DESIGN OF WEB BASED LMS (LEARNING MANAGEMENT SYSTEM) IN SMAN 1 KAMPAR KIRI HILIR

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Submission date: 09-Oct-2020 05:17PM (UTC+0700)**Submission ID:** 2190208199
File name: jurnal.pdf (827.57K)
Word count: 2470
Character count: 13507

Journal of Applied Engineering and Technological Science

DESIGN OF WEB BASED LMS (LEARNING MANAGEMENT SYSTEM) IN SMAN 1 KAMPAR KIRI HILIR

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ABSTRACT

Learning Management System appears as a solution to the many problems that arise due to limited time, place and the number of meetings between teacher and student. Learning Management System as a tool in the learning process offers several advantages so that it can solve problems that often arise in the learning process. Based on the limited number and time of meetings, a web-based Learning Management System was built by using the PHP programming language and MySQL Using the Waterfall Model Method. The result has been developed a Learning Management System for Sma Negeri 1 Kampar Kiri Hilir with facilities as a medium for the dissemination of subject matter, media for the distribution of assignments, and as a media for student discussion forums. In this Learning Management System application has 3 admin actors, teachers, students. The admin has the duty as an elearning application manager to manage the application so that it can run well. The admin manages curriculum data, semester years, teachers, students, subjects. The teacher gives the material and assignments done by students, while students will work on assignments uploaded by the teacher and download the material that has been uploaded by the teacher. Learning Management System application as a support for learning activities, because schools are able to carry out learning activities not only teaching in the classroom. By creating learning media through the Learning Management System website in Sma Negeri 1 Kampar Kiri Hilir, teacher and student interaction is increasing.

Keywords: *Learning Management System, Web, Education.*

1. INTRODUCTION

The rapid advancement of information technology supports the implementation of electronic-based learning (e-learning). E-learning has a number of advantages including students being able to share information and be able to access learning materials at any time and evaluations that can measure students' understanding of concepts. With these conditions students are expected to strengthen understanding of the concept of learning material. E-learning can train students in technical independence and experience using it. In addition, e-learning can also assist teachers in monitoring student activity with various assignments given, discussion forums and other activities, so that the character of students can be described through e-learning(Tafiardi, 2009).

Learning that can improve students' cognitive abilities is e-learning which has a high level of user interactivity, which in addition to presenting learning material in the form of files either in the format of words, powerpoint, html or PDF but the e-learning also has more value more menus interactive, both in the form of more varied online evaluations, online consultations and chat facilities. In e-learning there are virtual classes that can accommodate teachers and students to be able to interact and create virtual laboratories by inserting media in the form of animated images so that teachers can demonstrate through these media(Hamzah, et. al., 2019).

For the 2019-2020 Academic Year, the 2013 curriculum (K 13) is applied comprehensively for all levels of education (elementary to high school) throughout Indonesia. We hope that this year's curriculum change truly provides a significant change in improving the quality of Indonesian education. This curriculum should be able to assist teachers in carrying out the duties and obligations of giving birth to students with character. Given the increasing number of immoral problems that approach the lives of students because of the tempting development. Then of course there must be a real breakthrough in solving the problem. Changes in curriculum can actually be one solution in solving these problems. To carry out the meaning of assessment contained in this curriculum, of course the teacher must know and understand the character of students properly and correctly(Abdulmajid, et. al., 2017).

At present there are already quite a number of agencies or institutions that use e-learning as a learning tool, the use of e-learning in learning has proven successful. In learning to use e-learning is very effective when combined with guided inquiry learning methods. Based on the above problems, it has been explained that e-learning can be used as a learning innovation that can ease the burden on teachers in teaching. The purpose of this study is to Design a Learning Management System Software and to obtain responses to use and test its effectiveness(Berns & Erickson, 2001).

2. LITERATURE REVIEW

Hamzah et. al. (2018) discusses the infrastructure facilities management system in universities. The system is designed using Near Field Communication technology that uses an Android smartphone to support the use of this system and also the web using PHP and MYSQLi programming languages for online data storage. The method used in designing this system is the Waterfall model. This system modeling uses the UML language (Unified Modeling Language). This research was conducted at Pelita Indonesia College. The results showed that the use of Infrastructure Facilities System using Android-based NFC technology is easy to use for Staff and Infrastructure Heads in managing their inventory.

The use of LMS to support learning has been carried out in various schools, both at the secondary school level and upper school level. Various studies have been conducted related to the implementation of LMS in several schools. For example Hardyanto (2016) and Zyainuri (2012) conducted a study related to the application / implementation of LMS in SMK. Whereas Pratiwi (2014) conducted a study on the implementation of LMS in junior high schools for certain subjects. Another study shows that LMS can be applied in middle and high schools (Wibawa, Waspada, & Wirawan, 2017). Studies conducted by Hardyanto (2016), Zyainuri (2012), Pratiwi (2014) and Wibawa (2017) discuss how to implement Moodle in schools, but do not discuss how LMS can organize classes in middle and high schools in general in one school year, have many classes. Information about how to organize classes in the LMS is important so that junior and senior high schools can implement the LMS in their respective schools.

