

NEEDS IDENTIFICATION FOR THE DEVELOPMENT OF DIGITAL BOOK FOR E-LEARNING

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Abstract

Indonesia needs to have human resources with e-learning capabilities. Therefore, the process and learning resources for forming competence in this field must be considered properly. Based on the results of the interviews and distribution of problem identification questionnaires, it was found that students needed help understanding practical learning. It was also found that there was still material that students needed help understanding, including suitable material that was important to be mastered by an e-learning administrator. This study aims to identify the need for digital books for e-learning subjects in the Department of Educational Technology, Faculty of Educational Science, State University of Makassar. This research and development adopt the first step of the R&D model from Borg & Gall. The subjects of this study were 20 students who had just finished programming the subject. The data collection technique used was a questionnaire. The analysis technique used to process the data is a quantitative descriptive analysis technique. The results of the study indicate that there is a high need for the development of digital books in these subjects.

Keywords: needs identification, research and development, digital book, e-learning

Abstrak

Penting bagi Indonesia untuk memiliki SDM yang memiliki kemampuan dalam bidang *e-learning*. Maka dari itu proses dan sumber belajar dalam membentuk kompetensi di bidang ini harus diperhatikan dengan baik. Berdasarkan hasil wawancara dan penyebaran kuesioner identifikasi permasalahan ditemukan bahwa mahasiswa menghadapi kesulitan untuk memahami pembelajaran yang bersifat praktik. Ditemukan juga bahwa masih ada materi yang tidak dipahami mahasiswa, di antaranya adalah materi praktik yang penting untuk dikuasai oleh seorang pengelola *e-learning*. Penelitian ini bertujuan untuk mengidentifikasi kebutuhan buku digital mata kuliah *e-learning* pada Program Studi Teknologi Pendidikan Fakultas Ilmu Pendidikan Universitas Negeri Makassar. Penelitian dan pengembangan ini mengadopsi langkah pertama model R&D dari Borg & Gall. Subjek penelitian ini adalah 20 mahasiswa yang baru saja selesai memprogramkan mata kuliah tersebut. Teknik pengumpulan data yang digunakan adalah kuesioner. Teknik analisis yang digunakan untuk mengolah data adalah teknik analisis deskriptif kuantitatif. Hasil penelitian menunjukkan terdapat kebutuhan yang tinggi akan pengembangan buku digital di mata kuliah tersebut.

Kata kunci: identifikasi kebutuhan, penelitian dan pengembangan, buku digital, *e-learning*

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INTRODUCTION

Information and communication technology has helped people in their daily lives in various sectors in an era where technology is currently developing rapidly, including the transportation, culinary, hospitality, and education sectors. We can see the development of information and communication technology in Indonesia from the number of internet users in Indonesia. Based on research conducted by We Are Social & Hootsuite (2021) entitled "Digital 2021", in January 2021 Indonesia had an internet



penetration rate of 73.7%, in other words there were 202.6 million internet users out of a population of 274.9 million people. This figure has increased by 15.5% or 27 million when compared to data in January 2020. Hootsuite reports that internet users aged 16 to 64 years are known to have several types of electronic devices, such as mobile phones (both smartphones and non-smartphones), laptops/computers, tablets, smartwatches, and so on. Smartphones are the most popular of these various types of electronic devices. It is noted that 98.3% of Indonesian internet users aged 16 to 64 years own a cell phone. Moreover, in 2020 Indonesia was hit by the Covid-19 pandemic so that the use of technology became an option that cannot be postponed (Arnidah & Anwar, 2021).

The internet in the field of education can be used as a learning resource and also a learning medium. There are 3 functions of the internet (as media) in the learning process, namely as a component (complementary), supplement (additional), and substitution (substitute) for learning in educational institutions (Munir, 2012). One form of using the internet in education is e-learning. E-learning is an abbreviation of electronic learning, which in Indonesian means electronic learning. E-learning is basically learning that is carried out electronically or online by utilizing information and communication technology. Using e-learning, people can learn anywhere and anytime, even though they are separated by long distances, even though they are from different countries. Baris (2015: 427) in his research entitled *Future of E-Learning: Perspective of European Teachers* found that "lifelong learning and blended learning will become popular" which in Indonesian means lifelong learning and blended learning. Blended learning itself is a learning method in which the face-to-face learning process is combined with the e-learning process. Therefore it is important for education in Indonesia to have human resources who have capabilities in the field of e-learning

The Department of Educational Technology, Faculty of Educational Science, State University of Makassar has a vision to become a center for education, study, development in the field of Educational Technology and Curriculum, which produces graduates who are competent, competitive, with character, and have an entrepreneurial spirit. Based on this vision, this department targets several graduate competencies, namely main competencies, supporting competencies, and other competencies/graduate choices. Each of these main competencies is pedagogic, personality, social, and professional. The intended professional competence is the ability to master learning material in a broad and in-depth manner which allows guiding students to meet the competency standards set out in the National Education Standards. These professional competencies are then translated into 10 sub-competencies, and one of them is utilizing information and communication technology in communicating for learning purposes. This department has developed a curriculum in order to realize the graduate competencies above, and one of them is the Online Learning/E-Learning subject in semester 5 with a weight of 4 credits and is included in the core subject. This subject presents material regarding the theory and practice of developing online learning.



