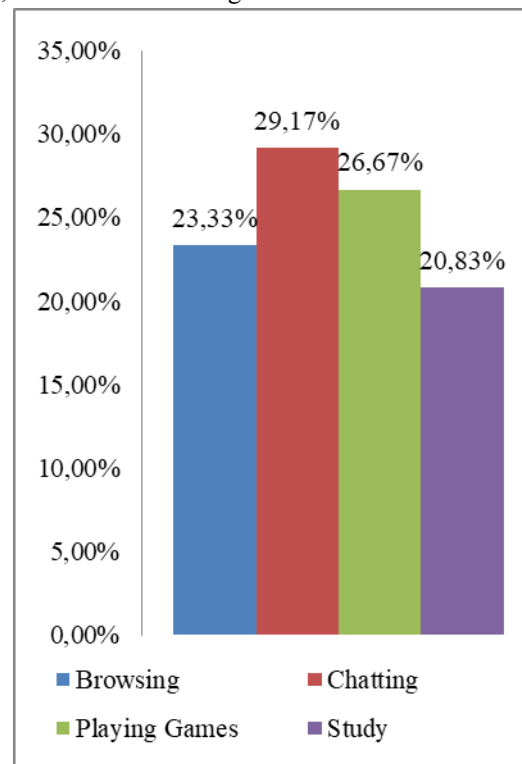


Figure 2. Student activities with smartphones.

3. Most students have never used learning materials with e-modules based on android form, although students are allowed to use smartphones in the school with a questionnaire result of 74,29% shown in Figure 3.

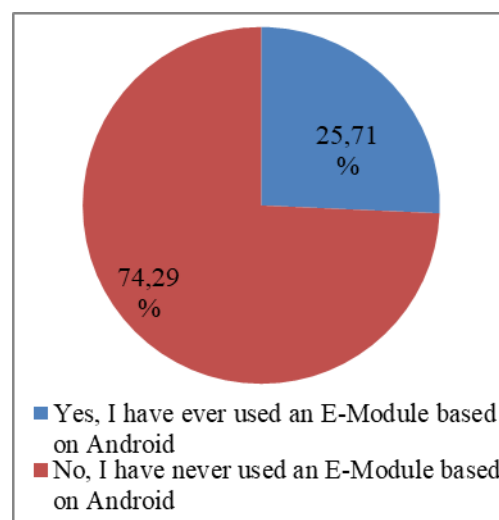


Figure 3. Students who have never used e-module based Android.

4. There are difficulties in some biology material in class

XI semester 1, such as the Structure and Function of Plant Tissue and Circulation Systems with the results of the questionnaire showing 24,44% and 31,11% and reinforced by the achievement of the average daily test scores of students who did not reach KKM.

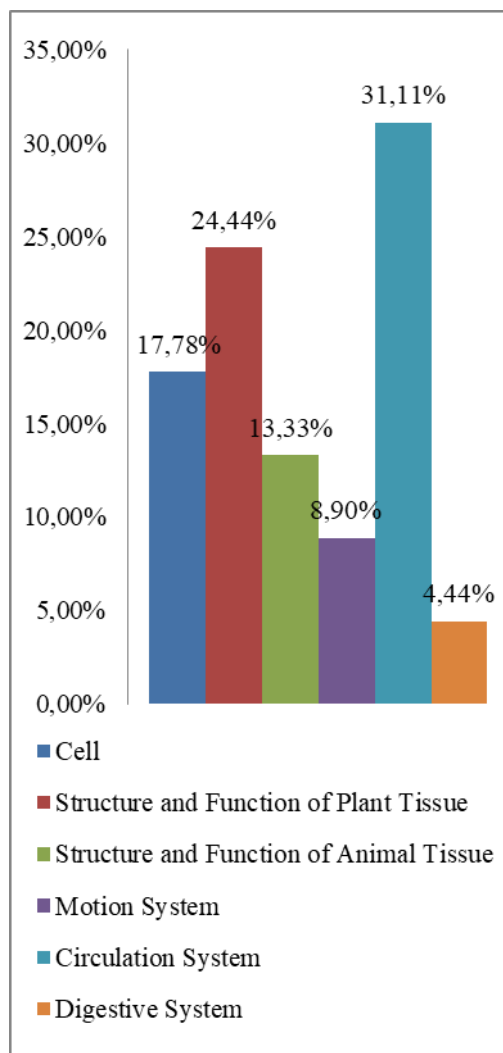


Figure 4. Material that is difficult for students to understand in class XI semester 1.

