E-Learning Design Based On Learning Management System In Web Programming Course

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Abstract: The number of students who have difficulty in understanding web programming courses resulting in low student learning outcomes. It is necessary for an innovation to develop and enhance the capabilities of students, especially in web programming courses. The purpose of this research is to design and produce e-learning-based learning management system (LMS) on the subjects of web programming. Research methods used in this study is the method waterfall. The results of this research have produced e-learning based lms that can be utilized by students to enhance learning motivation of college students. Based on the results of performance tests on gtmetric.com obtained the data that the page access speed score is 94% and fully loaded time is 3.1 s.

Index Terms: E-learning, Learning management system, web programming, motivation

1 INTRODUCTION

Competition in a job search is very tight in the current era requires the institution to seek innovation so that the graduates produced skilled and have good soft skills. One of them is to improve students' ability in a course. The web course is the core course that must be taken by the students of informatics engineering education. Competencies that must be achieved by students in this course are students able to design, produce, and skilled in creating a website. Currently, the learning process of web programming courses both theory and practicum are still conventional, lecturers delivering material using power point and whiteboard media. The material displayed on the presentation slides are static and conventional learning methods where professors become a major source of learning into one of the obstacles for students to understand the material of web programming. This causes students to feel bored, quickly bored and low interest in learning to follow the lectures. Then when practicum, examples of case studies of web program design given is still small, whereas the requirement of someone to be proficient in making the program is to practice a lot. Data on student learning outcomes in academic year 2015/2016 shows there are still students who do not pass on taking this course is almost 30%. Whereas the expected graduation target in this course is 85%. Out of 18 people, only 1 person (5.55%) got an A+, 3 people (16.67%) got a B + score, 5 people (28%) got B, 4 people (22.22%) got the value of B- and the rest get the value of C+, C, and D. Here is the percentage of the distribution of the basic web programming courses, as shown in the picture below:

Figure 1. Percentage distribution of student scores

The results of interviews with students who scored below the average, obtained information that they are less familiar with the material presented by lecturers, so that the interest of students to study this course is a little. Departing from the problems that arise above it takes a new breakthrough in the process of web programming lectures by developing e-learning media (LMS), where the learning process can be done anytime and anywhere, so hopefully with e-learning can foster student interest in learning. Because According to Rafi (2008) teaching methods that utilize software or computer applications get more positive response and popularity compared with conventional learning. The purpose of this study is to produce a learning management system (LMS) as a learning supplement for students in order to increase student interest in learning.

2. METHODOLOGY

E-learning based learning management system is built using Linear Sequential Model development model or commonly called Waterfall Model.
This model is systematic, has steps that must be passed to develop software that starts from analysis, design, coding, testing, and maintenance (Pressman, 2001).

A. Development Procedures

1. Needs and Data Collection Analysis
At this stage the analysis of what became the problem of students in the course of web programming then do analysis software like what can solve the problems faced by them, as well as what hardware can run software to be developed.

The data collection required in this study was conducted by literature study. This literature study was conducted to collect research results and other information related to the planned product development.

2. System Planning
Once the need for development is known, it will be done system design. System design here includes user interface design, flowchart and prepare application content including material and video. This app is also designed to display text and video tutorial material. This application will also provide exam content online.

3. Implementation
At this stage, the design of the application that has been made is implemented into a program. Development of this application using content management system (CMS) Moodle.

4. Testing
In this research testing is test black box testing. Test black box testing is done to see the performance of an e-learning.

B. Research Subject
The subject of this research is used to test the functional suitability and usability aspects of the application. Subjects in functional suitability testing use expert respondents who have experience in learning and understanding e-learning and web programming materials.

C. Time and Place
This research was conducted in the Department of Education of Informatics and Computer Engineering, Faculty of Teacher Training and Education, Bung Hatta University. This research will be conducted from January 2018 to August 2018.

