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The Development of Case Study Teaching Materials for Prospective Teachers in LPTK

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Abstract

Teaching materials and content on UNP e-learning are already available and can be accessed by students, but case study-based teaching materials with digital content are not available. Teaching materials in the digital form need to be further developed, especially case study-based ebooks. This study was aimed to develop digital teaching materials based on case studies for DDIP courses. This type of research is the R&D ADDIE model. The participant of this research was 82 prospective teachers or students in LPTK, Padang State University (UNP). The data collection is used questionnaire and observation. All instruments used have been tested for instrument validity by several experts consisting of various sciences including learning media, learning evaluations, learning models, and strategies. The development of digital teaching materials based on access studies uses video as an introduction to the case. Based on the expert assessment of the case study-based ebook validation, 78.1 values range from 61 to 80 which is interpreted as valid. Then the ICC score or ebook intra-class correlation based on case studies, the overall rater level of consistency is good, 0.767 the consistency level is good. Hence, it can be said that this case study-based digital teaching material has been valid and effective, especially for prospective teachers in LPTKs. It can be stated that during the COVID-19 pandemic, it is necessary to develop digital teaching material to increase student activity in accessing digital teaching materials and student activity during the learning process.

Keywords: Case studies, Digital learning materials, Digital content.

Introduction

The Covid-19 pandemic has become a point of change in every sector of life, one of which is the education sector. The face-to-face learning process was combined with online learning models. This certainly improves the implementation of technology in the educational process, especially in improving the quality of online learning. In line with this, Miarso (2016) reveals that current technological developments are closely related to the development of science and technology that are used to realize effective and efficient learning activities (Vuran et al, 2020).

To achieve the objectives of learning certainly cannot be separated from various aspects of it. The learning process is related to a series of activities involving various components which include, learning objectives, learning materials, learning media, and evaluation (Jazuli, 2017; Mirici & Uzel, 2021). One of the important components in achieving learning objectives is the availability of interesting and easy-to-use teaching materials for students. In connection with online learning and the use of strings which have increased recently, it also affects the form of teaching materials developed, which are not only in the form of printed teaching materials but also electronic teaching materials or also known as digital teaching materials (Istiqomah, 2019).

However, the number of teaching materials that are still theoretical affects the learning model applied in the classroom. The problem that still arises is the use of conventional learning models, such as lectures and group discussions or teacher-directed learning (Rahmi & Azrul, 2019). This will make it difficult for students to reach the level of critical thinking and skills in solving problems. In addition, the availability of teaching materials that are still in the form of theory-oriented makes students tend to memorize theories, without understanding the meaning and analysis of the material read and studied.

The ability to solve problems systematically, logically, and independently is needed by students, including education students. These abilities can be developed through courses with the application of the case study method. Moreover, the case-based approach was shown to improve college students' ability to solve problems such as those that arise in dealing

with classroom management issues (Choi & Lee, 2009). Besides, the case study method is motivating, it can promote active involvement, participation, and critical thinking among participants (Kelch & Kim, 2014). The case study method is the most widely implemented in the fields of education and medicine (Kim, et al.: 2006). The case study method is not the latest, but it is still relevant to current needs and demands (Garrido, Morales & Serina, 2016), (Corbat, Nauval, Henriet, Lapayre, 2020). Many case studies are listed in Semester Learning Plans (RPS) in courses, but it will have more impact if the method is supported by teaching materials that are also based on case studies.

