

LITERATURE STUDY ABOUT APPLICATION ANDROID MEDIA ON BIOLOGICAL LEARNING PROCESS

Mahiaka Dwi Atmaja

Biology Education, Faculty of Mathematics and Natural Sciences, Universitas Negeri Surabaya
Jalan Ketintang, Surabaya 60231
Email: mahiakaatmaja@mhs.unesa.ac.id

Raharjo

Biology Education, Faculty of Mathematics and Natural Sciences, Universitas Negeri Surabaya
Jalan Ketintang, Surabaya 60231
Email: raharjo@unesa.ac.id

Abstracts

In the learning process needed a good strategy to achieve learning goals. One of them is the use of media so that the learning process runs well. The development of the times has brought the world of education more advanced because of the floating technology and information. Android is very popular and many people use it among the people. Many Android applications have been developed for education. In biology, there are a lot of material and need to help overcome material that is still abstract or unclear. A strategy is needed to overcome this, one of which is the use of Android application media. Literature study that have been published say that Android application media can significantly improve students' understanding. The media is also very effective because it has the characteristics of being flexible to use anytime and anywhere, interactive and communicative that can attract students, and make it easier to understand the material so that knowledge is more concrete and can support student learning outcomes. The effectiveness of android applications can be seen from the results of media user satisfaction and can be seen in research that has used applications. This can be seen from the completeness of the learning outcomes of students reaching $\geq 75\%$.

Keywords: *learning media, Android application, biology material, learning process, learning goals.*

PRELIMINARY

Permendikbud No. 22 of 2016 concerning basic and secondary education process standards states that knowledge will be possessed through the activities of knowing, understanding, applying, analyzing and evaluating (Kemendikbud, 2016). Learning is essentially a process of interaction between students and their environment so that there is a change in better behavior. Factors that influence the process of interaction are internal to the individual and external factors coming from the environment where the task of an educator is to condition the environment to support learning (Yektyastuti and Ikhsan, 2016).

To achieve the learning objectives, special steps are needed. One of them is the use of media. In learning, media can be used as a communication tool to convey information about teaching materials to students because it makes learning more interesting (Kustiawan, 2016). The media is divided into two. The first is simple media that is easy to get, easy to use and the level of complexity is not too high as two and three dimensional media in the form of photos and other objects. Second, modern media

are more electronic, complex and require special abilities in the making and use. For example radio, LCD, television, computer's, telephone, etc.

The development of *mobile phones* now known as smartphones can also be used for media using available applications. Android applications are *software* in smart phones that are increasingly popular in various circles. The development of Android is very rapid so it is very supportive of daily activities. Of the many benefits, more and more are also using Android *smartphones*. The use of Android smartphones is very popular in the world and certainly not left behind in Indonesia. The Ministry of Communication and Information and UNICEF (2014) concluded that 98% of children and adolescents (10-19 years) surveyed about the internet, 79.5% were Android users. From these data, it can be seen that Android usage is quite high at that age among high school students.

In its application, the use of Android in the community is now diverse in use. Depending on the background of the owner of the smart phone. Currently there are many applications that offer to support student

learning to make it easier to find the information needed. However, most students only use it for social media and entertainment and only a few use it as learning (Muyaroah and Fajartia 2017).

In biology, some of the material has a wide range of material. As in the material diversity of living things whose discussion is quite extensive and varied (Islamadina, 2016). So it needs a strategy to overcome this. In this era many android applications contain topics or teaching materials such as Biology learning (Firmansyah and Ambarwati 2018). Examples of these applications such as *Animalpedia*, *Rumah Siput*, *Burungnesia*, and others that can be downloaded and installed for free from Play Store. According to Muyaroah and Fajartia (2017) learning with Android makes students happy because it can be packaged into games and is more flexible, making it suitable if used as a supporter of biological material that can be used at any time and can come from any environment.

In the process of learning applications can be used as a communication medium containing teaching material. The use of the application provides a different learning experience if traditional learning. The ability and knowledge of students after receiving learning or learning experiences are also called learning outcomes. This paper will examine the effectiveness of using Android applications in learning biology towards the learning process using the literature study method from existing research or information.

METHOD

The method in this article uses literature study by examining several journals and information related to the use of Android applications in learning. The results of the literature study will be used to identify the effect of the Android application on the results of the learning process on students.

