

Development of Web-Based Materials Using Moodle Applications in E-learning System

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Abstract-*Development of teaching materials is done as an effort to solve student learning problems, where there are some of them are less active follow the learning, so that impact on student learning outcomes are less than optimal. This study aims to produce web-based instructional products on a valid and practical e-learning system. This type of research is research development or better known as Research and Development (R & D). This research uses 4D development model (FourD). The development procedure in this research consists of 4 (four) stages, namely define, design, development, and disseminate. Product validity test is performed by 3 (three) validators ie 2 (two) validators of media expert and 1 (one) person material expert validator. The trial of the product is done to 10 (ten) students majoring in KTP FIP UNP with the aim to know the practicality of the developed product. The research instrument used is questionnaire, documentation, and assessment format.*

Keywords: Teaching Materials, Web, Moodle

I. INTRODUCTION

The implementation of current learning needs to be supported by technology-based learning media because it can make students adapt to the flow of developments in the IT field. Students who are accustomed to using IT-based media are indirectly developing their abilities in the field and can develop the quality of their human resources. Government Regulation No.17 Year 2010 articles 48 and 59 also implies the development of an information and technology-based education information system.. Law number 20 of 2002 concerning the National Education System states that: "National education functions to develop capabilities and shape dignified national character and civilization in order to educate the life of the nation. Education aims to develop the potential of students to become human believers and devote to God Almighty, noble, healthy, knowledgeable, capable, creative, independent, and become a democratic and responsible citizen.

Education is one form of embodiment of human culture that is dynamic and full of development. Therefore, changes or developments in education are things that are supposed to happen in line with changes in the culture of life. Changes in the meaning of improving education at all levels need to be continuously carried out in anticipation of future interests.

To achieve the national education goals the government has carried out improvements to improve the quality of education at various types and levels, but the facts on the ground have not shown satisfactory results. The government has also made efforts to improve the educational system, both through structuring software (software) and hardware (hardware), one of which is the improvement of teaching materials.

According to Widodo & Jumadi (2008: 40) that: "Teaching materials are a set of learning tools or tools that contain learning materials, methods, boundaries and ways of evaluating which are designed systematically and interestingly in order to achieve the expected goals of achieving competence or sub-competence in all its complexity".

This understanding illustrates that a teaching material should be designed and written with instructional rules because it will be used by the instructor to help and support the learning process.

Widodo & Jumadi (2008: 40) also states "the positive impact of the use of teaching materials is that teachers will have more time to guide students in the learning process, helping students to gain new knowledge from all sources or references used in teaching materials, and the role the teacher as the only source of knowledge is reduced".

In this case the ability of the teacher in designing or compiling teaching materials becomes a very important thing to determine the success of the learning and learning process through a teaching material. With the presence of teaching materials, teachers will be more coherent in teaching material to students and achieved all the competencies that have been taught before. The development is based on the concept of

learning design based on a competency or to achieve learning goals. Usually teaching materials are made by the teacher and distributed to all students. In writing teaching materials, instructors need many sources such as reference books that can be found in bookstores or electronic books, newspapers, magazines, and also the results of seminar discussions that are followed.

One application that can be used to create technology-based teaching materials is the moodle application. Moodle stands for Modular Object Oriented Dynamic Learning Environment, which essentially teaches and students conduct teaching activities online. Moodle is provided free of charge as open source software under the GNU Public License, which means that even though it has copyright, moodle still gives users the freedom to copy, use it and modify it. Users must agree to provide the original source code for other parties, not modify or eliminate the original licenses and copyrights that are in them, and apply the same license to moodle derivative products.

Moodle is a name for an application program that can transform a learning media into a web form. This application allows students to enter into digital classrooms to access learning materials. By using moodle we can create learning materials, quizzes, electronic journals and others.

Various forms of learning material can be included in this moodle application. Various sources can be attached as learning material. Written manuscripts written from Microsoft Word word processing applications, presentation material from Microsoft PowerPoint, Flash Animations and even audio and video format material can be attached as learning material.

Some learning activities supported by moodle are as follows (1) Assignment. This facility is used to provide assignments to students online. Students can access assignment material and collect the results of their assignments by sending files of their work, (2) Chat. This facility is used to conduct the chat process (online conversation). Between instructors and students can conduct text dialogs online, (3) Forums. An online discussion forum can be created in discussing a learning method. Teachers and students can also discuss several topics of learning in a discussion forum, (4) Quiz. With this facility it is possible to take an exam or test online, (5) Survey. This facility is used to conduct polls. Students are expected to have better understanding on learning material, because they can access more information available in moodle-based teaching materials. In addition, the innovation of teaching materials offered is expected to improve the quality of learning.

From the results of the author's observation and interviews with several FIP UNP KTP students, the authors found that students were less active in learning. This is because teaching only uses a textbook and student worksheets (LKS), the teaching materials or textbooks are less relevant to the learning material and curriculum, so many students prefer to look for learning materials or materials from the internet rather than reading in the institution's library. The available website is not in accordance with the learning material, so students feel confused looking for appropriate learning material and not infrequently students also visit websites that are not educational. In addition, the institution already has an institution's website, but it has not been properly utilized by the instructor.

The development of teaching materials is expected to facilitate student learning. This teaching material does not only contain material but also contains exercises that can help students see their abilities during learning. Based on this, the research was conducted in the form of developing web-based teaching materials with e-learning systems.

II. METHOD

The type of research used is development research or better known as Research and Development (R & D). Development research is a type of research conducted to develop existing knowledge (education). Research or Development research is a series of processes or steps in order to develop a new product or perfect existing products so that they can be accounted for. The educational products referred to in this study are products in the form of software (software), namely web-based teaching materials using the moodle application.

