Jurnal Teknologi Pendidikan, April 2023, 25 (1), 54-61
DOI: http://dx.doi.org/10.21009/JTP2001.6
p-ISSN: 1411-2744 e-ISSN: 2620-3081
Accredited by Directorate General of Strengthening for Research and Development
Available online at http://journal.unj.ac.id/unj/index.php/jtp

Mobile Learning Readiness of Junior High School Students in Science Learning

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Received : February 20, 2023
Revised : April 1, 2023
Accepted : April 7, 2023

Abstract

Technology advancements and an increasing number of mobile phone owners among junior high school students have opened opportunities for teachers to integrate technology into the learning process, especially in science learning. Before implementing mobile learning in the classroom, researchers must assess whether students are ready to adopt the technology. Adding the perspective of junior high school students in West Java, the research aims to present a quantitative survey on students' mobile learning readiness. An online questionnaire survey was used to collect data in this study. The results shown that students can use mobile learning in science learning. Almost all students have mobile phones to support mobile science learning. However, some students are still worried about the problem of costs when learning using mobile because it requires internet access. Nevertheless, students agreed to know more about mobile learning. These findings can serve as a reference point for further studies if mobile science learning is widely used in junior high schools.

Keywords: Mobile learning readiness, Junior high school, Science, Technology

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How to Cite: Rahmat, A. D., Kuswanto, H., & Wilujeng, I. (2023). Mobile Learning Readiness of Junior High School Students in Science Learning. JTP - Jurnal Teknologi Pendidikan, 25(1), 54-61. https://doi.org/10.21009/jtp.v25i1.34063

INTRODUCTION

Rapid technological developments also affect the education field. Technology improves teaching and learning (Olimov & Mamurova, 2022; West, 2013). Teachers can present learning content easier for students to reach when using technology. One of the most popular technologies today is the mobile phone which almost everyone uses. Currently, the primary function of mobile phones is not only as a communication tool but also as a learning media in the classroom. Mobile learning in education is often referred to as "*m-learning*".

Previous research on the effectiveness of m-learning finds diverse results. Research results found that m-learning can be an effective learning approach and is better than traditional face-to-face teaching (Shih et al., 2010), m-learning increases student engagement (Baran, 2014; Wilkinson & Barter, 2016), improves communication (Darmaji et al., 2019; Kuimova et al., 2018), enriches the learning experience (Criollo-C et al., 2021; Mkpojiogu et al., 2018), provides greater access to learning for distance learners (Cross et al., 2019; Kumar & Chand, 2019), and promotes shared education, mobility, and interactive learning (Papadakis, 2021; Parsazadeh et al., 2018). The other study results also found negative or neutral results due to or moderated by the characteristics of the students (Sha et al., 2012).

One benefit of m-learning is creating learning anytime and anywhere (Murphy et al., 2014). Learning is not limited by time and place when using m-learning (Sattarov & Khaitova, 2020). Students can expand their learning activities at home, where learning can happen naturally. Integrating mobile phones into learning activities will create a new environment and maximize students' use of mobile phones (Ally & Samaka, 2016). Although integrating mobile phones into learning has many benefits, implementing it is not as easy. Students get bored easily in learning activities and spend much more time playing games on mobile phones compared to using them for studying (Edmonds & Smith, 2017). It is a challenge for teachers to change the orientation of students' thinking that mobile phones can also assist learning activities.

The success or failure of implementing m-learning depends on the human factor (Martono & Nurhayati, 2014). One of the factors that must be considered before implementing mobile learning is the willingness of students to use this technology in the learning process (Yadava & Chaudharyb, 2017). Previous studies have examined respondents' readiness for mobile learning with their mobile device ownership (Ismail et al., 2016). Students who frequently use mobile phones indicate they are willing to use them during learning. In learning science, researchers must assess whether students are ready to adopt this technology in the learning process before being able to apply mobile learning. The study focuses on junior high school students in West Java, Indonesia. The research aims to identify students' readiness to learn science using mobile learning.

METHODS

This research is descriptive with a quantitative survey method to identify readiness for mobile science learning in junior high school. Quantitative surveys will describe how students are ready to use m-learning (Ismail et al., 2016) and easier to conclude with many respondents (Nardi, 2018). Participants in this study are 741 junior high school students from various districts in West Java, Indonesia. The demographic participants are shown in Table 1. The research instrument used is a questionnaire distributed randomly to students using the google form link distributed on social media such as Instagram and Facebook.

Table 1. Demographic participants

Variable	Classifications	Frequency	Percent (%)
District	Bandung	224	30.23
	Yogyakarta	198	26.72
	Sukabumi	163	22.00
	Cianjur	156	21.05
Gender	Male	345	46.56
	Female	396	53.44
Grades	7^{th}	262	35.36
	8^{th}	259	34.95
	9^{th}	220	29.69

The questionnaire consists of 3 parts: information demographics of

respondents, the status of ownership and activity use of mobile phones, and mobile learning readiness. The first part consists of demographic questions: name, address, gender, age, and junior high school grades. The second part contains four questions about student ownership of mobile phones and activity while using mobile phones. And the last part includes a 10-item student readiness survey for mobile learning that adapts the Mobile Learning Readiness (MLR). The instrument is adapted from Hussin et al. (Hussin et al., 2012), and research instruments are adapted to study needs focusing on science learning. The data analysis tool uses Microsoft excel. The results are then interpreted into a diagram to facilitate the analysis of the study results.

