

Online Instructional Materials for Media and Learning Resource Utilization

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Abstract:- This study aims to encourage the improvement of students' knowledge and skills in accordance with the expected learning outcomes through utilization of online instructional materials in learning media for students' at Education Technology program, Faculty of Education Sciences, Universitas Negeri Jakarta, Indonesia. This research conducted in two phases during 2 years such as (i) the development of online instructional materials model in media utilization and valid learning resource; and (ii) produce online instructional materials in web based learning. The target of finding and output in this research is online instructional materials in learning media utilization for increase student's knowledge and skills at Educational Technology program that contribute in development research is ADDIE model. ADDIE is learning development model such as analysis, design, development, implementation and evaluation. This study offer new online instructional materials product. This study shows the result of research in year 1 that already done through design analysis so it produces a mapping of courses and collects online instructional materials that will be developed in year 2.

Keywords:- Media utilization; learning resource; online instructional materials; ADDIE.

I. INTRODUCTION

In this era, information technology and communication or ICT (Information and Communication Technology) has development experienced very rapid already. These development made distance and time aren't a big problem in communication and information seeking. Innovation various in information technology and communication had a tremendous impact on our life field various such as business, entertainment and education. Especially in education, information technology and communication helped to problem solving in learning process. Previously, learning process done by conventional stages such as study activity carried out in the class with lecture. Usually, conventional stages use teacher center method and the students' just listening from beginning to the end of study. Based on previous research podcasting in higher education already had an implication for teaching and learning as an online instructional materials (Lonn & Teasley, 2009). Online instructional materials able to control the teaching and learning process by web based virtual online classroom (Yang & Liu, 2007). Ying and Yang (2013) found a

game-based learning system using the ARCS model and fuzzy logic.

The progress of information technology and communication made learning resource more developed, it can be seen by form and variety of learning resource increasing. The development of computer technology and internet networks can make easier to student during browse and using independently learning resource. It triggers time-space compression in learning process. Meanwhile study process and learning can be done in anytime and anywhere without being bouny by space and time. Because in learning process, lectures need to improve effective use of teaching and learning resource (Busjieta,2013).

The learning process that computer technology and internet networks utilization is electronic learning or E-Learning. The E-Learning, made easy to students' find materials learning and repeat anywhere and everywhere. By the material that is differently package and more innovatively through developing multimedia such as video, slide presentation, movie, images, etc., it made educators understand the situation of students' to increasing their learning encouraged to be active in E-Learning. In E-Learning, the encourage role of lecture is as a facilitator who lead E-Learning process. The Lecture didn't explain course materials directly but E-Learning made students' to active independently course materials processing (Min Lin,et al.2014).

As we know, the definition renewal of educational technology by Association for Education and Communication Technology (AECT) in 2018, the technology definition is interpreted as follows:

“Educational technology is the study and ethical application of theory, research, and best practices to advance knowledge as well as mediate and improve learning and performance through the strategic design, management and implementation of learning and instructional processes and resources.”

Based on the definition above, educational technology for mediate dan learning improvement and also students' performance by strategic design based on process and learning resource. Thus online learning design for students' need is one of important way to provide learning resource that will enhance students' learning. Harsasi (2015) shows the use of open educational resources in online learning made students' interested.

The variety of offered online learning or online study, Education Technology program need to developed of online instructional materials with high-quality and become a standard. Therefore this study is important to increase learning quality and education quality. With increasing education quality, it is hoped that human resources in Educational Technology program can be reliable and resilient for help to build Indonesia in the future. What variety of the development learning material to developed online instructional materials? Learning material is something that can be able to use students' for study. The utilization of learning resource can be directly or indirectly and separately or in combination so as to achieve learning pursuit of learning process. Educational technology manages and utilizes good learning resources that are planned and carefully designed first through a series of research, development, and evaluation first after they are utilized in the learning process. With the availability of adequate learning resources will be able to complete, maintenance, and enrichment learning process (Darmawan.2014).

The use of E-learning has been used for almost all universities in Indonesia, such as at Universitas Negeri Jakarta, in several faculties and study programs used e-learning already in the learning process. However, it is unfortunate that the e-learning material used looks unspecified, unfocused, and collects all teaching material into one teaching material. Those application is easy for students to get bored with the teaching materials used and make students not understand the teaching material presented because the amount of material will be a burden for students. Therefore, the development of teaching materials that will be delivered online must be developed and processed specifically for each of the material so that it can attract the attention of students and increase the motivation of students in independent learning.