The results of the analysis of the needs of e-module based Android, note that:

1. The students agree if there are learning materials with the of e-module based on Android
Form in the school with the results of the questionnaire 97 14% is shown in Figure 5.

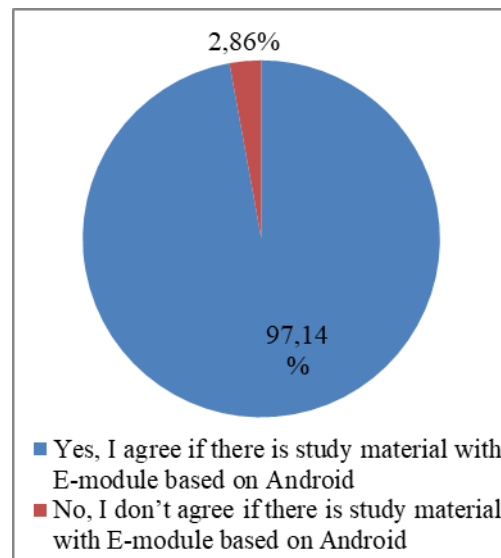


Figure 5. Students who agree if there is learning material in the form of e-module based android at school.

2. The students agree that the e-module based on android consists of an opening page, cover, menu, profile, preface, instructions for use, core competency, basic competency, and indicators, learning activities, practical activities, learning videos, evaluations, evaluation keys, and lists library with 80% questionnaire results are shown in Figure 6.

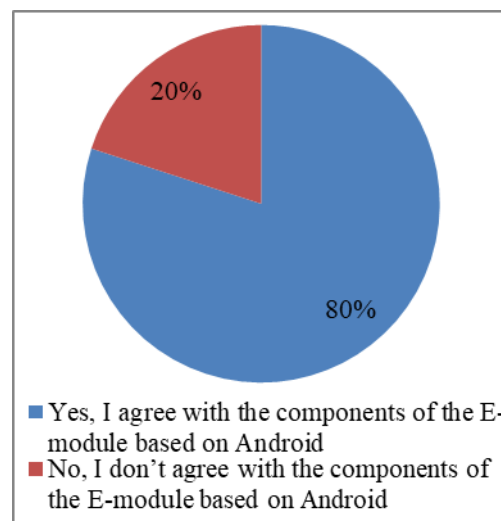


Figure 6. Students who agree with the components of the e-module based on android.

3. The Students agree that if the e-module based on android equipped with biological material and attractive pictures and videos are displayed to make it easier to understand the material with 100% questionnaire results

shown in Figure 7.

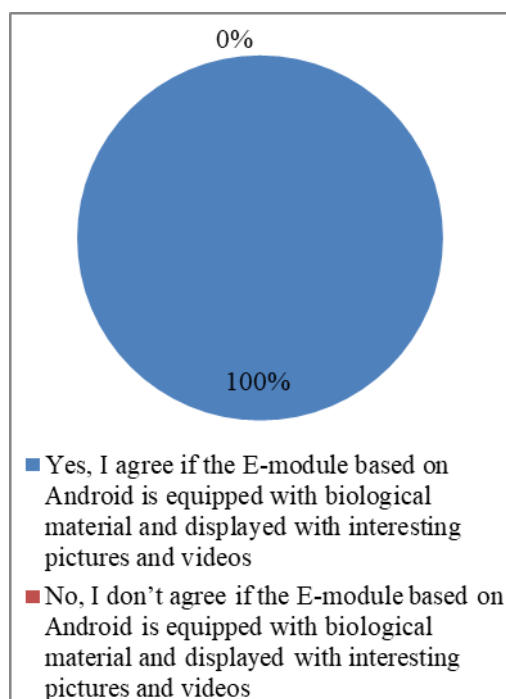


Figure 7. Students who agree if the e-module based on android -equipped with pictures and videos.

