Jurnal Pendidikan dan Konseling

Volume 5 Nomor 1 Tahun 2023

E-ISSN: 2685-936X dan P-ISSN: 2685-9351

Universitas Pahlawan Tuanku Tambusai

Literature Study on the Use of Android-Based Learning Media on Student Learning Outcomes at the Faculty of Engineering

Aulya Chasovy [1,*] Arief Juneirul Pratama[2], Hadid Putri B. Zurna[3], Nizwardi Jalinus[4], Waskito[5]

[1,2,3,4,5] Faculty of Engineering, Padang State University

Email : chasovyaulya17@gmail.com

Abstrak

Saat ini teknologi digital banyak digunakan dalam pengembangan media pembelajaran pendidikan. Pendidikan berbasis Android adalah contohnya. Tujuan artikel ini adalah untuk mengetahui pengaruh media pembelajaran berbasis android terhadap hasil belajar mahasiswa teknik. Artikel ini menggunakan metodologi Systematic Literature Review (SLR). Artikel review diperoleh dari Perpustakaan Nasional, Science Direct, dan Google Scholar, serta membahas dampak penggunaan media pembelajaran berbasis Android. Investigasi dimulai dengan pengumpulan studi literatur yang relevan. Setelah dilakukan evaluasi terhadap delapan artikel yang diperoleh, hasil penggunaan media pembelajaran berbasis Android menunjukkan bahwa media ini memberikan pengaruh yang signifikan terhadap hasil belajar mahasiswa Fakultas Teknik.

Kata kunci: *Media Pembelajaran, Android, Hasil Belajar.*

Abstract

Currently, digital technology id frequently employed in the development of educational learning media. Android-based education is an example. The purpose of this article is to investigate the impact of android-based learning media on the learning outcomes of engineering students. This article employs the Systematic Literature Review methodology (SLR). The reviewed articles were obtained from National Library, Science Direct, and Google Scholar, and discussed the impact of using Android-based learning media. The investigation begins with the gathering of relevant literature studies. After evaluating the eight articles obtained, the results of using Android-based learning media indicate that this media has a significant impact on student learning outcomes at the Faculty of Engineering.

Keywords: *Learning Media, Android, Learning Outcomes.*

INTRODUCTION

Along with the times, all aspects of life also developed. This development occurred both in the social, cultural, economic, artistic, and technological. One of the most rapid developments is the development of Information and Communication Technology (ICT).

ICT has a broad meaning. Information technology is an activity of collecting, processing, managing, storing, disseminating or utilizing information [11]. Communication is sharing, exchanging, talking, exchanging ideas, or providing information to someone [11]. ICT can be interpreted as the use of media in receiving, processing, and disseminating information as a communication activity

ICT can be in the form of software or hardware that is used for the process of sending or transferring data and information from one person to another or even from one place to another [15]. ICT utilizes hardware infrastructure, software and internet networks that can help humans communicate from all

directions. With the existence of ICT, it is possible for rapid communication between people in one country to another.

In today's modern era, it is very difficult for humans to avoid the development of ICT, from children to adults [4]. In addition to the social sector, the development of ICT has also penetrated the world of education. As one example, it is the school's obligation to input teacher and student data into the Basic Education Data system (Dapodik). In addition, the use of ICT can assist teachers in administration and improve the quality of their learning [4]. With e-reports, teachers can directly input student scores and can get *print-out* reports when the entry is complete, without having to write grades manually.

Utilization of ICT in education can also be seen from the use of facilities and infrastructure in learning. As a facilitator, the teacher is expected to be able to prepare learning media that can have a positive impact on students' mastery of concepts.

Learning media is an intermediary that can be used by teachers in conveying information to students [3]. Learning media can also be interpreted as tools, methods, and techniques that facilitate the process of communication between teachers and students. The media of learning can be in the form of modules, textbooks, teaching aids, documentaries, etc. [16]. The purpose of using the media is to increase the attention, thoughts, and learning motivation of students.

Advances in technology require educators to always innovate in creating learning media, in order to support students' understanding in learning theory and practice [9] . There are several things that must be considered in making learning media. Learning media must pay attention to the simplicity of language so that it is clear and easy to understand, the subject matter to be taught, the design of attractive media appearances, the suitability of the media with the learning styles of students, and interactions in learning media [10]. Matching needs of learning activities with this learning media will create effective and efficient learning so that the material delivered by the teacher to students can be understood optimally [1].

The implementation of learning carried out at universities has utilized several learning media such as *PowerPoint* , modules, films and others. The weakness is that these media are sometimes less able to attract students' interest in learning because a methods and media presented are not pleasant. This makes students feel bored and lazy to the learning process. Lack of interest in learning will affect the level of understanding to the student's learning outcomes later [2].

