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Smartphones as Learning Media in X Grade Informatics Class

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ABSTRACT

Smartphone use today is not only among adults, but also among high school students. Almost every student has a smartphone that is connected to the internet, students can access any site at any time, including during class. This certainly becomes a distraction for learning in class because it makes students not focus on paying attention to the material. Learning media is one of the instruments that really determines the success of the teaching and learning process. Because its direct presence can provide its own dynamics to students. The development of the times means that teachers are active and careful in making learning more enjoyable for students. This research is aimed at measuring the effectiveness of using smartphones as a learning media in the classroom. The research method used is Classroom Action Research (CAR). The subjects of this research were students in class X-1 at SMAN 8 Bandung, consisting of 34 students. The object of this research is the effectiveness of student learning. Researchers teach Webscraping material. Data collection techniques use observation and questionnaires. The research results show an increase in learning effectiveness, namely from 65.23% to 87.5%.

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1. INTRODUCTION

In the era of globalization, the utilization of technology has become indispensable in all aspects of life. Furthermore, information and communication technology can be considered a primary necessity and has become widely embraced by society across various demographics and age groups. This phenomenon is also leveraged within the realm of education. The application of electronic technology in learning processes isw23q commonly referred to as E-learning. Consequently, the development of electronic-based learning systems continues to advance to meet the demands of an increasingly sophisticated era (Azhar, 2003).

One way to utilize technology is through the use of mobile phones or smartphones. Smartphones are highly practical technological devices that can be carried anywhere. Undeniably, almost everyone across various age groups owns one today. Smartphones serve as communication tools that can also be utilized for educational purposes, particularly in the learning process. This was especially evident during the pandemic when smartphones evolved into essential, straightforward learning media that students were required to posses (Choiroh, 2020).

So, how can a smartphone serve as a learning media? Technological advancements have been a major catalyst for the increasing number of innovations in the field of education. One of these innovations is the utilization of technology embedded in smartphones, which transforms learning activities from being purely conventional. This aligns with the concept of E-learning, where the learning process can take place anytime and anywhere. In this context, smartphones play a crucial role as a media for learning (Riski, 2020).

The practical yet beneficial nature of smartphones is what makes them referred to as simple learning media. In the context of learning systems that utilize technological devices like smartphones, this is commonly known as mobile learning. Mobile learning (M-Learning) is a model or method of education that leverages 'mobile' media or smartphones as a supporting tool. M-Learning can be considered a subset of E-learning, as both fundamentally rely on electronic devices as aids in the learning process. So, how can smartphones be utilized as simple learning media? Nearly all types of smartphones are equipped with features and services that are sufficient to support the learning process. One of the most notable is internet connectivity. This feature enables students to use their smartphones for browsing, allowing them to access information quickly, anytime and anywhere (Bambang, 2008).

Furthermore, internet services can be utilized for knowledge sharing among students, enabling them to exchange ideas and maximize the use of electronic devices. Smartphones are among the most practical technological tools and can significantly support the learning process. As communication devices, smartphones facilitate the exchange of information through the communication process. Learning through the media of smartphones enhances the effectiveness of education. Additionally, it allows students to learn in a natural and pressure-free environment, fostering a more conducive and enjoyable learning experience.

Mobile learning, or m-learning, is a learning method that utilizes mobile devices such as smartphones, laptops, e-readers, or tablets. Smartphones, as tools for learning media, are particularly advantageous due to their accessibility, allowing users to connect to learning resources anytime and anywhere, as long as the device is connected to the internet.

In mobile learning, students can access learning media and interact with the content. This approach is often employed to deliver microlearning content, which provides relevant information in 2-5 minutes segments to maintain students' attention and improve knowledge retention and competency. Microlearning content is typically presented in the form of short

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videos, animations, gamified experiences, quizzes, and other interactive formats, making it especially suitable for consumption through smartphones.

By using smartphones as a learning media, students can not only access a wide range of content or materials but also utilize features such as discussion forums, communication with instructors or peers, case study simulations, and monitoring of learning progress and outcomes. Through these features, students can interact, collaborate, and receive feedback, enriching their learning experience.

As an effective and innovative learning model, mobile learning can be utilized to deliver engaging and easily comprehensible learning materials. Moreover, the development of mobile learning offers numerous advantages.

