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Problem Analysis and Needs E-Book Based on Android of Biology Materials in SMAN 3 Padang

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Abstract – High-quality human resources are needed by all levels of society and the country. In this 21st century, we know the term millennial generation, this generation is generally found among students who are still teenagers. The student is very familiar with using a communication device in the form of a smartphone. The use of smartphones in schools as educational media needs to be optimized. The purpose of this study is to describe the problem analysis and the need for e-book based on android biological material. This type of research uses descriptive qualitative analysis by data collection, data analysis, and conclusions. Based on the results of data analysis it can be stated that: 1) the author's interview with biology teacher at SMAN 3 Padang on April 23, 2019, stated that the unavailability of teaching materials in the form of an e-book based on android. 2) learning materials used during the learning process in the form of LKPD, books, modules, and browsing from the internet. 3) Students are allowed to carry a smartphone at school. 4) the learning process during the use of teaching materials as a whole has not been able to visualize the material structure and function of animal tissues and digestive systems as evidenced by the student questionnaire 23.76% and 20.79%. 5) learners agree if teaching material is in the form of an e-book based on android at school.

Keywords – Analysis, Android, E-Book, Needs, Problems.

I. INTRODUCTION

High-quality human resources are needed by all levels of society and the country. This is indicated by the higher standard of education in the 21st century today. Therefore, we are required to follow the development of age at this time. Besides, the rapid development of technology and information, including in the field of education, also increasingly encourages a country to improve the quality of existing education (Amalia, et al. 2016). In the 21st century, we know the term generation millennials, this generation, especially among students who are still teenagers, have used many communication devices in the form of devices.

Gawai is a small electronic device such as a smartphone with a variety of special functions (Anggraeni and Hendrizal, 2018). According to Muqarrobin (2015), it is stated that one of the learning tools that can be used in learning is a smartphone. In line with the opinion of Marta, et al (2018) smartphones can be used as a learning medium, because they refer to the use of information devices and handheld technology and can move because it can be used online or offline.

The smartphone is massive and has become a part of student life. Among smartphone students, it has a huge influence on their daily lives in spending time on social media such as Facebook, Instagram, WhatsApp and so on. As a result, the participants lost time to study. this has an impact on learning activities and outcomes. In the opinion of Cahyana (2018) states that the use of technology in the form of communication equipment such as a smartphone is one of the efforts to create meaningful learning processes and

improve the quality of student learning outcomes. This is one of them the use of instructional media in the form of electronic books, abbreviated with e-books.

An e-book is a textbook that is converted to a digital format, which means a learning environment that has an application that contains teaching resources and stores a multimedia database on topics in a book (Anwar, 2019). According to Ohene-Djan (2003) defining -e-books based android interactive contains a network of digital information units consisting of text, graphics, videos, animations and questions all of which are packaged in the form of visualization of animation Adobe Flash Professional CS6 combined in one program and equipped with attractive colors. Adobe Flash Professional CS6 is one of the software the most widely used to create multimedia that can be stored on smart mobile phones to make it more practical (Pranowo, 2011).

Furthermore, e-book based on android can be used as an alternative as learning material for students.learning materials are -e-book based android expected to increase the interest and motivation of students in a better learning process (Wijaya, et al. 2017: 2). In line with Angela, et al. (2013) that to improve students' understanding and motivation by choosing teaching materials that can stimulate students to be more active. This is where the actual role of teaching materials can make the curiosity of students better understand the material. In the opinion of Sakat (2012: 877) that learning media in the learning process is very effective and can be implemented in the world of education. One alternative electronic teaching materials used in biological material is one of them using teaching materials in the form of an e-book based on android.

Android is a software and framework operating system (OS) for mobile and tablet devices based on the kernel Linux (El-Sofany, 2014). Android is a-based operating Linux system intended for mobile devices that have many other features such as, office, video, e-book, digital book reader, and so on. (Muhammad et al, 2015). Judging from the preliminary data, it showed 93.69% in July 2019 utilizing the system Android as a supporting operating system used in Indonesia and growing in dominating the smartphone market (Statcounter, 2019).

System android that was developed as an application in a smartphone is expected to be able to produce learning material that is representative (Lee, et al. 2013). Following Nurjanah's opinion (2015), it is stated that learning materials e-book based on Android can ease, facilitate the delivery of learning. According to Shiratuddin (2003) in Ristiyowati, et al (2012) which examines e-book technology and its benefits in the world of education, namely the use of e-books can increase interactions between educators and students in distance learning.

Along with the increasingly sophisticated science and technology advances in the 21st century, it is necessary to create innovations in the form of learning materials e-book based on android so that students are more active, efficient, and more enjoyable so that the quality of learning becomes better. This is reinforced by the opinion of Nova, et al, (2018) stating that with the innovation and variants of learning materials in the learning process, it is expected to stimulate students to be more motivated in learning.