RESULTS AND DISCUSSION

In learning, media can be used as a communication tool that makes students more interested in the teaching material information delivered. According to Kustiawan (2016) Media has the following functions: (1) General function, the media becomes the messenger of material from the speaker to students to achieve learning objectives; (2) Special functions, the media can overcome the limitations of space, time, cost, and attract attention and can make learning activities effective. So it can be seen how the role of the media is very influential in the learning process. This is in line with the research

of Yektyastuti and Ikhsan (2016). Educators are greatly helped by the presence of the media because it can help educator limitations in teaching strategies and materials in conveying information and class time in class. The media can overcome the diversity of students' backgrounds so that they can provide encouragement, experience, and create a common perception among students (Ali, 2009). Media types vary from simple to modern.

The current era of globalization is a lot of technological developments that are increasingly advanced. One of them is in the field of education is the media. Modern media such as LCDs, computers, smart phones and others are increasingly sophisticated and growing. Mobile Learning or M-Learning is learning using computing devices including smartphones, personal digital assistants (PDAs), and similar handheld devices (Bahera, 2013). M-learning can be done to access learning materials, referrals and applications related to open source anytime and anywhere.

Android is a software (software) which is a platform for mobile devices (mobile devices) which is very popular among the public as in smartphones currently in circulation. Android in its use is superior if used in a learning model because it has complete facilities, free, open, data speed, and flexibility in use. In the development of the application, it is necessary to have good requirements in terms of visual design, user interaction, functional, performance and stability, and Google Play to ensure that the application is ready to be published (Mulyana, 2012). Agree with this statement Elissavet and Economides (2000) that the features in the application media are said to be feasible must meet the components in terms of use, the text must be proportional and consistent, the graphics must be in accordance with the background and there is animation. At this time a lot of Android applications contain topics or teaching materials such as learning one of them is Biology material (Firmansyah and Ambarwati, 2018). Examples of these applications such as *Animalpedia*, *Rumah Siput*, *Burungnesia*, and others that can be downloaded and installed for free from Play Store.

In biology, some of the material has a fairly broad scope. Lots of material is still abstract, such as processes or an invisible phenomenon, so there is a need for media that can support it. Istiawan and Kusdianto (2018) said that the Android application can help educators in explaining concrete material that is concrete because students can be actively involved in carrying out activities in the application features so that it is not only limited to wish.

According to Muyaroah and Fajartia (2017) learning with Android makes students happy because it can be packaged into games and is more flexible, making it suitable if used as a supporter of biological material that can be used at any time and can come from any environment. Android applications can also be done independently or in groups and at school or outside school because they can be accessed easily and are practical to use so it is suitable if students want to do practical work or field activities to support the learning process. The use of Android can be used anywhere because Android is formed on Linux software that is open so that application makers can create according to their own creations (Islamadina et al, 2016). According to Setiawan and Wiyardi (2015), learning using media can make students not easily get bored while learning and tend to be fun and can improve learning outcomes. Here are examples of applications Rumah Sipu applications in the Playstore (**Figure 1**).

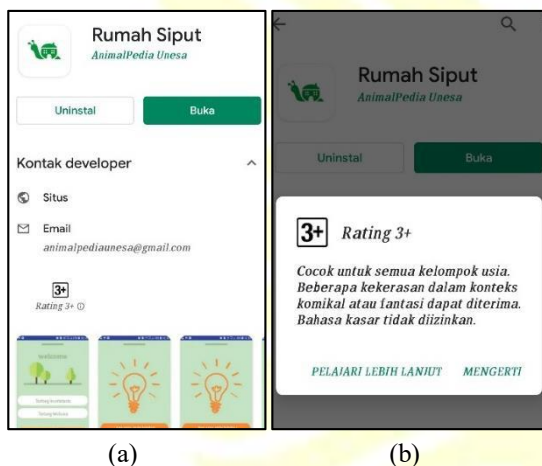


Figure 1. *Rumah sipu* on playstore (a) The *Rumah Sipu* home page on playstore and (b) The *Rumah Sipu* application belongs to the category “3+” which indicates that it is good for all age groups, the context is acceptable, the language is not abusive.

In the playstore there is a classification of applications with a rating of 3+ which means that it is good for all age groups, the context is acceptable, the language is not rude. There are also android applications on other biology learning (**Figure 2**).