Researchers conducted an interview in March 2021 with one of the students who had just programmed this subject, namely in the odd semester of the 2020/2021 academic year. It was found that students had difficulty understanding practical learning material because the material was delivered through online learning using the share screen feature of the Zoom video conferencing application. Difficulties are experienced when the quality of the internet network that is owned starts to be unstable or even bad during the process of delivering material. This causes students to experience lagging behind material explanations and will find it difficult to follow the explanation of the next stages in the practical material. This is in line with the results of Monica & Fitriawati (2020) research which found that there were students who complained that learning via video conferencing sometimes caused educators who were teaching to disappear from the virtual space depending on the signal strength during learning. The same thing was also found in the research of Kelana et al. (2021) that inadequate facilities and infrastructure, disruption of internet connection, wasteful use of internet quota are difficulties faced by students during online learning. Meanwhile, lecturers also cannot fully observe and control students one by one. Therefore it can be concluded that the delivery of practical learning materials is not suitable for delivery through online learning using video conferencing applications.

In response to this, the researcher then identified the problems in the subject using an online survey method using the Google Form. The survey was conducted from 7 to 27 March 2021 among students of the Department of Educational Technology, Faculty of Educational Science, State University of Makassar who had just finished programming an e-learning subject with 20 respondents participating. The simple random sampling technique was used in this survey to provide equal opportunities for the entire population to participate as respondents. From this process, data were obtained from 20 students who were willing to participate and provide data.

Based on the identification of these problems, it was found that there were competencies that were not mastered by some students, and some of them included practical material that was important for e-learning administrators to have. It was also found that several students complained about a network that did not support the lecture process considering that their lectures were held online using the Zoom application due to the Covid-19 pandemic. The quality of the internet network that does not support this has the potential to cause students to miss the material being explained. Moreover, if the material is procedural practical material, then one step left behind from the procedure will make students unable to follow the next steps.

In addition, when asked about what they needed so they could better understand learning material, there were students who wrote that they needed teaching materials. This raises questions, because in these subject teaching materials are already available that are used during the lecture process. This shows that students still need other learning resources. In addition, there were also those who wrote that they needed practical video tutorials that could be accessed at any time, as well as more explanation for LMS



(Learning Management System) material, which is procedural practical learning material.

Based on the findings above, the researcher concluded that students in E-Learning subject need learning resource facilities that make it easier to understand learning material in E-Learning subject that can be accessed anytime and anywhere, whether there is a network or not. there is an internet network. A suitable learning resource for this problem is a digital book. According to Andina (2011), digital books which are seen as free and easy to obtain just by downloading, are very much in line with the lifestyle of Indonesian people who tend to like things that are practical and inexpensive. Digital books are able to provide learning materials through the media of text, images, audio and video. Material in digital books can be made available for online as well as offline access. In addition, digital books or electronic books are suitable for practical material. This is because understanding of learning material can be improved through concrete examples or steps contained in the form of learning videos (Arnidah et al., 2020)

Researchers then view that it is necessary to develop digital books that can help students to learn E-Learning subject material. However, before carrying out a learning product development, it is necessary to identify needs first to find out whether students really need the development of digital books in that subject. The results of identifying these needs are then used as a strong foundation in developing digital books for the E-Learning subject in the Department of Educational Technology, Faculty of Educational Science, State University of Makassar.

METHOD

This research is initial research in the development of digital books for E-Learning subject in the Department of Educational Technology, Faculty of Educational Science, State University of Makassar. This study uses research and information collecting steps from the research and development model proposed by Borg and Gall (1983). The subjects in this study were 20 students who had programmed the subject. The data in this study were collected using a questionnaire and analyzed using a quantitative descriptive analysis technique. Qualitative descriptive analysis was carried out to process the data into the form of a percentage regarding the object studied so that general conclusions can be obtained. The percentage of response for each subject was calculated using the formula from Tegeh and Kirna (2010) as follows.

$$\text{Percentage} = \frac{\sum (\text{Answer} \times \text{rating of each assessment})}{N \times \text{highest rating}} \times 100\% \quad (1)$$

Information : \sum = Sum

N = The total number of questionnaire items



After finding the percentage of each subject, then the average response percentage for each subject is calculated using the following formula

$$\text{Percentage} = F : N \quad (2)$$

Information : F = Total percentage of the whole subject

N = Many subjects

General conclusions are drawn using the category table from Wati et al. (2020) as can be seen in Table 1.