The purpose of this research is to describe the analysis of problems and needs of an e-book based on android that is used in biological material. This is done as a basis to obtain concrete data to develop e-book in based android following the needs of students for the achievement of learning objectives.

II. Research Methods

This type of research uses descriptive qualitative analysis by collecting data, analyzing data, presenting data and drawing conclusions. This research was conducted at SMAN 3 Padang. The participants of this study were one biology teacher and 35 students of XI MIPA 7 class to 35 people. Data collection uses a list of questions for interviews with the biology teacher, and closed questionnaires for students 'problems, and closed questionnaires for students' needs.

III. Results And Discussion

A. Results

Based on the results of interviews with biology teacher at SMAN 3 Padang on April 23, 2019, it is known that:

1. Teaching materials in the form of an e-book based on android on biology subjects are not yet available at SMA N 3 Padang.
2. Learning materials used are printed books, LKPD, and browsing from the internet.
3. Students are allowed to bring smartphones to school.
4. Student cognitive learning outcomes are quite good, but there are still a large number of students whose learning outcomes are low under the minimum completeness criteria (KKM) set by the school.

The results of the problem analysis questionnaire were distributed to 35 students of class XI MIPA 7 at SMAN 3 Padang.

1. Students had difficulty with biological material in semester 1 of class XI MIPA 7. With the following percentages. Cells 17.82%, structure, and function of plant tissue 18.82%, structure and function of animal tissue 23.76%, motion system 6.93%, circulation system 11.88% and digestive system 20.79% can be seen in Figure 1.

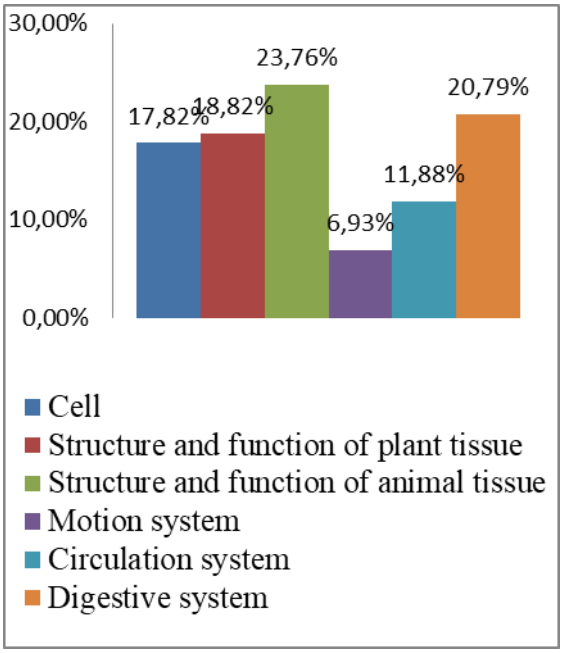

Figure 1. Students experiencing difficulties regarding biological material in class XI semester 1.

2. As many as 94.29% of students have based on smartphone android and 5.71% who have a smartphone-based iPhone Operating System (IOS) can be seen in Figure 2.

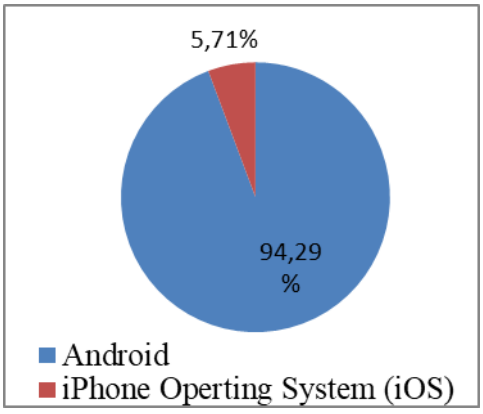

Figure 2. Students have smartphone-based on android and smartphones based on the iPhone Operating System (IOS).

3. Students have never used e-book based on android biology material with a percentage of never using 57.14% and have used 42.86% can be seen in Figure 3.

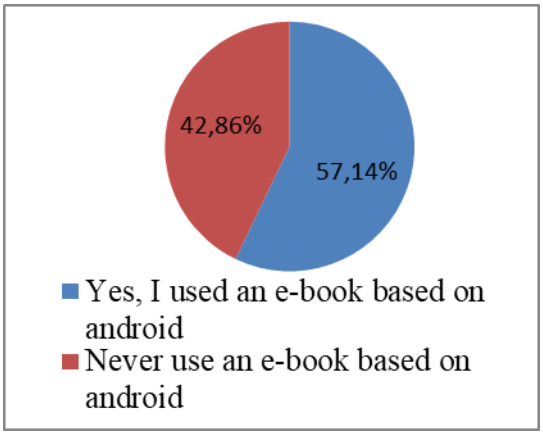

Figure 3. Students have never used an e-book based on android.