RESULTS & DISCUSSION

Results

This study aims to identify students' readiness in West Java, Indonesia, to learn science using mobile learning. The research results in this study consist of three main results: ownership of the mobile phone, activity use of mobile phones, and mobile learning readiness.

The ownership of mobile phone students in West Java

Based on the questionnaires distributed to students relating to ownership of mobile phones. This part contains questions about (1) *do you have a mobile phone?* (2) *what is the ownership status of the mobile phone, private or parental-owned?* and (3) *what operating system is used in the mobile phone?* The results from the survey questionnaire are shown in Figure 1.

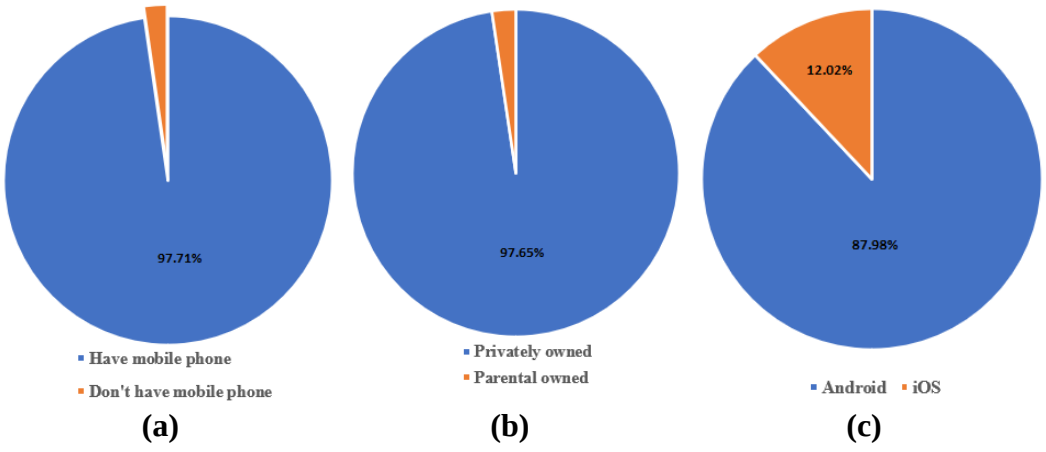

Figure 1. Results analysis of respondent mobile phones ownership

Figure 1 shows that students have almost mobile phones that are privately owned. Figure 1(a) shows the ownership of mobile phone respondents. The results show that 97.71% of respondents have mobile phones. This result indicates that almost all West Java students had mobile phones. The research finds that status of

mobile phones is owned by students, namely private property or belonging to parents. The results show that 97.65% of students have a personal mobile phone, while less than 5% belong to their parents, as shown in Figure 1(b). The result can be interpreted that almost all students have privately owned mobile phones. The mobile phone operating system found that 87.98% use the Android system, and only 12% of students have the iOS system, as shown in Figure 1(c). Students mostly use the Android system because the price is affordable.

Student's activity when using mobile phones

Almost all students in West Java, Indonesia, have privately owned mobile phones. This part of the questionnaire has a research question: "*what activities are usually done using a mobile phone?"*. The results of respondents' activities using mobile phones are shown in Figure 2.

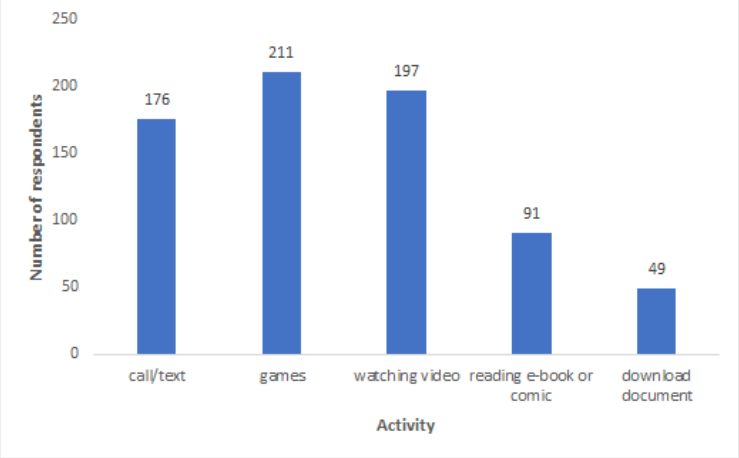

Figure 2. Activities of students when using mobile phone

The survey results found that 211 students used their mobile phones to play games, and then 197 students used them to watch the video, as shown in Figure 2. These results can be interpreted as students not using mobile phones effectively to support learning. Besides, 91 students also support the finding of this study using their mobile phones to read e-books or comics, and only 49 students carry out document download activities. The result can be interpreted that students prefer using visual learning such as images, videos, animations, and maybe game-based learning because learning is not easy, and they are quickly bored with complex words (Klimova, 2019).

