e-ISSN 2963-2870
Vol 3 2022

THE CONCISE LATEST REPORT ON THE USE OF MOBILE LEARNING TO SUSTAIN OPEN AND DISTANCE EDUCATION: LITERATURE REVIEW AND BIBLIOMETRIC ANALYSIS

Erman Arif[1], Imelda Paulina Soko[2]

[1,2]*Universitas Terbuka (INDONESIA)*

Abstract

Currently, numerous universities use an open and distance education system. In various countries especially in the Asian continent, there are many universities using mobile learning as learning aid media in learning process, Universitas Terbuka is one of them. However, the Speedtest Global Index reports that the speed of Indonesia's mobile internet network is 21.35 mbps in July 2021, compares to other countries in Southeast Asia, Indonesia's mobile internet speed is the slowest. Therefore, a bibliometric analysis was carried out to evaluate whether the application of mobile learning in the higher and distance education system in Indonesia was appropriate. As a recommendation, the results of this analysis provide further guidance and provide new arguments for the application of mobile learning in Indonesia.

Keywords: bibliometric analysis, open and distance education, mobile learning

1 INTRODUCTION

The COVID-19 pandemic has led to increased online learning at all levels of education, from kindergarten to higher education. Indeed, in the last 2 decades several universities have offered online education, but distance learning methods have become an absolute must, especially when face-to-face learning is discontinued for the common good. Distance learning, also known by various names such as distance education, e-learning, mobile learning, or online learning, is a form of education in which there is a physical separation between teachers and students during the teaching and learning process (Simonson, 2002). Distance learning is also an instructional practice that effectively utilizes various tools and technologies to enrich the student learning experience (Klein et al., 2016) and to facilitate student-faculty (especially with lecturers) and student-student communication (Alawamleh et al., 2022). The minimum technology requirements for distance learning are a computer, mobile device (cell phone), or webcam, some form of listening device, a video conferencing application such as WebEx or Zoom, a Microsoft Windows or Apple operating system, and a stable internet connection with a speed of approximately 56K (56,000) or more (Jabnoun & Al-Tamimi, 2003).

Data on the number of universities/comparisons/increases in the number of distance learning methods. Advantages and disadvantages of distance learning methods. Compare with universities in Indonesia. Universitas Terbuka?

Keegan (1980); Perry and Rumble (1987) were the initial researches of the concept of distance education (distance education, distance learning) with the main characteristics: a) the separation of lecturers and students during the teaching and learning process; b) use of educational media (print, audio, video and computer); c) the important role of educational organizations in planning, preparation of study materials and student services; d) the availability of two-way communication; and e) individualization of the learning process (self-study) (Agung, 2007). In Indonesia, the Universitas Terbuka (UT) is a state university that provides education through an open and long-distance system through various media, such as print media (modules) and non-printed (audio/video, computer/internet, radio broadcasts, and television).

It can be concluded that the learning system at UT does rely on technology. The materials, discussions, and assignments are carried out through Online Tutorials (Tuton).

2 METHODOLOGY

To develop the bibliometric analysis, we counted on three sources of information: (1) international research journals, (2) internet search engines with keywords related to mobile learning in higher and distance education, and (3) the knowledge of the authors about the analyzed areas.

This section consists of three parts. The first provides an overview of the adoption and implementation of mobile learning, then it followed by a critical and analysis of existing mobile learning models and frameworks, and lastly, a framework for higher and distance education system in Indonesia informed by critical findings is delivered.

The results of the synthesis of studies related to mobile learning in universities are presented in Table 1.

Table 1. *Summary of Mobile Learning Research Developments from 2005 - 2022*

No	Researchers	Subject/Population/ Sample	Research Variables	Method
1	Lee and Chan (2005)	First year undergraduate students of information technology.	The affective and cognitive benefits of mobile learning and podcasting.	Action research case study in two cycles.
2	Menkhoff and Bengtsson (2011)	Undergraduate students of entrepreneurship and business networks.	Pedagogical experiences with using mobile phones, wikis, and other mobile learning approaches.	Evaluative-exploratory case study
3	Fuegen (2012)	Research results/articles related to the use and impact of mobile devices and	Impact of mobile technologies on distance education.	Study of literature