Table 1. Results of responses needs identification regarding student perceptions of the learning process

Percentage	Category
0 – 1.9%	Not needed
2 – 25.9%	Few need
26 – 49.9%	Less than half need
50%	Half need
51.1 – 75.9%	More than half need
76 – 99.9%	Most need
100%	All need

RESULTS AND DISCUSSION

Result

Table 2. Results of questionnaire responses

Subject	Score Based on Question															
	Student perceptions of the learning process									Student perceptions of the learning resources						
	1	2	3	4	5	6	7	%	1	2	3	4	5	6	7	%
1	3	2	2	1	1	1	5	42.9	3	4	5	5	5	5	5	91.4
2	2	2	1	3	5	3	5	60.0	3	5	5	5	5	5	5	94.3
3	3	3	2	4	1	2	5	57.1	3	5	5	5	5	5	5	94.3
4	3	2	3	3	5	3	5	68.6	3	5	5	5	5	5	5	94.3
5	3	4	3	4	3	3	5	71.4	3	4	5	5	5	5	4	88.6
6	3	3	2	3	5	2	4	62.9	4	4	5	5	5	5	5	94.3
7	2	3	2	2	5	4	5	65.7	4	5	5	5	5	5	5	97.1
8	3	2	4	1	5	3	5	65.7	4	5	5	5	5	5	5	97.1
9	2	2	1	5	3	2	5	57.1	2	3	5	5	5	5	5	85.7
10	2	1	1	2	3	1	3	37.1	2	5	5	5	5	5	5	91.4
11	3	2	1	2	5	3	4	57.1	3	4	4	4	3	2	4	68.6
12	2	2	2	2	5	2	4	54.3	3	4	5	5	5	5	5	91.4
13	3	3	2	3	3	2	5	60.0	3	4	5	5	5	5	5	91.4
14	1	1	1	3	3	2	5	45.7	1	3	5	5	5	5	5	82.9
15	2	2	2	4	2	2	4	51.4	2	4	4	4	4	4	4	74.3
16	2	2	1	3	3	1	3	42.9	2	3	5	5	5	4	4	80.0
17	2	2	2	2	3	2	5	51.4	3	4	5	5	5	5	5	91.4
18	3	3	3	2	1	3	5	57.1	3	3	5	5	3	3	5	77.1
19	2	2	2	3	4	4	4	60.0	2	4	5	5	5	5	5	88.6
20	2	2	2	3	5	2	4	57.1	3	4	4	5	5	5	5	88.6



Average 56.29 88.14

Table 3. Results of responses needs identification regarding student perceptions of the learning process

No	Question	Number of Students Giving Score				
		1	2	3	4	5
1	Does the lecturer use fun learning methods?	0	0	9	10	1
2	Does the lecturer use learning resources that suit your learning needs?	0	1	5	12	2
3	Is the material taught by the lecturer obtained from various learning sources?	0	1	3	10	6
4	Is E-Learning subject material difficult to learn?	2	6	8	3	1
5	Do lecturers use digital books in learning?	8	1	7	1	3
6	Are the learning resources used by the lecturer in accordance with the learning objectives?	0	2	6	9	3
7	Does the lecturer give tests/assignments at the end of the lesson?	0	0	2	6	12

Table 4. Results of responses needs identification regarding student perceptions of the learning resources

No	Question	Number of Students Giving Score				
		1	2	3	4	5
1	In your opinion, are the learning resources used by the lecturer interesting and fun?	0	3	11	5	1
2	Do you need other learning resources besides the learning resources that have been used by lecturers?	0	0	4	10	6
3	Do you like learning resources that feature text, images, sound, and video?	0	0	0	3	17
4	Do you agree if learning resources for E-Learning subject are developed which contain text, images, sound, and video?	0	0	0	2	18
5	In your opinion, are learning resources that contain text, images, sound, and video able to help in understanding E-Learning subject material?	0	0	2	1	17
6	Do you agree if E-Learning subject material is presented in the form of a digital book containing text, images, sound, and video?	0	1	1	2	16
7	Do you agree if the digital book developed is loaded in the form of an Android application?	0	0	0	4	16