4. Students want to have teaching materials in the form of an e-book based on android to improve learning achievement with a percentage of 82.86% and disagree with the percentage of 17.14% can be seen in Figure 4.

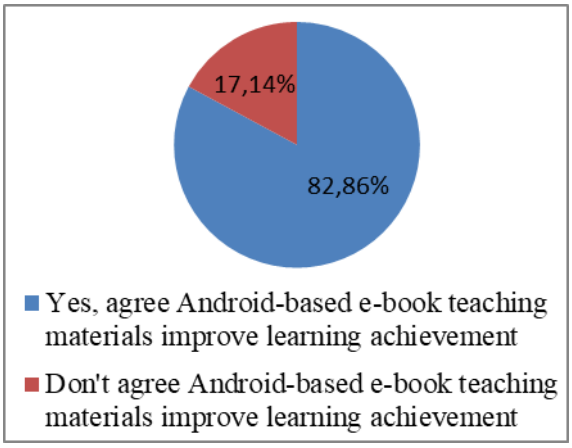

Figure 4. Students want to have teaching materials in the form of an e-book based on android.

5. The use of-based smartphone android by students that are used in daily life with the percentage of chatting (27.89%), browsing (26.92%), playing games (24.04%) rather than learning (21,15%) can be seen in Figure 5.

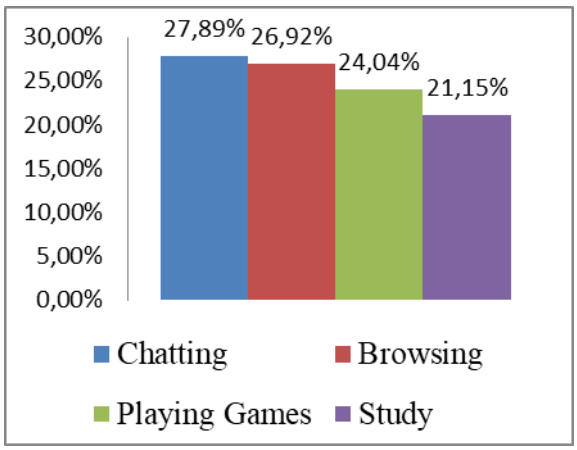

Figure 5. Student activities in utilizing a smartphone.

Based on the analysis of the needs of teaching materials, e-book based on android namely:

1. Students stated 91.43% agreed if teaching materials in the form of an e-book based on android at school can be seen in Figure 6.

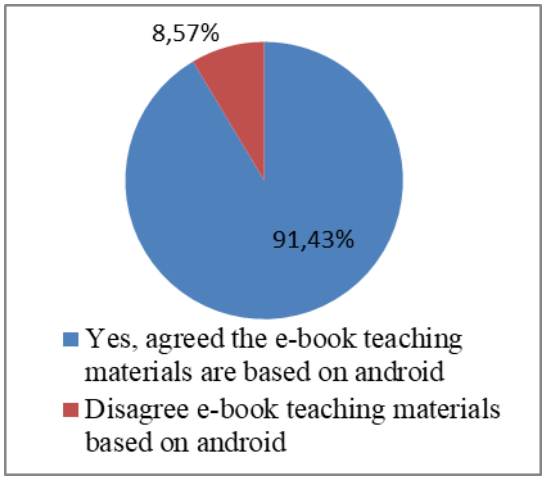

Figure 6. Learners agree that teaching material in the form of an e-book based on android at school.

2. Students stated 88.57% agreed if teaching materials in the form of an e-book based on android consisted of opening pages, covers, menus, profiles, preface, instructions for use, core competition, basic competencies and indicators, materials, practicum activities, learning videos, evaluation, key evaluation, and bibliography can be seen in Figure 7.

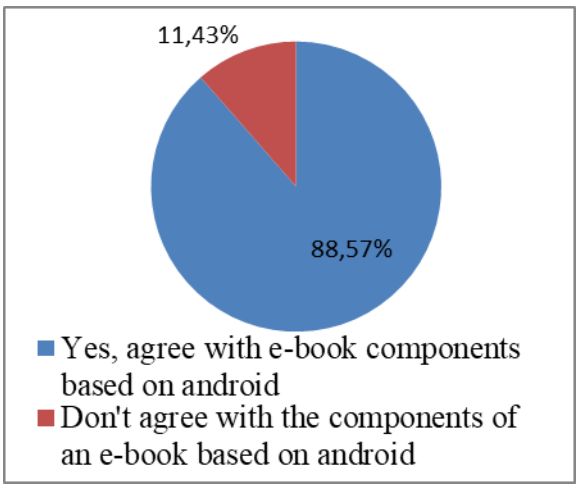

Figure 7. Learners agree with the components of an e-book based on android.