Learning outcomes are achievements that a person gets after getting knowledge from both teachers and environments. In addition, learning outcomes can also be interpreted as changes that occur in students after undergoing the learning process [7]. The results of this study can be a change in attitude, increased knowledge, or skills. In the learning process, the expected changes in students are of course in a better direction. Thus, learning objectives that have been designed from the beginning can be achieved optimally.

Problems in the use of media in learning process must be addressed immediately. One solution that can be done to support this learning process is to develop innovative learning media. If we review the problem regarding to the importance of delivering course material and the lack of use of innovative learning media, it is necessary to have a form of innovation using Android-based learning media.

Android is technology in the form of an operating system developed by Google [17]. Android is designed on the basis of the Linux kernel which can support the performance of touch screen electronic devices. Android can be a smartphone, cellular phone, or tablet [5] . The use of android in learning process allows students to learn anytime and anywhere.

METHOD

In this article, the researcher analyzes a number of studies that have been conducted by other researchers before. The analysis made by the author is presented in the form of an analysis table to make it

easier to understand how the Effect of Using Android-Based Learning Media on Student Learning Outcomes in the Faculty of Engineering.

This type of research is *Systematic Literature Review* (SLR). The stages carried out in the SLR are as follows:

1. Developing *Research Questions* (RQ)
2. Relevant literature search
3. Doing *Reviews*
4. Analysis of findings

Research questions (*Research Question*) in this article is: "How does the use of Android-based learning media affect student learning outcomes?".

The author collects articles to be reviewed from several sources, namely *Google Scholar* and *Science Direct* . The reviewed articles are published in 2016-2022. The articles are sorted based on variables related to the pre-designed RQ.

RESULTS AND DISCUSSION

Some of the results of the data obtained from the literature review regarding the application of android-based learning media to student learning outcomes in the engineering faculty can be seen in the following table:

Table 1. Results of article review on the impact of Android-based learning media on learning outcomes on engineering students.

No	Writer	Title	Research methods	Review results
1.	Arrobbani (2016)	The effect of developing android-based learning media on engineering physics courses for mechanical engineering students at Surabaya State University	One group pre-test post-test design.	The use of Android-based learning media developed in this study has proven to be effective and can be implemented for students majoring in Mechanical Engineering, Surabaya State University because learning media is packaged in a more attractive way with materials and questions that can be brought and done anywhere. Besides that, it can increase students' learning motivation. Judging from the average percentage of the results without using the application is 69.3% while the result using the application is 80.8%, this shows an increase in students' learning outcomes by 11.5% after studying and working on questions using the Android application. On the results of the paired – sample t-

				Test the result is t count = 2.9, this value is different from the t table value = 1.729, then Ha is accepted and H0 is rejected.
2.	Abraham (2021)	Implementation of Android-Based Media Smart With Pneumatics V.1.0 In Pneumatic Control System Learning	One group pre-test post-test design.	After conducting research on students in the Pneumatics and Hydraulics course, it was found that there was a significant effect. The application of Android-based media "Smart with Pneumatics V.1.0" can improve student learning outcomes. Student scores increased from 29.30 in the pretest to 67.36 in the posttest. The average value of N Gain obtained is in the medium category.
3.	Khoer & Algifari, (2021)	Development of Android-Based Learning Media To Improve Student Understanding In Diesel Motor Courses	R and D method uses ADDIE development model	The results of testing the effectiveness of using the modules that have been developed in this study indicate that Android-based learning media on improving students' learning outcomes in diesel motorbike courses has a good impact. This increase can be seen from the comparison of the scores of 2019 undergraduate automotive engineering education students as many as 40 people. At the pretest stage, the average student score was 31.20, while in the posttest the student's learning outcomes increased to 37.80.
4.	Supraptono (2020)	Development of Android-Based Learning Media in Basic Physics Courses	4-D *(Define, Design, Develop, and Disseminate)*	After successfully conducting validity and practicality trials in developing Android-based media, the effectiveness test of using media showed that there were differences in learning outcomes between students who used the media (experimental class) and students who did not use it

