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Mobile Learning Media for Computer and Based Network at Vocational High School

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Abstrak

Saat ini masih banyak siswa yang menyukai kegiatan pembelajaran berbasis digital. Penelitian ini bertujuan untuk menganalisis kebutuhan pengembangan media mobile learning berbasis Android di SMK. Jenis penelitian yang digunakan adalah penelitian survey dan studi kepustakaan. Metode yang digunakan dalam mengumpulkan data yaitu observasi, wawancara, dan kuesioner. Instrumen yang digunakan adalah lembar wawancara dan angket. Teknik analisis data yang digunakan adalah statistik deskriptif. Hasil penelitian yaitu siswa yang aktif menggunakan smartphone di luar jam pembelajaran adalah sekitar delapan puluh dua persen. Siswa yang menggunakan smartphone dalam pembelajaran lebih bersifat informal, dimana mereka lebih banyak menggunakannya untuk mencari informasi. Di sisi lain, hanya dua puluh lima siswa yang menggunakan smartphone untuk mengakses materi pelajaran. Siswa setuju untuk menggunakan smartphone mereka untuk belajar di kelas karena dapat meningkatkan minat belajar dan kemampuan mereka untuk lebih memahami materi pelajaran. Media pembelajaran yang dikembangkan dapat menjadi salah satu sumber belajar bagi siswa dan membantu guru dalam kegiatan belajar mengajar dapat lebih efektif.

***Kata kunci*:** *Android, Mobile Learning, Analisis Kebutuhan*

Abstract

Currently, there are still many students who like digital-based learning activities. This study aims to analyze the need for developing Android-based mobile learning media in SMK. The type of research used is survey research and literature study. The methods used in collecting data are observation, interviews, and questionnaires. The instruments used are interview sheets and questionnaires. The data analysis technique used is descriptive statistics. The study results showed that around eighty-two percent of students actively use smartphones outside learning hours. Students who use smartphones in learning are more informal, using them more to find information. On the other hand, only twenty-five students use smartphones to access course materials. Students agree to use their smartphones to study in class because it can increase their interest in learning and their ability to understand the subject matter better. Learning media can be a source of learning for students and help teachers in teaching, and learning activities can be more effective.

Keywords: Android, Mobile Learning, Need Analysis

1. INTRODUCTION

The use of mobiles such as mobile phones, smartphones, tablets for education, especially computing education is an attractive choice (Ihantola et al., 2013; Jordine et al., 2015; Moreira & Ferreira, 2016; Oyelere et al., 2016). Recently new technology whose most of the people have been commonly using is smartphones which has been developed massively for many purposes. The purposes on this research is the connection between academic learning and smartphone if we used effectively it can be a tool of learning. The effect of using smartphones on learning process can be either positive or negative (Cohn, 2016; Indra et al., 2020; Synnott, 2018). Although there are still some students who still do not use smartphones as a tool in learning. The method used by students in using smartphones for learning is different for each individual, the teacher as an educator only needs to find the best and most useful way for the smartphone to be effectively used in learning (Bartel & Hagel, 2014; Rahmat et al., 2019). In order to find out whether smartphones are used to have effectiveness benefits for learning, we can measure them through the value students get at the

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end of learning, although this method cannot be too accurate to measure students' abilities and effectiveness of using smartphones for learning.

Smartphones are a very common tool used to obtain information and learn things. The use of mobile devices in education, especially in learning tends to draw more interest among teachers, researchers, and students, when mobile learning methods can be applied to improve learning opportunities, addressing real-world skill acquisition and practical application within existing coursework (Díaz-Sainz et al., 2021; Khairudin et al., 2019). In other words, smartphones can be accessed anytime and anywhere. At present the use of smartphones is increasing drastically, this study will examine how students use smartphones in their daily lives and in learning, and also to find out the opinions of students whether smartphones are effectively used as learning tools (Ngabekti et al., 2019; Sophonhiranrak, 2021).

Mobile learning (or m-learning) as a theory and concept that has been developed quickly, and it is no longer determined only as a techno-centric trend, appealing to those who are interested in technology and devices (Astuti et al., 2017; Nuryadi et al., 2020). This becomes clear because it requires cellular renewal in the review of current trends in education. Mobile learning is accepted to participate in rich learning, advanced technology, contextual and distributed for learning (Devraj et al., 2021; Sukmana & Suartama, 2019). In addition, it can be accepted that m-learning is about student mobility, and how educators can help students in learning activities without them agreeing on a physical location. However, trying to understand m-learning is still developing, and that is a number of considerations that must be included in the published experiments (Bartel & Hagel, 2014; Díaz-Sainz et al., 2021). In particular, resolutions relevant to education about mobile learning are needed (Ngabekti et al., 2019; Novantara, 2017).