One of the primary advantages of mobile learning is the flexibility it offers in terms of time and location. Professionals can access learning materials anytime and anywhere using their mobile devices.

Mobile learning often provides content that can be tailored to individual needs. students have the opportunity to select learning materials that are most relevant to their field of work and the level of expertise they aim to achieve.

Thus, students can focus on the most critical topics and enhance specific skills according to their needs. Additionally, this customizable content provides a personalized and effective learning experience for professionals.

In mobile learning, various interactive methods are often employed to enhance user engagement. For instance, there are interactive modules, quizzes, and challenges that help professionals stay actively involved in the learning process (Riski, 2022).

These methods make the learning process more engaging and enjoyable, encouraging professionals to be more enthusiastic and committed to developing their skills.

Another benefit students can gain is the ability to learn independently. Mobile learning offers students the opportunity to take control of their own learning process, allowing it to be conducted autonomously.

Students can study at their own pace and revisit challenging materials. This self-directed learning enables professionals to explore a subject in greater depth and achieve a better understanding.

Through independent learning, Students can prioritize areas that demand the greatest attention, thereby enhancing the efficiency of their learning journey. This approach removes the dependence on external assistance.

Mobile learning also provides students with access to the latest and most up-to-date learning materials. Through mobile learning applications or platforms such as *Ruangkerja*, students can gain access to updated content, including articles, videos, and other learning materials that are regularly refreshed.

2. METHODS

This research employs Classroom Action Research (CAR). The primary objective of Classroom Action Research is to address real problems occurring in the classroom while simultaneously seeking scientific explanations for why these issues can be resolved through the actions taken. Hence, the expected outcome of CAR is the improvement or enhancement of the quality of both the learning process and its results.

This study was conducted during the even semester of the 2023/2024 academic year, specifically in April. The subjects of this research are 34 students from class X-1 at SMAN 8 Bandung. The object of the study is the effectiveness of student learning.

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The researcher taught the material on Web Scraping using Google Colab. Web Scraping is a technique for automatically extracting data from websites. This process enables users to retrieve specific information from web pages and store it in a format that can be processed, such as a spreadsheet or database file.

The requirements for students to use Google Colab are as follows:

1. A smartphone connected to the internet.
2. A smartphone equipped with a browser application (such as Chrome).

If students meet both of these requirements, the learning process can be effectively implemented in the classroom.

Figure 1. Students used Smartphone during the Webscraping learning session.

The data collection techniques utilized were observation and questionnaires. The data were analyzed descriptively and presented in the form of tables and graphs.

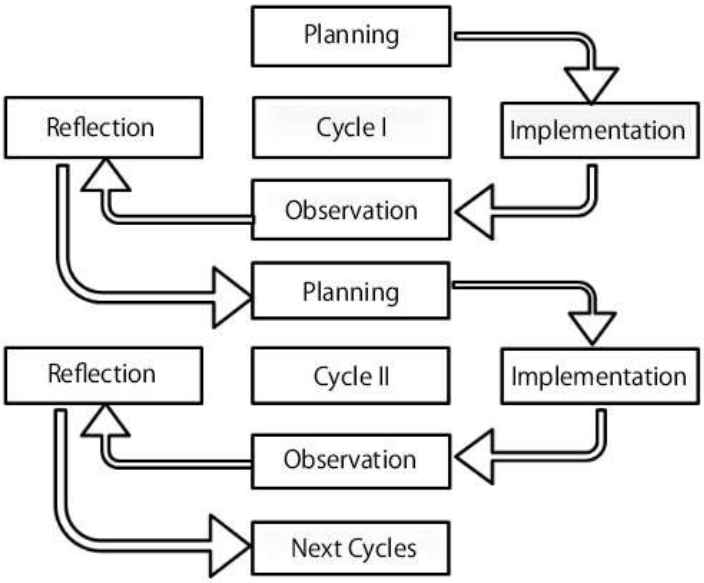

Figure 2. Classroom Action Research Cycle.