				(control class). The experimental class got a result for the posttest of 80.75, while the control class got 68.37.
5 .	Mubarak (2021)	Development Of Android-Based Starter Motor Learning Media For Improving Students' Abilities And Knowing Its Learning Motivated Achievements	One group pretest-posttest uses ADDIE method.	The results of the data analysis that has been carried out, namely significance (T-test), a value is obtained which states that the results of the Pre-Test and Post-Test have a significant difference. This shows that the difference in the value of the initial test and the final test has increased significantly, the increase in value is obtained as a result of the treatment given, namely the provision of android-based learning media, Reduction of Motor Starter Types.
6.	Suprapton (2020)	Development of EPS (Electric Power Steering) System Interactive Learning Media Based on Android Applications to Improve Learning Outcomes	ADDIE model development research method. Design Try the One-Group Pretest-Posttest Design product.	The use of learning media for the EPS system based on android applications has proven to be effective in increasing learning outcomes. This is evidenced by the paired T test which was carried out with the results t count = 11.58 and t table = 2.09 (t count > t table) at $\propto$ = 5% (t count > ttable), so it was found that Ha was accepted and Ho was rejected that is, there is a difference between the results of the pretest and posttest.
7.	Raqibs (2020)	Optimization of Android Media To Enhance The Ability To Read The Wiring Diagram Of The Conventional	One Group Pretest - Posttest design uses ADDIE development research method.	The media for the basic competencies of the Android-based conventional ignition system can improve students' learning achievement in the subject of the engine electrical system to

		Ignition System		increase students' learning achievement. This is evidenced by the pretest average score of 50.15 and the posttest average score of 90.07. The average N-gain score obtained from this study was 0.41 which was categorized in the medium category.
8.	Sefriani (2022)	Android-Based Blended Learning Media for Computer Maintenance Lectures	R&D method using the 4D model.	In this study, the use of Android-based media in the learning process has a significant impact on student learning outcomes. In addition, the use of this media also increases student interest in carrying out the lecture process. The use of media in learning provides a new learning atmosphere for students so that it motivates students to work on assignments given by lecturers. The learning media using Android used in this study were tested beforehand, and proved to be valid and practical for use in computer maintenance lectures.

Article searches were carried out using Google Scholar and Science Direct search engines. On these two sites, the author takes several steps to obtain the required articles. The stages are identification, screening, and eligibility. This stage the author did until eight articles about Android-based learning media that could be reviewed. These articles were chosen because they have a close relationship with the RQ that has been designed before.

Literature search obtained from the Google Scholar web using keywords: learning media, android, learning outcomes. An example of displaying search results using Google Scholar can be seen in the following image:

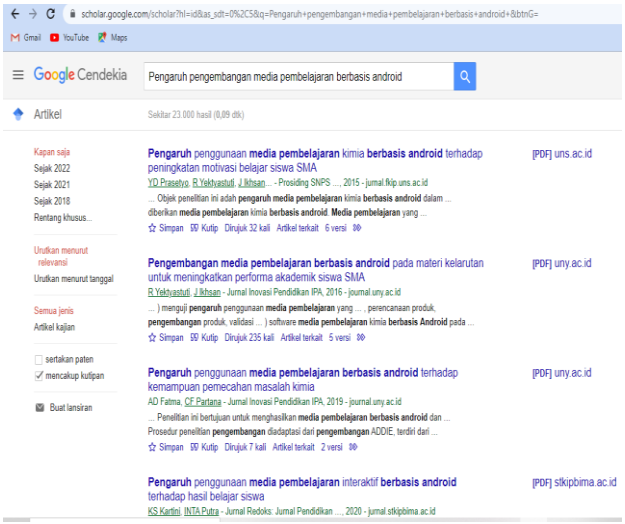

Figure 1 Search results on Google Scholar

On Science Direct web using keywords: Android-based learning media, learning outcomes. An example of displaying search results using Science Direct can be seen in the following image:

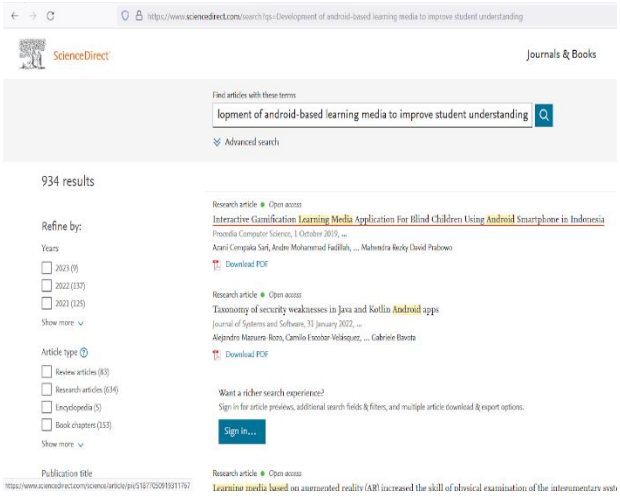

Figure 2 Search results on Science Direct website

After reviewing the eight articles, the authors present the findings obtained in the form of an analysis table. Based on the analysis table, it can be seen that there is an influence found from the use of android-based learning media for engineering students.

