

Needs Analysis for Mobile Learning of Plant Structure and Development Topic

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Abstract: Digital media has the potential to support learning, such as Mobile Learning. The fact show that students currently have not matched their ability to use digital media for the sake of obtaining information. The purpose of this study was to analyze the media learning needs of Plant Structure and Development material. This type of research is descriptive qualitative with observations and surveys. Research instruments in the form of observation sheets and questionnaires. This research was conducted from July to September 2019 at the Biology Education Study Program, FMIPA, UM. The research subjects consisted of 33 students and 1 lecturer. The technique of determining the sample using purposive sampling. The results showed that the subject of Plant Structure and Development requires Mobile Learning media.

Key Words: needs analysis; media; mobile learning

Abstrak: Media digital berpotensi mendukung pembelajaran, seperti *Mobile Learning*. Fakta menunjukkan bahwa mahasiswa saat ini belum mengimbangi kemampuannya menggunakan media digital untuk kepentingan memperoleh informasi. Tujuan penelitian untuk menganalisis kebutuhan media pembelajaran materi Struktur dan Perkembangan Tumbuhan. Jenis penelitian ini adalah deskriptif kualitatif dengan observasi dan survei. Instrumen penelitian berupa lembar observasi dan kuisisioner. Penelitian ini dilakukan bulan Juli sampai September 2019 pada Prodi Sarjana Pendidikan Biologi, FMIPA, UM. Subjek penelitian terdiri dari 33 mahasiswa dan 1 dosen. Teknik penentuan sampel menggunakan *purposive sampling*. Hasil penelitian menunjukkan bahwa pembelajaran Mata Kuliah Struktur dan Perkembangan Tumbuhan membutuhkan media *Mobile Learning*.

Kata kunci: analisis kebutuhan; media; mobile learning

INTRODUCTION

Science-related technological advancements are accelerating at the moment. This state is characterized by the growing importance of digital in numerous spheres of life, including education. The importance of digital media has also influenced the evolution of education in the modern era. This digital media has the ability to support the world of education by facilitating the use of media during the educational process. Learning media is a medium that is used to deliver information during the learning process activities in order to accomplish learning objectives. Learning media include any physical tools that are purpose-built to deliver messages and foster engagement. These tools include original works (realia), printed, visual, audio, audiovisual, and multimedia resources, as well as web-based materials (Yaumi, 2018).

Learning will be more effective if it is accompanied by appropriate educational media.

The forms and types of instructional tool available today vary significantly, especially in a period of rapid technological advancement in every aspect of human life, including educational activities. Today's educational activities frequently entail the use of gadget technology items, including students. Students tend to utilize gadgets while learning. Gadgets can be used to facilitate the learning process (Rachmawati et al., 2017). Generally, learning media that are connected with ICT advancements take the form of learning applications.

Today's instructors can optimize learning applications as one of the new learning medium available. Educators must be encouraged to innovate in order to keep the millennial generation's attention. Educators of the future must be prepared to evolve into professional educators who are responsive to the dig-

ital world's progress. As one of the LPTKs, the State University of Malang (UM) plays a role in training students enrolled in educational study programs, such as the Biology Education Study Program, to become professional educators.

Biology educator candidates are expected to demonstrate proficiency in instructing students using biology instructional resources. Biology educational materials examine all forms of life, including plants. Botany is the branch of biology that focuses on plant science. In recent years, there has been a fall in university interest in botany (Drea, 2011). Uno (2009) notes that too often, while teaching botany in schools, the emphasis is placed on definitions. Students with cognitive memory abilities are rewarded, but their thinking abilities are not strengthened. One of these difficulties can be avoided if the teacher is knowledgeable with botany, particularly the material on Plant Structure and Development, which contains numerous terms.

According to field data, some undergraduate students of Biology Education at UM who enroll in the Plant Structure and Development course frequently access learning materials via personal electronic media in the form of smartphones (smartphones). Unfortunately, these prerequisites have not been met by the availability of educational content in learning media, particularly electronic media such as learning applications. The purpose of this study is to determine the educational media requirements for Plant Structure and Development (SPT) material.