Case studies are one of the learning methods that are the Main Performance Indicators (KPI) in universities but are still minimally applied. This method is listed in various RPS in universities but is not supported by adequate printed and digital teaching materials, especially digital-based teaching materials for online learning (Garrido, Morales & Serina, 2016). Based on the 2020 online content assessment results, specifically for the Basic Educational Sciences (DDIP) general course, there has been no digital content developed independently and so far, only presenting the material. This course is very important because one of the superior values of UNP as an LPTK is to produce prospective educators and education personnel who can provide education at the school level [5], [6]. To produce excellent graduates, adequate educational knowledge is needed. One of them is through the DDIP course. Teaching materials in this course need to be prepared optimally by preparing problem-based digital materials. So far, there have been no case study-based teaching materials for KPI achievement. Related to these needs, researchers already have printed teaching materials with ISBNs [7], but researchers see the urgency of the need for case study-based digital teaching materials. Case study-based digital teaching materials are needed, especially for online learning (Garrido, Morales & Serina, 2016). Post-covid, face-to-face learning will still be held but will not return to the way it was before. Therefore, the purpose of this research is to develop valid, practical, and effective case study-based digital teaching materials in DDIP courses.

METHOD

The type of research is development research (R&D). This research is starting with identifying, namely identifying problems in the Basics of Educational Science course. The first stage is to analyze needs and determine relevant digital content according to the results of the needs analysis. Data collection needs analysis was carried out using a questionnaire to assess the needs of students and lecturers for teaching materials and continued by designing case study-based teaching materials and validation of teaching materials was carried out by the lecturer. The participants of this research consist of 82 students. Experts comprising learning media, curriculum, and learning

design experts. The collection of data is used observation and questionnaires. All instruments used have been tested for instrument validity by several experts consisting of various sciences including learning media, learning evaluations, learning models, and strategies. Based on the results of the expert appraiser, Aiken's validation coefficient of 0.60 means that the instrument is valid. Meanwhile, in the instrument reliability test, Cronbach's Alpha result of 0.971 means that the instrument has passed the minimum value and is reliable for use (Eisingerich and Rubera. (2010: 27).

Experts conduct an assessment by accessing case study-based teaching materials and providing their input and assessment, the instrument is revised and used to improve the product. This research was conducted at Padang State University on students of basic education subjects. The research instruments were a questionnaire for needs analysis, an assessment rubric for validation, an interview guide, and an assessment rubric. Data analysis in this study uses quantitative analysis by looking at the level of product validity and the expert's ICC value.

RESULTS AND DISCUSSION

Need Analysis Phase

The need analysis includes analysis of specific skills, curriculum, learning objectives, learning procedures, learning resources needed, learning tasks that need to be involved to achieve learning objectives, and determining relevant digital content according to the results of the needs analysis. Based on the results of responses to students who have done lectures, it was found that the teaching materials in the LMS UNP (elerning2.unp.ac.id) were the most widely accessed learning resources by students. The results in more detail can be seen in Figure 1.

In Figure 1 it can be seen that the learning resources read by students include textbooks, websites, LMS, and ebooks. However, in percentage terms, the most widely read learning resources by students are learning resources on the UNP Learning Management System (LMS) (68%) and website pages (38%) both learning resources are digital learning resources supported by the internet network.

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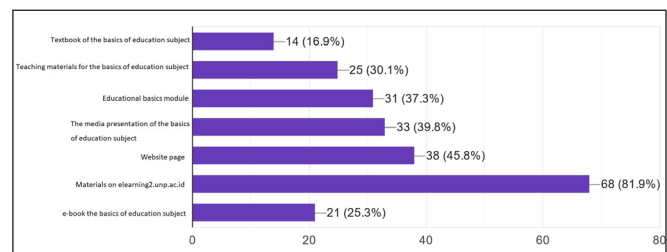

Fig. 1: Diagram of learning resources read by students

terms, the most widely read learning resources by students are learning resources on the UNP Learning Management System (LMS) (68%) and website pages (38%) both of which are digital learning resources supported by the internet. It can be stated that the use of internet technology for learning is currently the most widely used. With internet technology, the distribution of digital materials is increasingly accessible anywhere and anytime. Learning Management System (LMS) technology allows learning to be more independent (Babo et al., 2012) so that learning using LMS can improve student understanding (Mershad & Wakim, 2018). The variety of content formats desired by students is also influenced by digital learning resource platforms that are often accessed by students (U Rahmi et al., 2021). This is related to previous data that LMS media and website pages can contain various media formats that are interconnected (Simonson et al., 2019) (U. Rahmi et al., 2018)

At this stage, the researcher also collects data about what content students like in conducting lectures on the basics of Educational Sciences. A total of 82 respondents indicated that the tendency of content favored by students is content in digital form. The distribution of this data can be seen in Figure 2.