Research on the benefits of smartphones for learning in the classroom has also been widely carried out, the benefits obtained are providing opportunities for students to learn learning materials and interact with teachers or fellow students outside of class hours via a smartphone device (Astuti et al., 2017; Nuryadi et al., 2020; Sukmana & Suartama, 2019). The use of smartphones has become common at various levels of education because of their availability and affordability. Due to the rapid development of technology, more and more applications on smartphones are integrated in classroom learning to support the learning process, one of which is mobile learning (m-learning) has been widely used in formal education (Devraj et al., 2021; Lu et al., 2021). Students nowadays use their smartphones for most every time. However not all of the students have using their mobile technology for learning (Alfawareh & Jusoh, 2014; Astuti et al., 2017). We can categorize students use their smartphone as informal learning and formal learning. The formal involves students who use academic resources from the instructors, while the informal involve those who use it for self-directed learning. Even though students do want to use their smartphones more for formal learning. Instructors don't give them with enough resources (Devraj et al., 2021; Surahman & Surjono, 2017). Although smartphone use by students requires a wireless access point (WAPs), and strengthening the network system to protect it (Murphy et al., 2015).

Other research explain that 86% of research on m-learning gives positive results (Wu et al., 2012). Similar results are also explains that m-learning studies have positive results (Astuti et al., 2017; Nuryadi et al., 2020). Smartphone technology has great potential to facilitate more innovative learning (Chen & Hsu, 2020; Sukmana & Suartama, 2019). Students need the development of learning media that can increase student interest in learning and can increase the effectiveness of learning. It is necessary to develop a media that can visualize learning materials, especially computer subjects and basic networks that aim to facilitate students in understanding abstract learning material concepts or cannot be directly observed and can also be used for independent learning because students can use them wherever and any time. Based on the relevant research results, m-learning is a very effective

medium. This study aimed to analyze the development of Android-based mobile learning media in SMK. Through this research, students use technology and take advantage of their opportunities or use their smartphones only for non-study and communication purposes.

2. METHODS

The type of research used is survey research and literature study. The sample for this study is at student vocational high school 2 Padang in the west sumatera, Indonesia which are currently in the process of learning the course material Computer and Based Network which includes 63 participants. The majority of these students are aged between 16-18 years. 80% of them were males, however the rest 20% were females. The methods used in collecting data are observation, interviews, and questionnaires. The instrument used are interview sheets, questionnaires and literature related to mobile learning based on Android. Data analysis technique used is descriptive statistic. The observation result was in the form of teacher's needs assessment instruments that analyzed using descriptive qualitative. The questionnaire involved the question such as age, gender, students opinions towards the use smartphone in learning. To collect data for this study questionnaires distributed to students at vocational high school 2 Padang. The Sample for the study consisted of 63 vocational high schools students.

3. RESULTS AND DISCUSSION

Result

Based on the results, vocational high school students do use smartphone most of their time. As figure 1 illustrates that the answers to the question "how often the students use their smartphone" All of them have shown a positive respond, no one of the students have said "never", 75% of them answer "always" and 25% of the students answered "sometimes". Frequency of smartphone usage in Figure 1. Duration of smartphone usage everyday in Figure 2.