Android-based learning media helps teachers or educators in presenting learning material to make it more effective. In addition, Android-based media also have a positive impact on students. This can be seen from the increased learning outcomes of students in engineering faculties who use android-based learning media, in every research that has been conducted by these researchers.

CONCLUSION

Based on the the literature review that has been carried out by the authors, it can be concluded that Android-based learning media has a significant impact on improving students' learning outcomes. The author suggests that the Android-based learning media always be developed do that it can make the learning process more interesting for students.

AUTHORS' CONTRIBUTIONS

All authors contribute in searching for relevant articles, analyzing the information contained in the articles, making articles, revising them, until the articles are ready to be submitted.

REFERENCES

Apriansyah, M. R. (2020). Pengembangan Media Pembelajaran Video Berbasis Animasi Mata Kuliah Ilmu Bahan Bangunan Di Program Studi Pendidikan Teknik Bangunan Fakultas Teknik Universitas Negeri Jakarta. Jurnal PenSil, 9(1), 9–18. https://doi.org/10.21009/jpensil.v9i1.12905

Arrobbani, A. (2016). Pengaruh Pengembangan Media Pembelajaran Berbasis Android Pada Mata Kuliah Fisika Teknik Untuk Mahasiswa Teknik Mesin Universitas Negeri Surabaya. Jurnal Pendidikan Teknik Mesin UNESA, 5(02), 250399.

Hamid, A. H. (2020). Media Pembelajaran. Medan: Yayasan Kita Menulis.

Huda, I. A. (2020). Perkembangan Teknologi Informasi Dan Komunikasi (TIK) Terhadap Kualitas Pembelajaran Di Sekolah Dasar,Jurnal Pendidikan dan Konseling,Vol 2 No 1,2020: hal 121. Jurnal Pendidikan Dan Konseling (JPDK), 2(1), 121–125.

Ibrahim, fakhri, kustija, jaja, Purnawan, P., & Berman, E. T. (2021). Implementation of Android-Based Media Smart With Pneumatics V.1.0 in Pneumatic Control System Learning. Journal of Mechanical Engineering Education, 8(2), 127–134.

Khoer, M., & Algifari, M. M. (2021). Development Of Android-Based Learning Media To Improve Student Understanding In Diesel Motor Courses. 8(2), 135–142.

Matondang, Zulkifli; Djulia, Ely; Simarmata, J. (2019). Evaluasi Hasil Belajar. Medan:Yayasan Kita Menulis.

Mubarak, I., Permana, T., Sutia, I., Sriyono, M.N, R. A., & Andriani, R. (2021). Development of Android-Based Starter Motor Learning Media for Improving Students 'Abilities and Knowing its Learning Motivated Achievements. Journal of Mechanical Engineering, 6(1), 22–35.

Norman, E., & Furnes, B. (2016). The relationship between metacognitive experiences and learning: Is there a difference between digital and non-digital study media? Computers in Human Behavior, 54, 301–309. https://doi.org/10.1016/j.chb.2015.07.043

Nurfadhillah, S. & 4A PGSD. (2021). Media Pembelajaran. Jawa Barat: CV Jejak, Anggota IKAPI

Nuryanto, H. (2012). Sejarah Perkembangan Teknologi Informasi dan Komunikasi. Jakarta Timur: PT Balai Pustaka.

Raqib, F., Majasan, A., Darmawan, B., & Wiyono, A. (2020). Optimization Of Android Media To Enhance The Ability To Read The Wiring Diagram Of The Conventional Ignition System. 7(2), 193–200.

Sefriani, R., Sepriana, R., Radyuli, P., & Hakiki, M. (2022). Android-Based Blended Maintenance Lectures Learning Media for Computers. Journal of Education Technology, 6(1), 119–125.

Supraptono, A. W. (2020). Pengembangan Media Pembelajaran Interaktif Sistem EPS (Electric Power Steering) Berbasis Aplikasi Android Untuk Meningkatkan Hasil Belajar`. Jurnal Pendidikan Teknik Mesin, 20(1), 98–101. http://journal2.um.ac.id/index.php/jpe/index

Susanti, I. A. (2021). Media Pembelajaran Berbasis Teknologi Informasi dan Komunikasi.

Ummah, S.K. (2021). Media Pembelajaran Matematika. Malang: Universitas Muhammadiyah Malang.

Yusuf, D., & Afandi, F. N. (2020). Aplikasi Absensi Berbasis Android Menggunakan Validasi Koordinat Lokasi Dan Nomor Handphone Guna Menghindari Penularan Virus Covid 19. EXPERT: Jurnal Manajemen Sistem Informasi Dan Teknologi, 10(1), 16–22. https://doi.org/10.36448/jmsit.v10i1.1492