The results of the questionnaire on the content of teaching materials that are liked by students, 69.5% of respondents make content in a digital format their preferred content, while 30.5% like printed content. The data is related to the data in Figure 1 regarding access to learning resources that are widely accessed by students, namely LMS and web pages. LMS and web pages connected to the internet make learning resources consisting of teaching materials in a digital format more accessible to students. This makes the tendency of digital content to be liked by students as a result the motivation to carry out learning is more meaningful (Ulfia Rahmi & Azrul, 2021; Wahono, 2018).

The need for digital teaching materials is also accompanied by the need for teaching materials that have case study content, this can be seen in Figure 3

Based on the data in Figure 3, it is obtained that 83.1% of respondents want case study-based teaching materials. Case

study-based learning is better than conventional learning methods, where case-based teaching can improve critical thinking skills and classroom interaction. In the case learning method, students are challenged to analyze problems presented as cases, make conclusions based on limited information, make decisions on uncertain, ambiguous, and conflicting issues that simulate the real world (Kim et al., 2006).

Design Phase

At the design stage, a literature review was carried out related to theories relevant to case study-based digital teaching materials for prospective teachers in the Basics of Educational course. At this stage, a data collection tool in the form of an instrument was also developed to assess the feasibility of case study-based teaching materials to be developed. The evaluation instrument in the form of a questionnaire consists of several indicators that compose case study-based teaching material following are the indicators for the preparation of case study-based teaching materials, which can be seen in table 1.

After that, the researchers designed case study digital teaching materials. This stage obtains a prototype of case study-based digital teaching materials for the Basics of Educational course.

Development Phase

At the development stage, case study-based digital teaching materials are made into this prototype and validated. The responses of experts and lecturers are very high because case study-based digital teaching materials already contain diverse content such as text, image, audio, and video content that is integrated with a link that uses a QR code that can be accessed by students using their smartphones.

The results of the expert assessment of teaching materials based on the expert assessment of case study-based ebook validation is 78.1. Referring to Riduwan (2013) that the range of values 61-80 are interpreted as valid.

Then the ICC (Intra-class Correlation Coefficient) value or the case study-based intra-class ebook correlation.
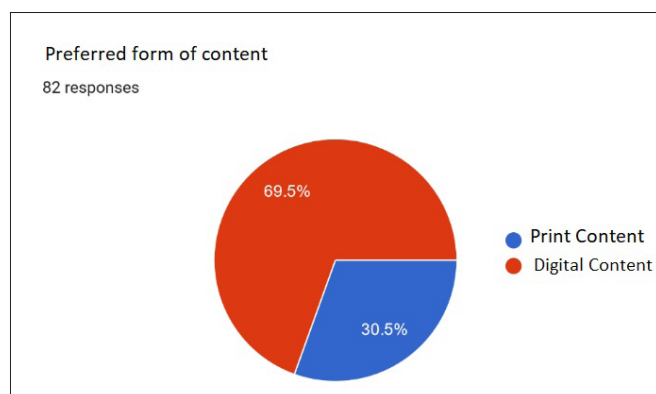

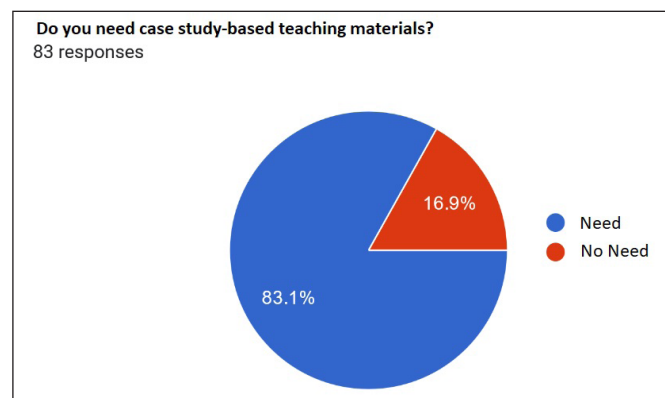**Fig. 2:** Content liked by students in the Basics of Educational course