In contrast to the Education Technology program that has long been developing and utilizing E-learning for the learning process in several subjects at Universitas Negeri Jakarta since 2009. Which aims to reduce obstacles or problems that exist in the face-to-face learning process in the classroom. Educational Technology Program are developing and processing teaching materials to be included in E-learning systematically. By developing more specific material and packaged innovatively in the form of learning media, making Education Technology programs can reduce the problems that exist in learning and make students become more focused on learning and increasingly have high motivation in learning.

One of the courses that has the potential to be developed into online instructional materials is the subject of Learning Media Utilization. This course learns about how to integrate media into learning, with the material presented among others: the concept of media and learning resources in learning, variety and media clarification, the theoretical basis of learning resources, evaluation of the use of learning resources,

theories and principles of media use (media print, graphics, three-dimensional, video, audio, network-based media, computer media and multimedia). Based on the variety of knowledge, the material is a fact and procedure, so it requires learning media that are able to describe some of the material concepts such as learning videos, infographics, presentation slides, and so on.

Online instructional materials will be packaged in the form of learning videos, infographics, presentation slides, etc. and the needs and characteristics of the material. With the variety of forms of teaching materials that can be accessed by students, it will make students' experiences and insights more broad, because based on the cone of experience of Edgar Dale (the cone of experience), the more diverse student learning experiences, they will be more critical and think higher (higher order thinking skills = HOTS). In addition, a learning system that combines synchronous and asynchronous learning strategies will be able to enrich student learning experiences and facilitate the formation of knowledge construction by students. Thus the development of online instructional materials will be a valuable innovation to improve the quality of learning.

Using of online learning materials is expected to enrich the student learning experience so that it can be used the knowledge and skills increase of the students' Education Technology program at Universitas Negeri Jakarta. This research is also important because it can be used as a standard reference procedure in the implementation of the development of online instructional materials so that they can be developed thoroughly for other subjects.

II. METHOD

This research is use mix method. The researcher got the data through explanatory sequential mixed methods (Creswell, 2014). And then a development research that uses the development model of the ADDIE development model which is one of the models for developing product-oriented learning. The model that focuses on the development of learning products in the form of multimedia-based online instructional materials is from a systems approach, with five main steps such as Analysis, Design, Development, Implementation, and Evaluation. In addition to using the ADDIE model, this study also uses the PEDATI (Learn, Follow, Apply and Evaluate) model as a reference for its development model. PEDATI is one of Indonesian model of research development. The PEDATI model was chosen based on the consideration that this online instructional materials will be used as one of the materials in the lecture process using the blended learning method. This model has four main stages, namely Learn, Follow, Apply and Evaluate.

This research was conducted in two stages carried out in the Educational Technology Program, Faculty of Education Science, Universitas Negeri Jakarta. The duration of the study was carried out for 8 months starting May to October 2018.

Reviewer in this research first stage involved one learning design expert and one material expert, he is one of lecture Education Technology Program. The respondents for the needs analysis is student of the Educational Technology Program who had taken courses in the Use of Media and Learning Resources.

In the first stage the research developed instruments to assess blended learning and mapping of online instructional materials by instructional design experts and material experts. The research instrument in the form of a questionnaire and open questions to assess the feasibility of the design developed. The instrument was developed based on the instrument grid on blended learning and online instructional materials, then a list of questions was compiled to obtain information from related respondents. The instruments used in developing this online instructional materials were questionnaires or questionnaires using a Likert scale with a range of 1 to 4. Questionnaires that are distributed are questions that cover the quality of the learning design developed.

III. RESULTS AND DISCUSSION

Based on the output target, draft model of online instructional materials in Media and Learning Resources Utilization which is valid for increasing the knowledge and skills of students Education Technology program, Universitas Negeri Jakarta is following are the details based on the ADDIE model and the PEDATI model:

A. Analysis Phases

In the analysis phase of this student, the researcher collected information through a randomly distributed questionnaire on students year 2 in academic on 2016 who had taken courses in the Media and Learning Resources Utilization. The questionnaire distributed consists of questions that are used to obtain information on both the learning style and experience of students using an online learning system. Through this phase, researchers can adjust the design of content to be developed with the characteristics of students, the size of the media and the type of media that will be developed. So that through the collection of information that has been done can be concluded:

- Students have learning experience using online learning systems. Online learning is no longer a new thing for students. The average student states that the online learning system feels they can increase their learning interest.
- Students are accustomed and prefer to search for material on the internet as an additional learning resource, but not a few students have difficulty to finding reliable and accurate learning resources for their self-study material.
- Most of respondents have a visual learning style, however they feel that online learning can help their learning activities. Therefore, efforts to develop learning media with visual displays that attract and motivate students.

- The average of student feels that the material presented during learning process in the classroom unable to facilitate them in mastery the material because the teaching materials presented are presentation slides resulting from student discussions which are still unclear.