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3. RESULTS AND DISCUSSION

Based on the implementation of actions conducted over 2 cycles, each comprising 2 sessions, data indicate an improvement in the learning effectiveness of students. The increase in learning engagement was observed through the application of the mobile learning model. The results of observations regarding the implementation of the mobile learning model are presented in the following **figure 3**:

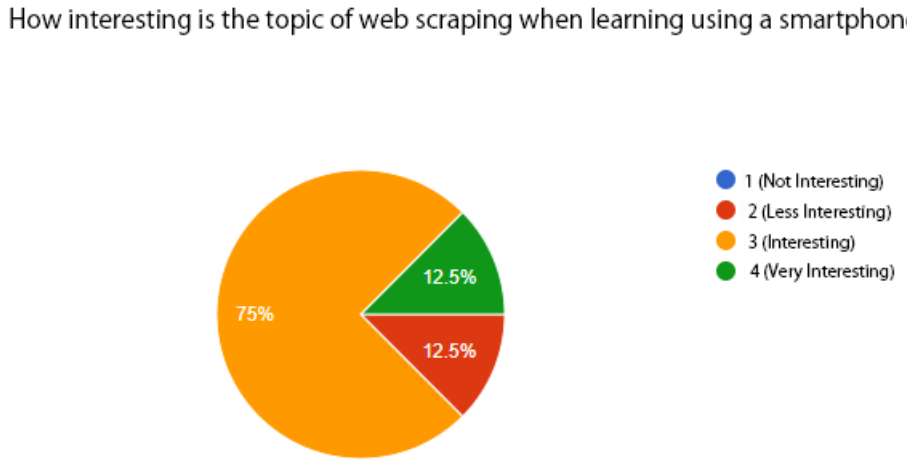

Figure 3. Questionnaires Diagram.

The researcher posed a question to the students: "How interesting is the web scraping material when taught using a smartphone?" Out of 34 students, 25 responded with "Interesting," and 4 responded with "Very Interesting," indicating that 87.5% of the students found learning with smartphones to be engaging.

Effectiveness of Smartphone Usage as Learning Media	
Cycle I	**Cycle II**
65.23%	87.5%
Poor	Very Good

Table 1. Comparison of Observational Results on the Effectiveness of Using Smartphones as a Learning Media.

Based on the **table 1**, the percentage of observational results regarding the effectiveness of using smartphones as a learning media in the first cycle was still at 65.23%, categorized as less effective. In contrast, in the second cycle, it increased to 87.5%, categorized as highly effective.

he use of the mobile learning model in teaching Informatics, specifically on the topic of Web Scraping, made the learning process more meaningful, enjoyable, and fostered student engagement. This is because the mobile learning model actively involves students in

practicing their own coding, solving problems through critical thinking, and directly experimenting with the material.

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4. CONCLUSION

Based on the results of the conducted research, it can be concluded that the use of smartphones as a learning media for Web Scraping material in Grade X can improve the effectiveness of students' learning. The implementation of hands-on learning methods in the classroom also influenced students' interest and focus on the subject matter. The average effectiveness percentage increased from 65.23% in the first cycle to 87.5% in the second cycle.

Improvements that need to be made include providing reinforcement to motivate students to learn and ensuring supervision during the learning process so that students only access materials related to the subject matter. Other strategies include encouraging students to attentively observe peers who actively share opinions, motivating them by offering praise or rewards, and providing opportunities for students to ask questions when they encounter difficulties.

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6. AUTHORS' NOTE

The authors declare that there is no conflict of interest regarding the publication of this article. The authors confirmed that the paper was free of plagiarism.

7. REFERENCES

Azhar, A. (2003). Media Pembelajaran. In PT. Raja Grafindo Persada (p.300). PT Raja Grafindo Persada.

Bambang, W. (2008). Teknologi Pembelajaran Landasan & Aplikasinya. In PT. Rineka Cipta (P.208). PT. Rineka Cipta.

Choiroh, N. (2020). Efektivitas Pembelajaran Berbasis Daring / E-Learning Dalam Pandangan Siswa. In Institut Aga Islam Press (p. 150). Intitut Agama Islam Press.

Gonibala, A., Latjompoh, M., & Ahmad, J. (2024). Meaning learning model: Implementation, activities and responses of science students. *Journal of Research in Instructional*, 4(1), 49–58.

Riski, R., & Quratul Ain, S. (2022). The impact of handphone use on character development of children in elementary school. *Jurnal Ilmiah Sekolah Dasar, 6*(1), 145–156.

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