No	Researchers	Subject/Population/ Sample	Research Variables	Method
		mobile technologies on distance education.		
4	Ally and Prieto-Blazquez	Research results/articles related to the use and impact of mobile learning in higher education.	Impact of mobile learning applications in higher education.	Study of literature
5	Ranieri and Pachler (2014)	Workshops of mobile learning in adult education conducted in Italy and Britain.	The potential of mobile learning in adult education with a particular focus on identity formation and self-representation.	A case study approach
6	Bray and Tangney	54 students in three secondary schools	The impact of a transformative, mobile technology-mediated approach, RME, and a particular model of 21st century learning facilitates the development of mathematics learning activities to increase student engagement and confidence	Explanatory case study with multiple embedded units and a pre-experimental design
7	Borba, et al (2016)	Five sub-areas of research, important trends of development, and illustrating them using case studies: mobile technologies, massive open online courses (MOOCs), digital libraries and designing learning objects, collaborative learning using digital technology, and teacher training using blended learning.	Identifying recent advances in research on digital technology in the field of mathematics education	Literature survey
8	Oyelere, Suhonen, Wajiga, and Sutinen (2017)	142 third-year undergraduate students in a Nigerian university	The application of the design science research approach in the course of developing a mobile learning application, MobileEdu, for computing education in	Experimental method

No	Researchers	Subject/Population/ Sample	Research Variables	Method
			the Nigerian higher education context	
9	Sarrab, Al-Shihi, Al-Manthari, and Bourdoucen (2018)	The results of applying the proposed set of educational requirements on three different M-learning systems. Instructional designers and educational software developers may find the requirements useful in the development of M-learning systems.	Standards for learning and mobile application software quality and guidelines.	Literature study
10	Grant (2019)	Research results/related articles.	The principles of mobile learning; definition, design, and implications for future research and instructional design.	Literature study
11	Alasmari and Zhang (2019)	The Saudi higher education students enrolled in all the twenty-eight public universities in Saudi Arabia	Learning Expectancy (LE), Effort Expectancy (EE), Social Influence (SI), and characteristics of mobile learning	Mixed-method research
12	Pinto, et al (2019)	Research results/related articles.	(a) identify the most relevant journals that publish literature in this feld, (b) calculate the authors' average productivity and identify the most productive authors, and (c) discover the most significant trends in this academic feld, through statistical and co-occurrence word analyzes of the titles and the keywords used to index papers	Bibliometric analysis
13	Bai (2019)	Scholarly peer-reviewed journal articles that were published between 2010 and 2017	(1) original research was reported; (2) data-based research in which data collection and analysis were	Literature study

No	Researchers	Subject/Population/ Sample	Research Variables	Method
			described; (3) positive learning outcomes were reported; (4) mobile technology was used by students for learning; (5) mobile devices were limited to iPads, iPods, PDAs, tablets and mobile phones; (6) studies were conducted in K-12 and higher education settings	
14	Hall and Connolly (2019)	Papers that highlight key features of infrastructure in relation to mobile learning within teacher education and related areas (2014-2019).	Infrastructure in relation to mobile learning within teacher education and related areas	Literature study
15	Li, Zhao, Herencsar, and Srivastava (2021)	Teachers and students of sebior high schools in Shanghai	The main body and scope of collaboration, constructs a man-machine collaborative resource sharing model with large scale man-machine cooperation as the main model	Experimental research
16	Gounder and Kumar (2021)	103 papers retrieved from six different databases	The use of mobile learning applications in higher education institutes to; i) identify publication trends, ii) types of mobile learning applications used, and iii) categorize the research papers published	A systematic mapping study
17	Okai-Ugbaje, Ardzejewka, and Imran (2022)	Studies conducted over four years (2018-2022), including the outcome of two empirical studies conducted in a Nigerian university	Mobile learning framework that considers the sociocultural and socio-economic contexts of low-income economies	Literature study

3 FINDINGS AND DISCUSSION

This mobile learning system makes use of the portability of handheld devices, including cell phones and PDAs, to offer a learning function that can be used whenever and anywhere (Ardiansyah & Nana, 2020). Mobile learning can be used to supplement the learning process in classrooms and colleges, not to replace regular sessions (Aripin, 2018).

Figure 1. M-learning tools

3.1 Functions and Benefits of Mobile Learning

There are three ways that mobile learning can be used in classroom learning activities (classroom instruction), namely as an optional supplement, complement, or substitution (Junita, 2019).

1. Supplements

Students have the option of using or not using the material from Mobile Learning, which serves as a supplement. Students are not required to access the Mobile Learning materials in this situation. Although it is optional, students who use it will undoubtedly get new information or insights.

2. Complement

In order to supplement the learning materials that students get in class, mobile learning serves as a complement (complement). Here, it means that the mobile learning content is set up to serve as a student's reinforcement or remedial material as they engage in traditional learning activities.

e-ISSN 2963-2870
Vol 3 2022

3. Substitution

Many colleges in affluent nations offer their students/students a variety of alternate forms of educational activity. The intention is for students to be able to handle their lecture activities flexibly in accordance with their daily schedules and other obligations. The following three alternate models of learning activities are available to students:

A. entirely face-to-face (traditional)

B. partially face-to-face and partially online

C. entirely online Position of M-learning in Learning

Since mobile learning is a component of electronic learning (e-Learning), it is also a component of distance learning (d-Learning) on its own (Aripin, 2018).