B. Design Phase

At this phase, the researcher designs a blended learning system that is compatible with the PEDATI model. The results of this research design are:

➤ Formulation of Learning Outcomes

After knowing the characteristics of the students from the results of the previous analysis, the next step in designing a blended learning system is to formulate learning outcomes. The achievement of learning which is intended here is the achievement of course learning. This is the learning media utilization course :-

Study Program : Education Technology
Course : Learning Media Utilization

- Mastery of the media concept and learning resource for learning proricess
- Describing the variety and media classification
- Analyzing the theoretical basis of learning resource utilization
- Mastery of learning resource utilization procedure
- Mastery of theory and principles of print media utilization
- Mastery of theory and principles of graphic media utilization
- Mastery of theory and principles of three-dimensional media utilization
- Mastery of theory and principles of audio media utilization
- Mastery of theory and principles of video media utilization
- Mastery of theory and principles of computer and multimedia utilization
- Mastery of theory and principles of based on networks media utilization
- Mastery the principles of media evaluation and media evaluating utilization for learning process

➤ Mapping and Material Organization

The next step is to mapping and organizing learning material. Mapping and organizing learning material is an effort to determine and group learning material into the subject matter, and the subject matter in accordance with the learning outcomes that have been determined.

➤ Selection and Determination of Learning Setting

The next step is to choose and determine the learning settings. Choosing and determining learning settings is an effort to determine whether certain outcomes and points or sub-topics can be achieved through asynchronous or synchronous learning activities.

Learning Outcomes	Subject	Topic	Learning Setting	
			Sync Dirctly	Asynch Maya
Mastery of media and learning resource concept in learning	Media and learning resource concept in learning	• Definiton of media		√
		• Learning in concrete abstract continuum	√	
		• The position of media in learning process	√	
		• Definiton of learning resource		√
		• Learning resource of usability		√
Describing the variety and media classification	The variety and media classification	• Types of learning resource according to AECT		√
		• Information and learning	√	
		• Effective learning of principles	√	
		• The several of media classification based on Smaldino, Seels & Richey	√	
Analyzing the theoretical basis of learning resource utilization	The theoretical basis of learning resource utilization	• The theoretical basis of behavioristic, cognitive, constructivistic and social in media utilization	√	
		• The theoretical basis of communication in media utilization	√	
		• The theoretical basis of the conical based on Dale experience	√	
Mastery of Learning resource utilization procedure	Learning resource utilization procedure	• Definition of learning resource utilization		√
		• Strategy of media integration into learning	√	
		• Models of media utilization (ASSURE by Arief Sadiman & Judy Lever)	√	
Mastery of theory and principles of print media utilization	Theory and principles of print media utilization	• Definition of Print Media		√
		• The variety of print media		√
		• Strength and limitation of print media		√
Mastery of theory and principles of graphic media utilization	Theory and principles of graphic media utilization	• Print media of utilization in learning	√	
		• Definition of graphic media		√
		• The variety of graphic media		√
		• Strength and limitation of graphic media	√	

Mastery of theory and principles of three-dimensional media	Theory and principles of three-dimensional media	• Graphic media of utilization in learning	✓
		Midterm Exam	
		• Definition of three-dimensional media	✓
		• The variety of three-dimensional media	✓
Mastery of theory and principles of audio media utilization	Theory and principles of audio media utilization	• Strength and limitation of three-dimensional media	✓
		• Three-dimensional media utilization in learning	✓
		• Definition of audio media	✓
		• The variety of audio media	✓
Mastery of theory and principles of video media utilization	Theory and principles of video media utilization	• Strength and limitation of audio media	✓
		• Audio media utilization in learning	✓
		• Definition of video media	✓
		• The variety of video media	✓
Mastery of theory and principles of computer and multimedia utilization	Theory and principles of computer and multimedia utilization	• Strength and limitation of video media	✓
		• Video media utilization in learning	✓
		• Definition of computer and multimedia	✓
		• The variety of computer and multimedia	✓
Mastery of theory and principles of based on networks media utilization	Theory and principles of based on networks media utilization	• Strength and limitation of computer and multimedia	✓
		• Computer and multimedia utilization in learning	✓
		• Definition of based on networks media	✓
		• The variety of networks media	✓
Mastery of theory and principles of based on networks media utilization	Theory and principles of based on networks media utilization	• Strength and limitation of networks media	✓
		• Networks media utilization in learning	✓

Mastery of the principles of media evaluation and evaluation media for learning process	Media Evaluation and Media evaluating utilization for learning process	• Definition of media evaluation	✓
		• Media evaluation of pursuit	✓
		• Media evaluation of variety	✓
		• The good media utilization of indicator	✓
		• The development of evaluation instrument for media utilization	✓

Final Exam

Table 1:- Selection and determination of learning setting

➤ *Content map of arrange*

Based on learning setting of selection, the researcher also learning outcomes arrange into content map of chunking solving and selection of learning resource or learning media that will be develop as variety of existing knowledge.