Fig. 3: Student case study material needs

Table 1: Case study-based teaching materials

No	Indicator	Sub-indicator	Questions items
1	Material Presentation	Material arrangement	The composition of the material from easy to difficult
2			The material contains relationships with other materials
3			The material is presented by scientific provisions
4			Material is reinforced with illustrations
5			Teaching materials are presented by the supporting content of the case
6	Material Component	Draft	Concept material is under learning
7			Concept material is supported by clear charts
8		Fact	Fact type material is presented clearly
9		Procedure	Procedure material is presented systematically
10			The procedure material is easy for students to follow
11	Learning Activities	Oriented to learning activities	Case material makes students do observing activities.
12			Activities in teaching materials help students focus
13		Learning procedure	Teaching materials guide the learning steps
14			Teaching materials contain evaluation activities
15		Achievement of objectives	Teaching materials contain learning outcomes
16	Digital content	Format compatibility	The format of the case video is by the learning objectives
17			The format of the case text is by the learning objectives
18		Access	Teaching materials are easily accessible with mobile devices
19			Teaching materials are easily accessible with personal computers
20		Supporting technology	Teaching materials support multimedia technology
21	Case study	Presentation	Case presented clearly
22			An introductory presentation of the case attracts users
23			Events in cases relevant to the topic
24			The presented cases represent the topics to be studied
25			The presentation of cases has varied

Table 2: Results of the validator assessmen

	Intraclass Correlation	95% Confidence Interval		F Test with True Value 0			
		Lower Bound	Upper Bound	Value	df1	df2	Sig
Single Measures	,355a	,194	,560	4,299	24	120	,000
Average Measures	,767c	,591	,884	4,299	24	120	,000

In detail, the results of the validator assessment can be seen in table 2

The validation value of the ICC value was obtained from the SPSS 20 calculation. These results show that from the overall rater the level of consistency of the assessment is good, namely 0.767. This means that the assessment made by the validator on case study-based ebooks has a good level of consistency, which is between 0.75-0.90.

After the product is declared valid, then a product reliability test is carried out, reliability shows the extent to which the measurement results with the tool can be trusted. The measurement results must be reliable in the sense that they must have a level of consistency and stability.

Based on the reliability test carried out, it was found that Cronbach's Alpha value was 0.976. After that, the comparison between the calculated r values and r tables, from the comparison, the calculated r values > from r tables, this means that the case study-based ebook assessment has a high level of reliability.

Discussions

Based on the results of the needs analysis and recommendations for teaching materials developed for the basics of Educational courses. This stage begins with identifying problems that occur in the Basics of Educational course. The analysis includes skills analysis.

Specifically, curriculum, learning objectives, learning procedures, learning resources needed, learning tasks that need to be involved to achieve learning objectives, and determining relevant digital content according to the results of the needs analysis. The results of responses to students who have done lectures found that the teaching materials in the LMS UNP (elerning2.unp.ac.id) were the most widely accessed learning resources by students.

Based on the needs analysis, the learning resources read by students include textbooks, websites, LMS, and ebooks. However, in percentage terms, the most widely read learning resources by students are learning resources on the UNP Learning Management System (LMS) (68%) and website pages (38%) both of which are digital learning resources supported by the internet. It can be seen that the use of internet technology for learning is currently the most widely used. With internet technology, the distribution of digital materials is increasingly accessible anywhere and anytime. Learning Management System (LMS) technology allows learning to be more independent (Babo et al., 2012) so that learning using LMS can improve student understanding (Mershad & Wakim, 2018).