B. Discussion

The results of the interview with a biology teacher in SMAN 3 Padang, the students in SMAN 3 Padang are allowed to use a smartphone at the school to find references in learning. The students learning biology material by used the books, modules, worksheets, and articles originating from the internet. Electronic learning materials based android such as e-module that can be used on student's smartphones are not available yet. Teachers should have able to develop electronic learning materials based on android because at every time students use a smartphone for various activities. Akbar and Razak (2019) stated that an educator is required to have the ability to develop learning material. Learning material will be able to visualize biology learning by the characteristics and needs of students.

Besides, the learning outcomes of students as the score are also unsatisfactory, because they could not reach the minimum completeness criteria that have been determined. In line with the interview conducted by researchers. Muzari et al. (2016) stated that the interview activity is a preliminary study activity to find the problem to be examined. This was confirmed by Susilogati et al. (2014) who explained that the interview activity aimed to obtain information that was only obtained by asking respondents directly to find a problem

that requires to be investigated.

The result of the problem analysis questionnaire was distributed and filled out by 35 students of Class XI MIPA 5 in SMAN 3 Padang in line with the results of the interview. In the implementation of learning in school students are allowed to carry a smartphone. Students are allowed to bring smartphones with the aim of adding references in learning, but in reality, students are more active using their smartphones for activities such as rather chatting, playing games, browsing than learning. These activities make students less interested in learning because they are considered more interesting. The impact caused the student's learning outcomes (score) to be less satisfying because their time has been consumed by activities in the smartphone. This is suitable for the statement of Anggraeni and Hendrizal (2018), teenagers at this time are unconsciously very dependent on smartphones. This has a negative impact, for example playing games, playing games without time restrictions can make teens tend to be lazy to learn.

Furthermore, most students also have never used learning material in the form of an e-module based on Android. Though at school students are allowed to use smartphones. There are also difficulties in learning in some of the materials in class XI semester 1, such as the Structure and Function of Plant Tissue and Circulation Systems. The existence of these problems needs to be overcome by appropriate learning material, in this case, it is electronic learning material that is an e-module based on android. This is in line with Angela et al. (2013) to improve students' understanding and motivation, learning materials can stimulate students to be more active. In line with this Kowske et al (2010) education system when causing students to focus on achieving goals.

The results of the requirement analysis questionnaire distributed and filled out by 35 students of Class XI MIPA 5 in SMAN 3 Padang found that students agree if there were learning material in the form of e-module based android at school. In line with this Soffany et al. (2014) states that the management of learning with smartphones for a learning application is a form of technology that can be utilized as an instructor for students in learning. The students agreed if the e-module based on android consists of the opening pages, cover, menu, profile, introduction, instructions for use, core competency, basic competency, and indicators, learning activities, practical activities, video learning, evaluation, evaluation key, and bibliography.

Besides, the students also agreed that the e-module base on android equipped with biological material and displayed interesting pictures and videos for learning because it makes

it easier for students to understand the material on a smartphone. In line with this Amalia and Bintari (2016) state that the use of pictorial media stimulates students' feelings to be able to understand. The statement was reinforced by Mathew and Alidmat (2013), that the use of audio as a visual method of teaching and learning, can improve the learning environment in the learning process as a pleasant learning experience.

IV. CONCLUSION

From the data analysis conducted, it can be concluded that:

1. The student learning outcomes tend to be low because there are no electronic learning materials used, such as an e-module based on android. E-module based on android will be able to access on a smartphone.
2. The presence of an e-module based on android is expected to increase a student's attention and motivation when using a smartphone.

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