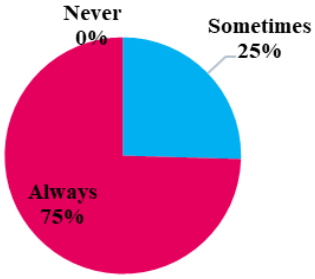

Figure 1. Frequency of Smartphone Usage

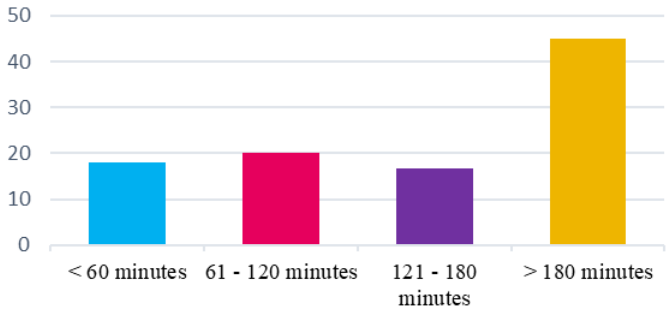

Figure 2. Duration of Smartphone Usage Everyday

From the illustration in Figure 3, we can see the duration of times per a day the students use their smartphone from the question "how much the duration of times did you spend with smartphone". 82% of them answered more than 60 minutes a day and only 18% answered they only use their smartphone not more than 60 minutes a day. Most of their times the students (in this case 45% of the students) use smartphone only for informal learning for example to search for information like access course material. Despite thinking smartphone can be good tool for education, their main purpose of using smartphone is to access social media by more than a half the responses which is not commonly known to be for learning purposes. The most frequent category of apps used is social media, followed by games 25%. Books in the smartphone only 15% of the students access it and listening to music are end up with 9%.

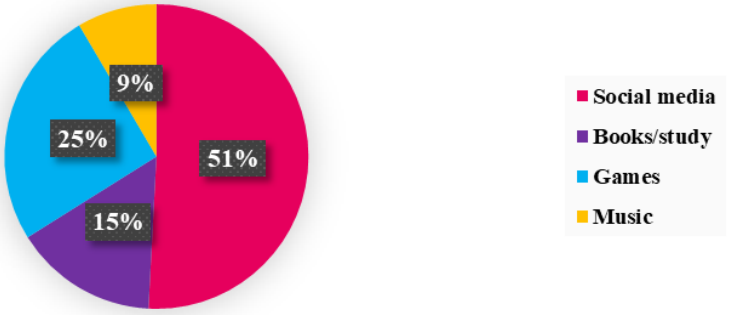

Figure 3. Frequently Used Category of Application

Based on interviews with the teachers, teacher have a hard time to deliver the course material to students although several students have a good reactions and enthusiastic towards learning process and yet a few of the students still less active in the learning process. This problem happen because there is still not enough media or help tool for learners to explain the course material Computer and Based Network which in need to object visualization in which can explain the process of Computer and Based Network. The process of Computer and Based Network must be observed directly because if students learning the course material without the practice and there are no learning tools to help students the impact of these problems can be either the students feel they do not master the material concept well due to students' understanding of the abstract material. One of the abstract subject for this course is Computer and Based Network and operating system, in which can only be done with practice with the real media as we can say it is the computer. And why should we use learning media even though we have a real tool which students can easily understand the course? That's the problem we have, at vocational high school 2 Padang still doesn't have enough computer for students to study, let alone use it to practice Computer and Based Network in which the students need to unload the component in CPU and to install back the component. This can be risk the healthy computer to can not be used anymore because the work has be done by the students whom still learning in which have possibility to unsuccessful in assembly the computers. To prevent this thing to happen, one of the solutions at this problem is to developed the learning media which can make students understand the course material media who look like the real computer and students can learn the course like they practice with the real computer. Learning sources by teachers shown in Figure 4.

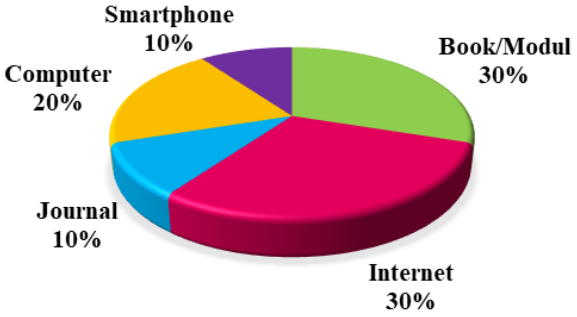

Figure 4. Learning Sources by Teachers

The results of the observation from Figure 4, can be concluded that the use of teaching resources in the form of media presented in smartphones is still not optimally being used by the students which is only 10% in this case, whereas Computer and Based Network material requires more detailed and real visualization of objects. The teacher believes that abstract material needs to be conveyed by presenting object visualizations and explaining each process in detail. Therefore, the use of appropriate teaching resources or media needs more attention. But in reality, in preparation for learning 67% of teachers did not make their own teaching media but obtained from the internet or only using modules. From the results of the observation it was also found that students were more interested in learning using various media. Students prefer learning with media that shows how to work, drawings or material in more detail than learning by using only textbooks, modules or textbooks. Students think smartphones can be a very good device and help in learning. Based on the tables presented if we take from those who agree and strongly agree, 92% of students agree to using a smartphone in learning only 8% of students who answer do not agree when smartphones are used in learning, they think this is less effective. Student perception of using smartphone as a tool of learning shown in Figure 5.