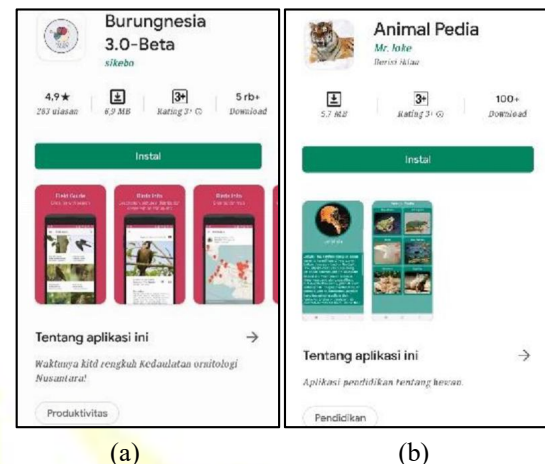


Figure 2. Android based application biological material on playstore, (a) The *Burungnesia* application gets a rating of 4.9 points from a 1-5 point range which indicates that the user is satisfied with the application and (b) The *Animalpedia* application has a file size or capacity of 5.7 MB (megabytes).

The android application has a survey on the user so that it can be known how good or what benefits the user gets. The assessment has a 1-5 point range which is represented by giving stars according to user satisfaction. And users can provide comments on the application. In the *Burungnesia* application, it seems that it gets a near-perfect rating of 4.9 points and gets lots of good comments on the application. Yektyastuti and Ikhsan (2016) said that a decent android application that has been implemented in learning can have an influence on improving academic performance on students' motivation and learning outcomes.

Learning outcomes are the abilities that students have after they have received their learning experience. The change in behavior in a person can be observed and measured in knowledge, attitudes and skills (Hamalik, 2007). Assessment is the process of gathering and managing information to measure student learning outcomes (Permendikbud, 2016). In some studies that use the Android application media on learning, the assessment uses experiments with the results of the pre-test (value before treatment) and post-test (value after treatment). For the most data collection methods using the Research and Development (R&D) development model, namely research by Amin and Mayasari (2015), Yektyastuti and Ikhsan (2016), Muyaroah and Fajartia (2017), Prabowo et al (2016), Chahyanto (2019)). Also the ASSURE development model by Firmansyah and Ambarwati (2018) and Islamadina et al (2016). For the evaluation of learning outcomes can be known with a

variety of one of them with the t test on the SPSS application through the results of pre-test and post-test with a level of accuracy of 0.05% and a gain score > 0. (Islamadina et al, 2016). In research that has been conducted and published states that an increase in student learning outcomes after receiving treatment in the learning process using the Android application media seen from the results of the pre-test and posttest.

Research by Firmansyah and Ambarwati (2018) regarding the use of the Rumah Siput application in high school students is categorized as effective as seen from the research data from learning outcomes with completeness value of $\geq 75\%$ and the results of the effectiveness of the biology learning reach an average completeness of 84%. Sudarwan (1995) also confirm that the results of many studies prove the effectiveness of the use of media can help in the learning process especially in the direction of improving student achievement. Like Amin Dana Mayasari (2015), Prabowo et al (2016), Susilo (2017), Chahyanto (2019), Putra et al (2017), Handayani and Suharyanto (2016) have the same research background regarding learning using applications Android which shows that there is a significant influence on student learning outcomes and is effectively used for the learning process using the Android application. Of course the application has been tested for eligibility and validity.

CONCLUSION

From some studies show that the use of Android applications is very effective in the learning process and can improve student learning outcomes in learning biology. Students are able to follow the learning well because the use of Android applications make students more enthusiastic, fun and makes material that is still abstract to be more concrete. In addition, the use of the Android application is very flexible, it can help students learn biology anywhere, anytime and easily accessible.

SUGGESTION

Learning to use the Android application media is highly recommended because it can have a positive impact on teachers and students. However, the implementation time can be emphasized for students to discipline not to open applications that are not in accordance with the topic of learning. The development continues so that the existing media applications need to be updated in accordance with the development of information and technology.

ACKNOWLEDGMENT

The author thanks Dra. Herlina Fitrihidajati, M.Sc., Intan Delia S.Pd., Prada W. Sanjaya S.Pd. along with colleagues who took the time to support and encourage the work of studying literature on the use of Android applications biological learning.