➤ *Design of asynchronous learning*

Based on the steps to selected and determine a learning setting and also content map preparation like previously step, therefore the next step can be asynchronous learning activities design.

Topic	Materials	Independently of asynchronous			Colaborative of asynchronous
		Digital Media	Assessment		Online Task
			Test	Online Discussion	
<ul style="list-style-type: none"> • Definition of media • Definition of learning resource • The usability of learning resource • Types of learning resource according to AECT 	What is media ?	Slide	Short Answer	Discussion of identification and analysis differentiation between media and learning resource had been used at education institution	Discussion of identification and analysis media and learning resource utilization had been used at education institution
	What is learning?	Slide	T/F		
	What is learning resource ?	Slide & Video	Multiple Choices (MC)		
	What are the usability of learning resource?	Slide	Short answer		
	ET Ball	Slide & Videoscribe	MC		
<ul style="list-style-type: none"> • Definition of learning resource utilization • Definition of print media • The variety of print media 	What is learning resource utilization?	Slide & video	Short answer	Discussion of the example learning resource utilization and print media in education instituion	
	What is print media?	Slide & infographic	MC		
	Variety of print media	Slide	T/F		
<ul style="list-style-type: none"> • Definition of graphic media • The variety of graphic media 	What is graphic media?	Slide & infographic	MC	Discussion of utilization analysis one of graphic media in education institution	Discussion of identification and analysis media utilization and learning resource had been used in education institution
	The variety of graphic media	Slide	T/F		
• Definition of three-	What is three-dimensional media	Slide & infographic	Multiple Choice	Discussion f utilization analysis one of three-dimensional media variety in	

<ul style="list-style-type: none"> • <i>dimensional media</i> • <i>The variety of three-dimensional media</i> 	Jenis-jenis media tiga media	Slide	Multiple Choice	education institution	Discussion of identification and analysis of media utilization and learning resource had been use in education institution
<ul style="list-style-type: none"> • <i>Definition of audio media</i> • <i>The variety of audio media</i> 	What is audio media?	Slide & infographic	Multiple Choice	Discussion of utilization analysis one of audio media variety in education institution	
	Variety of audio media	Slide	T/F		
<ul style="list-style-type: none"> • <i>Definition of video media</i> • <i>The variety of video media</i> 	What is video media?	Slide	Multiple choice	Discussion of utilization analysis one of media video variety in education institution	
	Variety of video media	Slide	T/F		
<ul style="list-style-type: none"> • <i>Define of computer and multimedia</i> • <i>The variety of computer and multimedia</i> 	Apa itu computer	Slide & infografis	PG	Discussion of utilization analysis one of computer media variety in education institution	
	What is multimedia	Slide	Short Answer		
	Variety of computer	Slide	Multiple choice		
	Variety of multimedia	Slide & videoscribe	Multiple choice		
<ul style="list-style-type: none"> • <i>Definition of networks media</i> • <i>The variety of network media</i> 	What is network media?	Slide & infographic	Multiple choice	Discussion of utilization analysis one of network media variety in education institution	
	Variety of network media	Slide & video	Multiple choice		

Tabel 2 Design of asynchronous learning

➤ *Design of Asynchronous Learning*

The results of previously phase still general. That isn't describe design of asynchronous learning that allows interaction between students and learning resources. Therefore, as a further phase after drawing up the design of asynchronous learning activities, it is necessary to assemble learning paths to ensure the occurrence of learning interactions. This stage the researcher makes the instruction text in the form of an interactive sentence e for users of online instructional materials later in each subject matter which has been determined in the previous asynchronous learning design.

IV. CONCLUSION

This research was conducted with the aim of producing a product in the form of online instructional materials for the subjects of media utilization and learning resources. The online instructional materials produced will be integrated into the learning process in media utilization and learning resource course. In this study, the ADDIE development model was used in combination with the PEDATI blended learning system model.

In this first phase of the study, a blended learning system design and mapping of online instructional materials were produced through the following phases:

- Through the phase of needs analysis, student characteristics of analysis and material analysis, data is needed to develop learning materials that are suitable for students.
- By the design phase is produced:
 - Formulation of Learning Outcomes media utilization and learning resource Courses

- Mapping and Material Organizing
- Choosing and Determining Settings
- Content Map Compilation
- The design of a synchronous learning
- Design of asynchronous learning

The results of design has been reviewed by metrics and learning design experts and has received “good evaluation” and improvements have been made according to the reviewer's recommendations. The results of this design will be used for the process of developing online instructional materials that will be integrated in media utilization and learning resource course.

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