METHOD

This study was a case of qualitative descriptive research conducted through observation and surveys. The instruments of the investigation were observation sheets and questionnaires. From July to August 2019, this research was conducted in the Biology Education Undergraduate Study Program, FMIPA, State University of Malang. The research subjects were 33 students who had taken the Plant Structure and Development course, as well as the course's lecturer. Purposive sampling was utilized to collect data. The data collection technique employed two processes, namely observation and survey. Observation is used to gather data on the learning that is taking place and to examine the learning gadgets and media that are being used. The survey step involved the distribution of questionnaires about lecturers' and students' needs

for learning material. Following the collection of qualitative data, the data analysis stage was performed.

RESULTS

The observations indicate that the Plant Structure and Development lecture makes use of a variety of media and instructional materials, including printed books, Power Point slideshows, and plant models. The majority of students use printed books from specific publishers that lack clear visualizations to complement the subject. The majority of students frequently use their smartphones to access educational resources.

According to the results of a poll of 33 students who attended the Plant Structure and Development Course, some barriers remain, including students' continued emphasis on memorizing material that has no relevance and some terminology for abstract information and principles. Students have been unable to adapt their learning media to their learning styles' modalities. Certain students exhibit a variety of distinct learning styles, as illustrated in Table 1.

Students learn the Plant Structure and Development Course through the use of printed books, electronic books, posters, Power Point presentations, and realia media. As illustrated in Figure 1, thirty-two students (97 percent) reported that they have never used Mobile Learning media while studying Plant Structure and Development.

Table 1. Students' Learning Styles

Learning Styles	Number of Students	Percentage (%)
Audio	1	3,03
Visual	7	21,21
Kinesthetic	2	6,06
Audiovisual	22	66,67
Others	1	3,03
Total	33	100,00

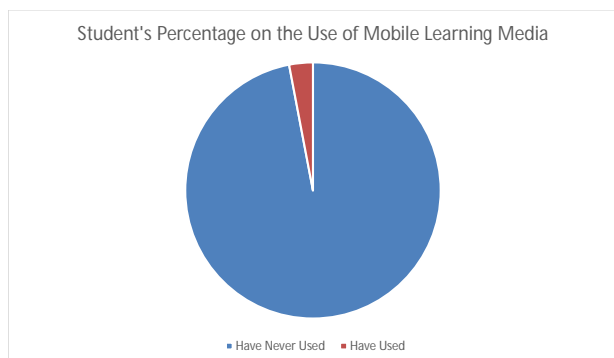


Figure 1. Mobile Learning Application Percentage

Thirty-three students responded that having Mobile Learning media was required to support learning in the Plant Structure and Development Course. According to the results of the questionnaire on the need for lecturers to support Plant Structure and Development, it was determined that the average student achievement in learning Plant Structure and Development is still below par, as the majority of students continue to place an emphasis on memorizing terminology. Students have never used mobile learning material before; they have always used printed books and power points. This media should be created to assist students in learning about Plant Structure and Development.

DISCUSSION

Prior to conducting research and development, it is necessary to undertake a needs analysis. This analysis of Mobile Learning media demands will go deeper into the subject by integrating qualitative data from observation and survey stages with relevant theories. According to the results of observations made throughout the Plant Structure and Development Course, learning occurred through the use of a variety of learning media. Media is a container containing messages that the sender wishes to forward to the intended recipient. The role of media in the learning component is critical, even more so than the manner of instruction (Maimunah, 2016).

According to Tafonao (2018), the media's involvement in the learning process is inextricably linked to the realm of education. Everything that can be utilized to channel information from the sender to the recipient in such a way that it activates the students' ideas, feelings, concerns, and interests in order to learn is considered learning media. Students can use learning media as a supplement to traditional classroom instruction. Until now, learning aids for Plant Structure and Development courses have included realia media, Power Point presentations, plant models, and printed texts. The majority of students use printed books from specific publishers that lack clear visualizations to complement the subject. This is one of the difficulties students have when attempting to master this course material. According to the poll, there are several other difficulties, including the fact that students are still focused on memorizing the material rather than on its meaning, and some of the material's vocabulary is abstract. Students believe they have been unable to adjust the learning media to their learning styles' modalities.