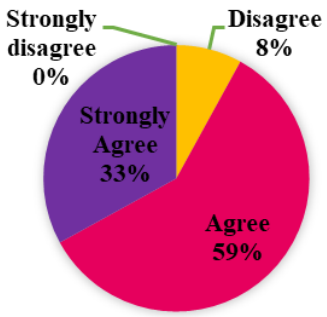

Figure 5. Student Perception of Using Smartphone as a Tool of Learning

Discussion

The distinctive advantage of the Android system is openness, which means that an Android-based learning system can be applied to various devices (Malhotra et al., 2020; Sokibi & Adnyana, 2018). For students to use mobile technology to access educational anytime dan anywhere with only resources with communication technology (Lai & Hwang, 2014; Tseng et al., 2018; Wardani et al., 2017). Seeing the impact of the increasingly rapid development of smartphones, Android based m-learning needs to be developed in learning. Learning media developed can be one source of learning for students and help teachers in teaching and learning activities (Hanifah et al., 2019; Ristanto et al., 2020). Some students

explain, using smartphone in learning can be more effective if it was supervised by the teachers, rather than it being under student's productivity (Churchill et al., 2016; Nikolopoulou & Kousloglou, 2019). Since the main focus found from student usage was smartphone, this can be used as an advantage to add academic purpose for them using it. This can match what was found on the research Mobile technologies enable learners to find, manipulate, identify and evaluate existing knowledge and successfully integrate and communicate this new knowledge into their work (Bano et al., 2018; Kattayat et al., 2017).

The teachers reveal that learning resources needed to be developed and can be used as a source of independent learning for students is android based m-learning because students can use it wherever and whenever (Irwanto et al., 2019; Suprianto et al., 2019). Therefore it is necessary to develop a media that can visualize learning material, especially computers and basic networks which aims to facilitate students in understanding the concepts of learning material that is abstract or cannot be observed directly and can also be used for independent learning (Ahdan et al., 2020; Sukardi et al., 2020). In research and development that will be carried out by researchers at a later stage is limited only to the subject matter of Computer and Based Network. Given the misconception of the subject often occurs compared to other material.

Based on the results of the relevan study, m-learning were very effective media rather than using media PowerPoint the students has used before and the android based m-learning media can improve student learning outcomes. This is relevant with previous research, found that mobile apps that are designed for learning are in education showed that M-learning can increase students' cognitive traits (Astuti et al., 2017; Okai-Ugbaje et al., 2020). This result is relevant to other studies that show that the application of m-learning in learning can improve student learning outcomes (Efriyanti & Annas, 2020; Kim et al., 2012; Mahdi, 2018). Other research develop learning media using mobile and with this media the effectiveness of learning increases as seen from students cognitive learning outcomes (El-Sofany & Hosam, 2014; Zhao, 2017).

The conclusions that can be drawn from the discussion presented are; First, the use of learning media as a source of learning in the process of learning computers and basic networks that have been happening in the field so far has not been done optimally. There are obstacles to the delivery of material, especially material that is not directly observable or abstract in nature. Second, in the process to explain the subject of Computer and Based Network and installing an operating system is difficult material, the teacher needs media that can visualize the Computer and Based Network process and install the operating system for Grade X Vocational School and explain it in detail and correctly so that there is no misconception of students on the subject matter and Third, learning media that need to be developed in computer learning and basic networks are android-based m-learning media.

4. CONCLUSION

In conclusion, we use smartphones most of our time and we can access it everywhere and anywhere. This will be a very significant change in life, and certainly has an impact on the lives of students both in education and in everyday life. Even though we cannot deny that this smartphone is used and is useful for communicating and is also a tool in learning. This study tries to find the effectiveness of smartphone use for students and find what useful methods are very large. More interestingly, we can give a visualization of what students do invest the good use of technology or not. After the analysis is done, the results obtained are that many students do invest technology as a tool of learning. Because the students use smartphones most of their time, there are many ways that students using that for learning such as taking notes in class, searching, and recording lectures.

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