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The need for digital teaching materials is also accompanied by the need for teaching materials that have case study content, data shows that 83.1% of respondents want case study-based teaching materials. Case study-based learning is better than conventional learning methods, where case-based teaching can improve critical thinking skills and classroom interaction. In the case learning method, students are challenged to analyze problems presented in the form of cases, make conclusions based on limited information, make decisions on uncertain, ambiguous, and conflicting issues that simulate the real world (Kim et al., 2006).

Case study-based ebooks were designed based on the results of the needs analysis which found that digital-based teaching materials were the most visited and preferred teaching materials by students, this is a good trend to be continued to improve the quality of learning. For this reason, a case study-based ebook was developed for the DDIP course. The developed ebook consists of 2 formats, namely PDF and Epub formats. This is to support the diversity of devices used by students because consideration of access devices must also be a concern in developing media and teaching materials. In this connection, apart from the relation with learning objectives, the selection of media is another factor that needs to be considered in the selection of media. The first is the availability of access sources in the field. That is if the media in question can be accessed with devices available to students. Next is the accessibility of media used anywhere with existing equipment, move or support with various types of devices. (Dick & Carey 1978). In line with that, practical reasons related to the considerations of users (teachers, lecturers, instructors) choosing learning media are demonstrations. Media functions as learning aids, Clarity, using media is to further clarify learning messages and provide more concrete explanations.

The stage in the research also analyzes the suitability of the lecture material with the case examples raised. From a collection of case study-based ebook contents, a case study format is formulated using a case study video. The video format was chosen because the video format containing integrated audio text is more attractive and easy to understand by students from various learning styles. Karakaya, F., Ainscough, T. L., & Chopoorian, J. (2001). Video as part of multimedia allows multimedia-based learning strategies to improve student learning attitudes. The use of multimedia-based learning strategies has a significant effect on student learning attitudes by accommodating learning styles (Weng, F., Ho, H. J., Yang, R. J., & Weng, C. H.: 2018). Considerations for presenting video content in the design of case study-based digital teaching materials are also supported by the characteristics of videos that support the learning process, including (1) being able to display motion pictures and sounds simultaneous (2) being able to present objects that cannot be presented in real-time to the classroom through recordings. (3) able to shorten the process (4) and can be used repeatedly.

Learning videos in case study teaching materials also function as learning media. Media also functions as a teaching material because it contains the components that will be studied by students. The process of designing case study-based teaching materials should follow the principles of developing teaching materials. According to Gafur (1994), the preparation of teaching materials or learning materials includes the principles of relevance, consistency, and adequacy.

The development of case study-based digital teaching materials are developed to develop various abilities and skills in life in the 21st century or the era of the industrial revolution. The World Economic Forum (WEF), released that 16 important skills needed in the 21st century. These skills or skills are grouped into 3 categories:

1. Basic literacy,
2. Competence, and
3. Character qualities.

Based on the skills needed in the 21st century, according to the World Economic Forum (WEF). There is a relationship between intelligence that can be developed through a case study model. The abilities that can be developed using the case study method include (1) innovative and analytical thinking skills, (2) complex problem solving (3) critical and analytical thinking (4) reasoning, problem-solving, and idea development (Dori, YJ, Tal, RT, & Tsuushu, M. (2003)

Various types of case studies can be carried out using this case study-based ebook, one of which is the Mini case type, which aims to understand the concept, by observing the cases raised and followed up in research, the nature of the case is further analyzed. What are the cause and the case in which scope? (Daniel K. Schneider 2007). The case compilation can be accessed by students through introductory videos embedded on certain pages of the ebook, both in PDF format and in Epub format.

Conclusion

The availability of teaching materials is one of the important components in learning. In line with the increasing use of technology, especially during the COVID-19 pandemic, UNP as an educational institution also continues to improve online learning facilities and infrastructure. This case study-based digital teaching material was developed using the ADDIE model and adapted to the needs of students. The results indicate that this case study-based digital teaching material has been tested to be valid, practical, and effective to use. This is evidenced by the increase in student activity in accessing digital teaching materials and student activity during the learning process.

Acknowledgment

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