3. Result and Discussion

3.1 Designing
The design stage is a study activity undertaken before determining the initial product design concept of e-learning. Activities undertaken include:

A. Design of Instructional Design and Navigation
After analyzing the purpose of e-learning development and identification of instructional characteristics and learning method is most students in the class, then the stage next is the design process of instructional design and navigation. On this stage, researchers made instructional design and navigation of e-learning aims to simplify the process of product development. As for Instructional design and navigation as shown below:

B. Limiting Basic Competence
The basic competitions chosen in this study are four types subject matter for semester students V Informatics and Computer Engineering Education taken from the course Web programming is HTML, CSS, Javascript, and PHP.

C. Plan for Learning and Support Resources
After determining the basic competence, the researcher prepares the Semester Learning Plans (RPS) of the existing syllabus. RPS is designed for an online learning, including learning and assessment activities.

D. Learning Media Design
At this stage, the researcher do the designing product in order to supports a wide variety of multimedia file types within the material learning that will be displayed on e-learning. Researchers implement development of initial ideas about product design that will support material content from various file formats, such as video, audio, images and flash animation. Additionally, product are also designed to display the files - multimedia files from other websites such as youtube.com and others.

E. Implementation
Implementation stage is the stage to apply elearning. Moodle system be uploaded and be installed on the media hosting online which has been rented for a year. The name domain used in this study is http://www.lms.rikaesarsearch.com. Selection of names domain comes from stands for "learning management system.rikaesarsearch", name chosen by the developer for this e-learning product. E-learning developed with online media to be easily accessible to experts media, material experts and students wherever and whenever. In the production process, developers choose Learning Management System (LMS) of Moodle as the main system of e-learning. The Moodle Lms version used in this study is version 3.2. Moodle characteristics are complex, supported by forums, and widely used for elearning, is very helpful in the development of this elearning concept, because the support from users around the world. Then the features offered by moodle was quite complete such as online exam facilities with various types of questions, exercises, quizzes, interaction between students with dongan lecturer (chatting), the addition of video and audio features, plus mood is also open source. Users of e-learning is that both lecturers and students connected to the internet.
both synchronously and asynchronously. In this e-learning concept, the developer sets the user in the system into 3 levels, namely Student (Registered), teacher (Adminstrator), Admin (Super Administrator). Students can only log in through the frontend display website and can only follow community forums, practice questions, and read the article. Lecturers can log in through the website backend and can posting articles, uploading material files to download by students and make exercise questions, while admin has the authority highest. Admin can add additional features in e-learning, set global configuration, manage users and others on the system. The advantages of e-learning are the application of learning concepts based on multimedia. In this e-learning system, there are several articles of course that have been categorized based on the semester and also the course. The articles in addition to displaying material in the form of text as well images, also display other multimedia files such as video, audio, or flash that can present the subject matter in audiovisual to students so great that students can more easily understand the material the. The display of learning management system products that have been designed is like the picture below:

1. Display the main elearning page
This main page view is the view when the user accesses the website learning management system.

2. Display admin page
The admin page contains about the management menu of an elearning. All permissions are controlled by the admin. From set display, add user ie teacher, student, create class, everything is managed by admin.

3. Teacher / Lecturer page views
The teacher / lecturer page contains a menu that can be used by lecturers. Like making materials, creating tasks, creating quizzes, managing your own blogs, creating forums that students can follow.

4. Student / Student page views
Student page view contains material content that can be accessed by students.

4. Testing
To see the performance of this e-learning, performed a performance test on the website Gtmetrix.com,. Based on the performance test results obtained 95%, which means that e-learning performance is good enough and fully loading time to access e-learning is 3.1s.

5. Conclusion
a. Design e-learning through a learning management system through 4 stages are: analysis, design, implementation, and testing. The result of e-learning product design can be accessed by URL address: www.lms.riskaresearch.com.
b. Based on the results of performance tests on gtmetric.com obtained data that the page access speed score is 94% and fully loaded time is 3.1s.
REFERENCES