This development research uses a 4D development model (Four D) consisting of four main stages, namely:

1. *Define*
2. *Design*
3. *Develop*
4. *Disseminate*

At this writing only 3 stages are included, namely define, design, and develop because given the limited time and funding, the disseminate stage cannot be done, with the following description:

1. Define

a. Curriculum analysis

In designing web-based teaching materials, it is closely related to the curriculum, which is to find out what indicators students must achieve in learning so that competency standards and basic competencies can be achieved. The curriculum used in the UNP FIP KTP Department is the 2013 curriculum

b. Student Analysis

Student analysis is a study of student characteristics in accordance with the design and development of web-based teaching materials. In this study researchers found several problems, including learning, teaching is still limited by using manual or text book teaching materials, these applications are sometimes less relevant to current technological developments (updates), so that many students prefer to look for learning materials or materials from the internet rather than reading in the institution's library. For this reason, the researcher develops teaching materials using the moodle application where the application is web-based that can be accessed via the internet, besides that this teaching material is managed by the instructional eye itself so that all student activities can be monitored by the instructor.

c. Media analysis

Media analysis was conducted to determine the extent to which web-based teaching materials in class VIII learning subjects can improve students' understanding, interests and motivations, and student learning outcomes. Based on the research that the researchers did in the UNP FIP KTP Department, it was seen that web-based teaching materials could improve understanding, interest, student motivation and student learning outcomes.

2. Design

Before developing teaching materials researchers need to do a display design of teaching materials so that they are easy to use and interesting for students and able to motivate students in learning. The design of teaching materials is made in the form of flowcharts and storyboards. At this stage, the design of teaching materials is carried out starting from the installation of the moodle application, designing the appearance of teaching materials, including material and evaluation, up to the purchase of domains and hosting.

This stage aims to produce revised products based on input from the validator. At this stage the validity and practicality test is carried out. The stage of validity and practicality is carried out by the following steps:

a. Validity test

To find out whether this web-based teaching material is feasible or not in learning, researchers must validate with 3 (three) validators, including 2 (two) media experts, namely UNP FIP KTP lecturers, and 1 (one) material expert namely lecturer at the UNP FIP KTP Department. In this process the researcher gives the product to the validator to assess the feasibility of the teaching material developed. The aspects assessed included material, conceptual correctness, material presentation, writing, evaluation, appearance, and media elements. After validation by the validator, we will find weaknesses of the product being developed. The researcher makes improvements in accordance with the advice given by the validator.

b. Practicality Test

To find out the success of a product, a field trial is needed. At this stage an assessment of web-based teaching materials is carried out in e-learning lectures by students of the UNP FIP KTP. In this trial, the researcher introduced web-based teaching materials to students and after that spread the questionnaire to determine the extent of the assessment of the appearance, material, and practicality of web-based teaching materials by students.

III. RESULTS

Web-based teaching materials are one of the web-based teaching materials that are expected to be able to make students learn interactively and improve the meaningfulness of student learning in the context of independent learning. Active learning by students will be able to develop all its potential so that students are able to optimize learning outcomes.

According to Miarso (2011: 267) "there are two possibilities for implementing the principle of independent learning, namely (1) a learning program that contains instructions for self-learning is used by students with minimal teaching assistance, and (2) involves students in planning and carrying out activities". Web-based teaching materials can be a means of discussion for students even though they are not in one place. Teachers can attend this discussion by giving an initial review before starting the discussion.

The final results of the validation and pre-reality of web-based teaching materials developed are in a very good category so that they are declared feasible to use. In accordance with the Likert scale contained in

the scale of measurement of research variables by Riduwan (2010: 15) which states "if the percentage value obtained by researchers in the study amounted to 81 - 100% is in the excellent category". Assessment for web-based teaching materials can be seen in table 1 below.

Table 1. Assessment of Web-Based Teaching Material Products Using the Moodle Application

No.	Aspect	Variable Criteria	Average	(%)	Category
1	Materi	a. Truth concept b. Material presentation/ evaluation c. Writing d. Evaluation	4,92	98%	Very good
2	Media	a. Feasibility of content b. Linguistics c. Presentation d. Display	4,28	86%	Very good
3	Practicality	a. Display b. Material presentation c. Fill in the material d. Practicality	4,2	84%	Very good

The results of material validity on web-based teaching materials products that have been developed have an average of 4.92 with a percentage of 98% categorized very well and media validity has an average of 4.28 with a percentage of 86% categorized very well. So that the instructional materials developed can be categorized very well.

The prequality test results show that teaching materials products with display criteria, material presentation, material content, and benefits are obtained on average 4.2 with a percentage of 84% categorized as very good.

From the product trial data that has been done, web-based teaching materials are declared feasible as teaching materials that can help students learn and understand learning material more easily. This teaching material also allows students to study anywhere and anytime.

IV. CONCLUSION

The process of developing web-based teaching materials using the moodle application on the e-learning system in the FIP UNP KTP Department begins with the definition, planning, initial product development stage. obtained a mean of 4.28 with a percentage of 86% categorized as very good. The results of the validity test on web-based teaching materials products that have been developed as a whole have an average of 4.6 with a percentage of 92% categorized as very good. So that the instructional materials developed can be categorized very well. The prequality test results show that the instructional materials products with display criteria, material presentation, material content, and benefits were obtained on average 4.2 with a percentage of 84% categorized as very good. The final results of the validation and pre-reality of moodle-based teaching materials developed are in the very good category so that they are declared feasible to use.

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