3. Students state 100% agree if teaching materials in the form of an e-book based on android are equipped with biological material, display images and videos that are interesting to facilitate students in understanding the material can be seen in Figure 8.

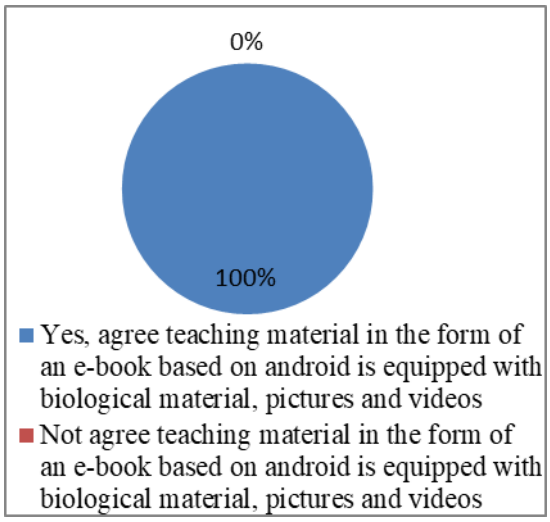

Figure 8. Students agree e-book based android features a display of images and videos.

B. Discussion

The results of interviews with biology teachers found that teaching materials in the form of an e-book based on android biology material were not yet available. Teaching materials commonly used by teachers are printed books, LKPD, browsing from the internet and students are allowed to bring smartphones at school. Student learning outcomes

obtained are still low under the minimum completeness criteria (KKM).

The low learning outcomes of students due to the absence of electronic teaching materials that can visualize biological material that is very conceptual and abstract. This becomes a great responsibility for educators to overcome problems experienced by students. Therefore, educators must be able to be innovative and be able to develop electronic teaching materials to support the learning process properly and be able to visualize biological material specifically so that students can understand the biological material.

In line with the opinion of Akbar and Razak (2019) states that an educator is required to have the ability to create or develop teaching materials that can visualize biological learning following the characteristics and needs of students. In line with the research of Najihah and Sanjaya (2014) stated that e-books interactive can be used as a source of learning for students to increase student motivation and provide better learning outcomes.

Therefore, it is necessary to have teaching materials that can visualize biological material, to increase students' understanding and motivation. And the use of smartphones in schools as educational media needs to be optimized.

The results of the problem analysis questionnaire distributed to 35 students of Class XI MIPA 7 at SMAN 3 Padang showed that problems regarding learning material for almost all biological material in class XI semester 1 were difficult for students to learn. Most students have based on smartphone android than the iPhone Operating System (IOS). Most students have never used teaching materials e-books based on android and if there are students agree to the existence of e-books based on android at school. Student activities in the use of smartphones for chatting, browsing, playing rather games than for learning.

From the activities of the use of smartphones more widely used for social media such as Facebook, Instagram, WhatsApp and so on, so that the time of students to learn is reduced. Less optimal use of the smartphone by students has a low learning outcome. The negative impact experienced by the abuse of smartphone is reducing learning competence in the cognitive realm as well as reduced student reading power (Marpaung, 2018).

This, in line with the opinion of Guntarto (2011) states that the use of smartphone can spend the time they have just to socialize through social media, playing games, and browsing, so that the time they have to learn is reduced. The use of smart mobile communication devices can be used as an educational medium to facilitate students in understanding biological material.

According to Zheng, et al. (2015) smartphones nowadays, are not only used by users as a communication medium but can be used as reliable and user-friendly learning materials as well as e-books based on android. Therefore, to overcome the problems of students need innovation in teaching materials by an educator in solving problems experienced by students. In line with the opinion of Rahmi, et al, (2018) states that an educator must be able to prepare teaching materials before learning activities begin so that the problems of students in the learning process become systematic, effective and attractive to students.

The results of the needs analysis questionnaire showed that students agreed if there were teaching materials in the form of an e-book based on android at school. Learners agree with the components of an e-book based on android. Learners agree if the e-book based on android is equipped with biological material with interesting images and video displays to facilitate students in understanding the material. In line with the opinion of Huang (2012) to improve students' understanding of the need for e-books interactive which contains contexts related to the needs of students and has components such as images and videos that attract students.

IV. CONCLUSION

1. Student learning outcomes are low because there are no teaching materials that can visualize biological material.
2. The use of the smartphone by students is not optimal in their use as educational media.
3. Students need electronic teaching materials on their smartphone such as e-book based on android.
4. The existence of e-book a based android expected to increase the attention and motivation of students in the use of smartphones for learning materials.

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