REFERENCES

- Ali, M. 2009. Development of Interactive Learning Media Electromechanical Medan Subjects. *Journal of Electrical Education*. 5 (1): Pages 11-18
- Amin, A. K., and Mayasari, N. 2015. Development of Learning Media in the Form of an Android Application Based on Weblogs to Improve Student Learning Outcomes of Mathematics Education IKIP PGRI Bojonegoro. *Journal of Mathematics Education Study Program IKIP PGRI*. 94 (27): Pages 12-23.
- Bahera, S. K. 2013. M-Learning: A New Learning Paradigm. *International Journal on New Trends in Education and Thei Implication*. 4 (2): Pages 23-24.
- Chyahyanto, N. T. 2019. Learning Media with Android-Based Applications to Improve Student Learning Outcomes in Biology Subjects in Class XI of Muhammadiyah 1 High School Karang Anyar. *Scientific Publications*. FKIP Muhammadiyah University Surakarta.
- Elissavet, G. and Economides, A. 2014. Evaluation Factors of Educational Software. *International Workshop on Advanced Learning Technologies*. 10 (1): Pages 113-116.
- Firmansyah, F. E. and Ambarwati, R. 2018. Development of Android-Based Media of Rumah Siput on Mollusca Material for High School Grade X. *BioEdu Journal*. 7 (2): Pages 313-320.
- Hamalik, O. 2007. *Mangajar Learning Process*. Jakarta: Bumi Aksara
- Handayani, T. S., and Suharyanto. 2016. Development of Learning Media on Static Fluid Material to Increase Interest and Learning Outcomes of Students' Cognitive Domains. *Journal of Physical Education*. 5 (6): Pages 384-389.
- Islamadina, F., Haryono, T., and Ambarwati,

- R. 2016. Validity, Practicality, and Effectiveness of Mobile Application Media Learning "Butterfly Identification" Based on Android for Class X High School Students. *BioEdu Journal*. 5 (3): Pages 352-360.
- Setiawan, H. W., and Wiyardi, R. S. 2015. The Use of APP Inventor in Making Android-Based Game Education as an Independent and Interactive Learning Media to Improve Student Learning Outcomes of TITL in Basic Electricity Learning at SMK Muhammadiyah Majenang. *Journal EDUEL*. 4 (1) Pages: 24-30.
- Sudarwan, D. 1995. *Educational Communication Media*. Jakarta: Bumi Aksara.
- Susilo, M. A. 2017. Development of Learning Media Based on Android Applications to Improve Cognitive Learning Outcomes in Wheel Alignment Learning at SMK Negeri 2 Surakarta. *Thesis*. Semarang: UNNES.
- Istiawan, N., and Kusdianto, H. 2018. Effects of Android-Based Myology Teaching Materials to Improve Student Learning Outcomes of PJKR in Anatomy Courses. *Jp.jok (Journal of Education Physical, Sport and Health)*. 2 (1): Pages 13-19.
- Kustiawan, U. 2016. *Development of Early Childhood Learning Media*. Malang: Publisher Gunung Samudera.
- Kominfo and UNICEF. 2014. Digital Citizenship Safety among Children and Adolescents in Indonesia *Kominfo*. No 17. (2).
- Mulyana, E. 2012. *App Inventor "Create Your Own Android Application"*. Yogyakarta: CV AND OFFSET
- Muyaroah, S., and Fajartia, M. 2017. Development of Android-Based Learning Media Using Adobe Flash CS 6 Application in Biology Subjects. *IJCE (Innovative Journal of Curriculum and Educational Technology)*. 6 (2): Pages 79-83.
- Kemendikbud. 2016. Permendikbud No. 22 of 2016 concerning Basic and Secondary Education Process Standards. *Jakarta*: Kemendikbud.
- Putra, R. S., Wijayanti, N., and Mahatmanti, F. W. 2017. The Effect of Using Android Application Based Learning Media Against Student Learning Outcomes. *Journal of Chemical Education Innovation*. 11 (2): Pages 2009-2018.
- Prabowo, D. Y., Suprpto, E. and Safi'i, R. 2016. The Effectiveness of Android-Based Applications Using Api Gesture to Get to Know Korean Alphabet. *Journal Didacticum*. 17 (2): Pages 74-82.
- Yektyastuti, R., and Ikhsan, J. 2016. Development of Android-Based Learning Media on Solubility Materials to Improve Academic Performance of High School Students. *Journal of Science Education Innovation*. 2 (1): Pages 88-99.