Student learning modalities are classified as follows: (1) visual learning styles; (2) auditory learning styles; and (3) kinesthetic learning styles. These three categories differ in their method of data collection. Visual learners will learn through sight, auditory learners will learn through hearing, and kinesthetic learners will learn through movement and touch. The inclination of students to study according to their learning modes should be fostered so that learning success can rise optimally (Widayanti, 2017).

According to survey data, students choose audiovisual learning techniques (66.67 percent), visual learning styles (21.21 percent), kinesthetic (6.06 percent), and auditory (3.03 percent), among others (3.03 percent). These findings suggest that the majority of students are more adaptable to audiovisual learning media, such as Mobile Learning media that incorporates image and video elements. Mobile learning is gaining popularity in higher education (Foti & Mendez, 2014). Mobile learning material can be used to supplement the classroom experience (Sarrab, Elgamel, & Aldabbas, 2012). Sari & Nurcahyo's (2018) research demonstrates that the application of Mobile Learning can increase students' motivation to learn.

Mobile learning evolved as a response to education's difficulties. The introduction of mobile learning encourages students to cooperate in their learning, problem-solving, and project-based activities (Mehdipour & Zerehkafi, 2013). Effective utilization of Mobile Learning media has an impact on the learning process. Numerous research studies demonstrate the importance of Mobile Learning media in the learning process. Mobile learning media can pique students' interest in learning and help them develop practical skills (Erlinawati et al., 2016). Mobile learning is a technique for education that makes use of information and communication technology (Thohari et al., 2013). According to Zheng (2015), the advantage of mobile learning media is that it is flexible in terms of space and time. Mobile learning is the process of utilizing mobile devices, either alone or in conjunction with technology advancements.

Digital media in the form of mobile learning is one of the preferred methods for enhancing student competencies through fascinating and enjoyable approach (Mohammadyari & Singh, 2015). Mobile learning is a method of education that places an emphasis on convenience and practicality and may be used anywhere and at any time (Aripin, 2018). Mobile Learning enables students to learn at their convenience. Students can access learning resources, chat with studying peers, and access or store content using

Mobile Learning devices, collaborating both inside and outside the classroom. Students now demonstrate the rapid development of mobile device technology through their usage of mobile phones, smartphones, phablets, computers, tablets, e-readers, and portable audio and video players, among other devices. These mobile gadgets are ubiquitous in daily life, including educational activities.

According to the survey results, thirty-two students reported that they have never used Mobile Learning media to assist them in learning about Plant Structure and Development. This is consistent with the supporting lecturer's information that students have never used Mobile Learning media in this course, and thus it is necessary to develop Mobile Learning media as a supplement to student learning, the majority of which are currently close to digital media, such as Mobile Learning media. This medium is expected to assist students in optimizing their average student accomplishment when it comes to studying about Plant Structure and Development. According to the student questionnaire survey results, thirty-three student respondents felt that having Mobile Learning media was required to support learning in the Plant Structure and Development Course. Current students are members of generation M, who are accustomed to using mobile devices (Tabor, 2016), to the extent that practically all of their activities, including learning, frequently involve the use of mobile media to access instructional resources.

Mobile Learning Media is a relatively recent technology in the educational environment. Mobile Learning Media enables students to learn independently and without regard for space or time constraints (Sönmez et al., 2018). Mobile Learning is a service that offers pupils with general knowledge electronically (Hidayat & Utomo, 2014). Because mobile learning is a component of e-learning activities (Viberg, 2015), the availability of Mobile Learning media enables the continuation of e-learning activities, which are critical educational demands in the twenty-first century. Mobile learning application media is a necessary device for education in the Industrial Revolution 4.0 era (Efriyanti & Annas, 2020)

Mobile learning media can serve as a foundation for ongoing learning in the digital era, as the majority of higher education institutions now provide supporting facilities in the form of an internet network, as observed during learning observations in the FMIPA UM undergraduate biology education study program. Students must use Mobile Learning media to review

lecture topics. Students value the capacity to use Mobile Learning media appropriately and effectively (Brown & Mbat, 2015), which means that the development of Mobile Learning media must be carefully designed.

CONCLUSION

The outcomes of the study indicate that the usage of mobile learning media is necessary for students to learn about the structure and development of plants. Research suggests that it is beneficial to examine media demands in addition to those for other courses, particularly microscopic lecture materials, in order to make learning easier for students and make learning more enjoyable.

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