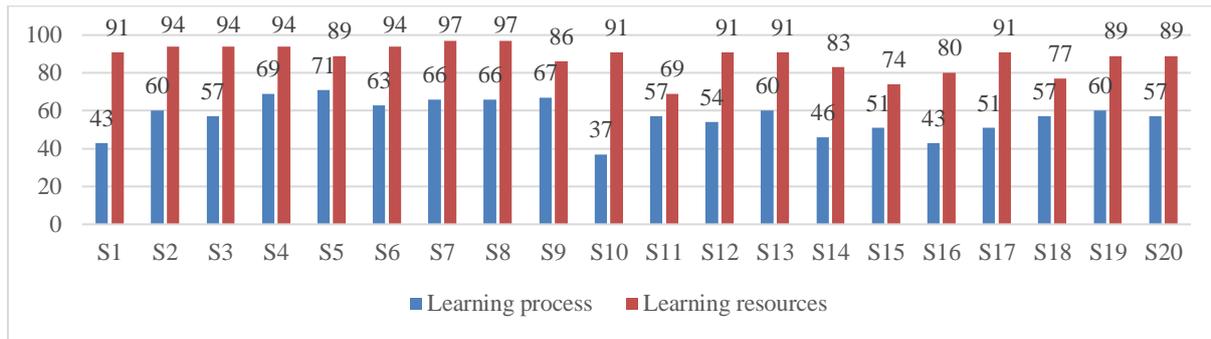


Figure 1. Percentage level of needs of each subject based on needs identification

After the results of completing the questionnaire were viewed as a whole and analyzed using the formula mentioned in the method, it was found that student perceptions in the learning process section showed an average percentage of 56.29%. This figure is a low number so that researchers conclude that in terms of the learning process is good and has a low level of research needs. While the perception of students in the learning resources section shows a high average percentage of 88.14%. If general conclusions are drawn using Table 1, the need for developing digital books in the E-Learning subject, the Department of Educational Technology, Faculty of Educational Science, State University of Makassar is in the category of most need.

Discussion

One form of using the internet in education is electronic learning, or better known as e-learning. Along with the development of this era, the use of e-learning is also increasingly popular. This is in line with Baris (2015) research that long life learning and blended learning will become popular. As it is known that blended learning is a type of learning that combines e-learning and face-to-face learning. Therefore it is important for human resources in the world of education in Indonesia to have competence in the field of e-learning. The Department of Educational Technology, Faculty of Educational Science, State University of Makassar is one of the agencies engaged in producing graduates with one of the graduate competencies being competence in the field of e-learning. For this reason, this department provides Online Learning/ E-Learning subject which have a weight of 4 credits and are core and mandatory subject in the department.

After conducting an interview with one of the students who had just finished programming the subject, it was found that students had difficulty understanding practical learning material. This is because the material is delivered through online learning using the share screen feature of the Zoom video conferencing application. Difficulties are experienced when the quality of the internet network that is owned starts to be unstable or even bad during the process of delivering material.

Furthermore, researchers identified problems using questionnaires for students who had just programmed E-learning subject. From the results of the identification of these problems it was found that there were still competencies that were not mastered by students. Among these include skills



competencies that are important to be owned by people engaged in the world of e-learning. Based on open questions about what they need so that they can be more helped to understand learning material, there are students who write that they need teaching materials. This raises questions, because in these subject teaching materials are already available that are used during the lecture process. This shows that students still need other learning resources. Apart from that, there were also students who wrote that they needed video tutorials for practical material which could be accessed at any time and also more explanation for learning management system (LMS) material, which is a practical learning material.

Based on the data found from the identification of this problem, the researcher concluded that students in this subject needed learning resource facilities beyond the available learning resources. The learning resources needed are learning resources that can make it easier for students and also help students understand the learning material for the subject. These learning resources should be used by students anytime and anywhere, whether connected or not connected to the internet network. Researchers view that the right learning resources for these problems are digital books. However, this is not enough to be used as a basis, therefore it is necessary to identify needs.

In response to these conclusions, the researcher then identified the need for digital book development in the subject. Identification of needs is done with questions about students' perceptions of the learning process and learning media used when they take the subject. Based on the data it was found that in terms of the learning process in these subject it was classified as good, but in terms of learning resources it showed a high level of need. In closed questions regarding learning media, a high percentage level of need was obtained. The open questions also show response data which is dominated by problems related to learning media. In addition, students also strongly agree that E-learning subject material is presented in the form of a digital book that contains text, images, sound and video.

CONCLUSION

The need for developing digital books for the –E-Learning subject in the Department of Educational Technology, Faculty of Educational Science, State University of Makassar, based on all the findings from this study, is in the category of most need. So it can be concluded that it is necessary to conduct research and development of digital books for e-learning subject in these subject.

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