Mobile Learning Readiness

In this study, a survey for mobile science learning adapts the MLR Instrument was developed by Hussin et al. The results of the respondents' analysis of the readiness of mobile learning science are shown in Table 2.

Based on the results, most students in West Java, Indonesia, agree that they would like to know more about mobile learning, as shown in Table 2. The survey results show that students are interested in learning more about mobile learning, where 94.06% of respondents already know about mobile learning. Junior high school students in West Java are generally ready to learn more about mobile

learning (98.38%). In addition, students also want teachers to integrate mobile learning into the classroom and conduct face-to-face meetings. Students are unsure whether teachers want to integrate mobile science learning into the classroom (98.38%). In addition, some students are also worried about costs, where 22.00% of respondents are afraid to spend more money to buy internet access. Moreover, few agree that they will pay extra for mobile learning. For this reason, some prefer traditional learning over mobile learning (4.99%), while others believe mobile learning will provide a convenient learning process (97.98%).

Table 2. Result of analysis of mobile learning readiness

No	Statement	Yes (%)	No (%)
1	I know what mobile learning all is about	94.06	5.94
2	I want to know more about mobile learning.	98.38	1.62
3	I prefer conventional learning than mobile learning	95.01	4.99
4	I think mobile learning is good for me.	98.79	1.21
5	I don't mind paying extra money for mobile learning.	97.30	2.70
6	Mobile learning will make my life difficult.	2.02	97.98
7	I am not ready for mobile learning if the school implements it now	98.92	1.08
8	I want my teacher to integrate mobile learning in my class and face-to-face meetings in class.	98.38	1.62
9	I am afraid I will spend more money on my mobile phones bill because of mobile learning	22.00	78.00
10	I would like my teacher to integrate mobile learning into my course	92.44	7.56

Discussion

Based on the research about mobile learning readiness in junior high school students in West Java, the study found that almost all students were ready to use mobile learning, especially in science learning. Many students seem unfamiliar with using it but are interested in learning more about mobile learning. Although mobile phones are popular, learning using mobile learning has not been widespread due to constraints such as costs, teacher capabilities, and technological challenges. Junior high school students mostly use mobile phones for games and watching videos, not for learning (Botha & Herselman, 2015). It can be advantageous for teachers to produce visual learning to increase motivation and learning outcomes (Criollo-C et al., 2021). A previous study stated that visual learning could improve student motivation and learning outcomes (El-Sofany & El-Haggar, 2020; Torres Diaz et al., 2015).

The result of this study also agrees with another study investigating student perceptions of mobile learning. The results of previous studies found that students seemed hesitant to use mobile phones during the learning process even though they had positive opinions about mobile learning. It happens because students are not used to using mobile phones as a tool in the learning process (Biswas et al., 2020; Nikolopoulou, 2018; Pollara & Broussard, 2011). But over time, students will become familiar with mobile learning by improving technology in this era. Mobile

phones owned are increasingly popular, but this study found that students still do not have mobile phones.

Several factors affect junior high school student's readiness to implement mobile learning in science learning. Demographic characteristics do not affect respondents' readiness for mobile learning. In addition, mobile phone ownership is not affected because almost all students have privately owned mobile phones. Activities are carried out by students using mobile phones to play games and watch videos, and this situation can be changed by creating visual learning. Also, the mobile learning readiness survey shows that some students fear using mobile learning because they will pay extra money and make it difficult. Benefit mobile learning for the student, such as learning can be done anywhere and anytime, with a visual learning element to improve student learning outcomes (Criollo-C et al., 2021; Mehdipour & Zerehkafi, 2013).

The research results show that students are interested in mobile learning, but some students are not financially ready. In addition, mobile learning offered to help students in the classroom can make learning more meaningful. And mobile learning trends can be booming in the next few years, especially with the technology development era. Then, the result of this study can serve as a reference point for further studies if mobile science learning is widely used in junior high schools.

CONCLUSION

The result of the study showed that students are ready to use mobile learning in science learning. The study also found that almost all students have mobile phones to support implementing mobile learning. Students have privately owned mobile phones, but most all students waste time using mobile phones to play games and watch videos. From the survey was found that students show interest in mobile learning. However, some students are still not quite ready and unsure about what is offered to help their learning process, especially financial problems. Nevertheless, students agreed to know more about mobile learning.

This research limitation only focuses on student readiness for mobile learning in science learning. Future research can identify students' readiness to use mobile learning in terms of psychology and mental readiness. And the participants in this study only focused on junior high school students. Further research can show various perceptions from teachers, students, and parents about mobile learning. Suggestions for further research can provide many perceptions about how important it is to use mobile learning to adapt to today's development era.

ACKNOWLEDGEMENT

The authors would like to thank the Indonesian Ministry of Education, Culture, Research and Technology funded this study through a PMDSU (*Program Magister Menuju Doktoral untuk Sarjana Unggul*) scheme with grant number

T/15/1.34/UN34.21/PT.01.03/2022.

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