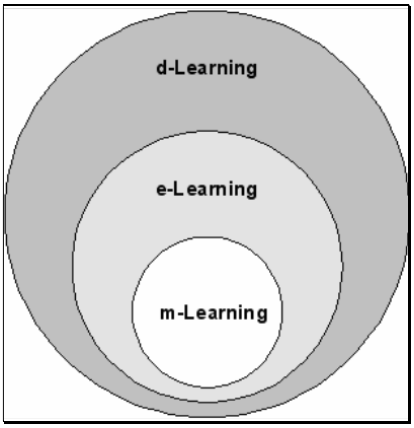

Figure 2. M-learning scheme

Looking at the above diagram, we can see that remote learning includes both m-learning and electronic-based learning (e-learning), depending on how it is implemented (d-learning). According to the following diagram, mobile learning is truly a crucial component of e-learning (Rahmat et al., 2019).

Mobile learning systems are based on tools that leverage devices like laptops, tablets, PDAs, smartphones, and cell phones, which are all essentially portable and usable at any time or place. based on the network's GPRS, GSM, Bluetooth, and infrared capabilities. When seen from the perspective of teacher-teacher communication, it can be done both online and offline using synchronous and asynchronous group communication (Wulandari et al., 2019). M-learning can be done both on and off campus, in terms of geography.

4 CONCLUSION

A learning system called mobile learning places an emphasis on practicality, portability, and accessibility. Different approaches, including tutorials, drill and practice, games, and simulations, can be used to develop learning utilizing mobile learning to sustain open and distance education.

ACKNOWLEDGEMENTS

Universitas Terbuka is acknowledged by the author for its help and support. The INNODEL 2022 committee is also acknowledged by the author.

REFERENCES

Agung, A. (2007). Optimalisasi Peran Teknologi Informasi (Internet) Dalam Meningkatkan Efektifitas Dan Kualitas Proses Pembelajaran Pjj S1 Pgsd. *Majalah Ilmiah Pembelajaran*, *3*(2), 1–15.

Alawamleh, M., Al-Twait, L. M., & Al-Saht, G. R. (2022). The effect of online learning on communication between instructors and students during Covid-19 pandemic. *Asian Education and Development Studies*, *11*(2), 380–400. https://doi.org/10.1108/AEDS-06-2020-0131

Ardiansyah, A. A., & Nana, N. (2020). Peran Mobile Learning sebagai Inovasi dalam Meningkatkan Hasil Belajar Siswa pada Pembelajaran di Sekolah. *Indonesian Journal Of Educational Research and Review*, *3*(1), 47. https://doi.org/10.23887/ijerr.v3i1.24245

Aripin, I. (2018). Konsep-Dan-Aplikasi-Mobile-Learning. *Jurnal Bio Educatio*, *3*(1), 1–9.

Jabnoun, N., & Al-Tamimi, H. A. H. (2003). Measuring perceived service quality at UAE commercial banks. *International Journal of Quality and Reliability Management*, *20*(4), 458–472. https://doi.org/10.1108/02656710310468614

Junita, W. (2019). Penggunaan mobile learning sebagai media dalam pembelajaran. *Prosiding Seminar Nasional Teknologi Pendidikan Pascasarjana UNIMED*, 602–609. http://digilib.unimed.ac.id/38863/3/ATP 69.pdf

Klein, T., Siegwolf, R. T. W., & Körner, C. (2016). Belowground carbon trade among tall trees in a temperate forest. *Science*, *352*(6283), 342–344. https://doi.org/10.1126/science.aad6188

Rahmat, R. F., Mursyida, L., Rizal, F., Krismadinata, K., & Yunus, Y. (2019). Pengembangan media pembelajaran berbasis mobile learning pada mata pelajaran simulasi digital. *Jurnal Inovasi Teknologi Pendidikan*, *6*(2), 116–126. https://doi.org/10.21831/jitp.v6i2.27414

Simonson, M. (2002). In case you're asked: The effectiveness of distance education. *ResearchGate*, *3*(January 2002). https://www.researchgate.net/publication/242284461

Wulandari, D. A., Murnomo, A., Wibawanto, H., & Suryanto, A. (2019). Pengembangan Mobile Learning Berbasis Android Pada Mata Pelajaran Rekayasa Perangkat Lunak Di Smk Sultan

Trenggono Kota Semarang Mobile Learning Based on Android Development on Subjects of Software Engineering At Smk Sultan Trenggono Kota Semarang. *Jurnal Teknologi Informasi Dan Ilmu Komputer (JTIIK)* , *6*(5), 577–584. https://doi.org/10.25126/jtiik.20196994

e-ISSN 2963-2870
Vol 3 2022