3. RESEARCH METHOD

This chapter will discuss the system design that will be built. The steps to be taken in this study can be seen in the flow chart below:

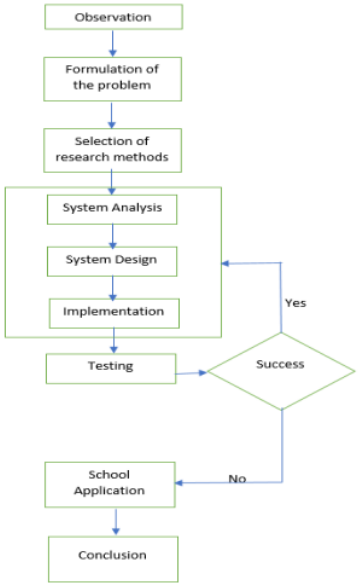

Figure 1. Web-Based Learning Flow Chart Making LMS (Learning Management System)

The research methodology used is descriptive analysis method, which is a method that describes the facts and information in a current situation or event systematically, factually and accurately. The research method used in this research is the method of data collection. Data collection methods used as follows:

1. Study of literature
   Literature Study is the collection of data by collecting journals, papers and books relating to the research titles taken which are about designing learning systems that are commonly done in schools and gathering all information to build a Learning Management System.
2. Observation
   Observation is a method of collecting data by conducting a direct review of the problems taken at SMA Negeri 1 Kampar Kiri Hilir
3. Interview
   Interview is a method of data collection by holding question and answer directly with SMA Negeri 1 Kampar Kiri Hilir.

Software Development Method

The software builder method that will be used is using the waterfall model. Thanks to the decline from phase to phase, this model is known as the terjun waterfall model 'or the software life cycle(Pressman, 2010). This waterfall model is illustrated in Figure 2. which includes several stages, including :

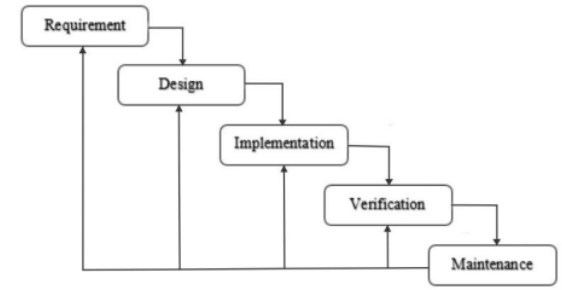

Figure 2. Software life cycle of the waterfall model

The main stages of the waterfall model map basic development activities namely:

1. Analysis and definition of requirements.
   Services, boundaries, and system goals are determined in consultation with the school. These requirements are then defined in detail and function as system specifications.
2. System and software design.
   The system design process divides requirements into hardware or software systems. This activity determines the overall system architecture. Software design involves identifying and describing the underlying software system abstractions and their relationships.
3. Implementation and unit testing.
   At this stage, software design is realized as a series of programs or program units. Unit testing involves verification that each unit meets the specifications of SMA Negeri 1 Kampar Kiri Hilir.
4. System integration and testing.
   Unit programs or individual programs are integrated and tested as complete systems to ensure that system requirements are met. After system testing, the software is sent to the school.
5. Operation and maintenance.
   Operation and maintenance is the longest life cycle phase. The system is installed and used. Maintenance includes correction of various errors not found in the previous stages,

improvements to the implementation of the system unit and the development of system services, while new requirements are added.

System Design

Basically, the stages in the design of this system are divided into two, namely:

1. System design in general
   At this stage, in general, that is to explain about the data flow diagram to the user for the system steps that will be done later. The data obtained are from a database that already exists in SMA Negeri 1 Kampar Kiri Hilir.
2. Detailed system design
   But at this stage, the detailed system design is a system design that is carried out in detail based on changes that occur at the system design stage in general. For example in this detailed system design that is by designing databases, data dictionaries and ERDs and relationships between tables.

Data analysis technique

This research procedure was divided into three stages, namely preliminary study, design and development. Research instruments in the form of expert test questionnaires, questionnaire responses, written tests and character observation sheets. Before being tested, expert validation was carried out on the LMS media and teaching materials. The results of expert validation showed a percentage of 89.81% of the total indicators developed, meaning that a valid LMS was used as learning.

Data analysis techniques using normality test and gain test. Normality test is used to test whether the research data is normally distributed or not. Gain test is used to measure the increase in students' understanding and character in using LMS made through 4 stages as follows.

a. designing system design, including template design, database and flowcart.
b. do the coding with the PHP programming language.
c. installation on the hosting server.
d. fill teaching materials on LMS.

4. RESEARCH RESULTS AND DISCUSSION

System Implementation

The implementation stage is the stage of software creation, the continuation stage of the system design activities. This stage is the stage where the system is ready to operate, which consists of an explanation of the implementation environment, and program implementation. To support applications implemented in Kampar Kiri Hilir 1 High School, in this case using hardware and software that supports the development of web-based LMS (Learning Menegement System) applications.

Home Page Display

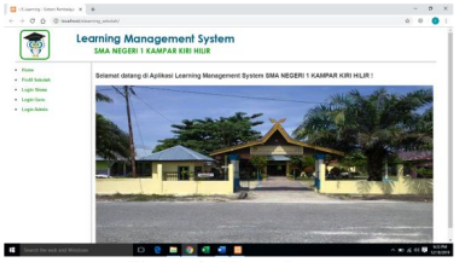

Figure 3. Home Page

School Profile Display

Figure 4. School Profile Page

Student Login Display

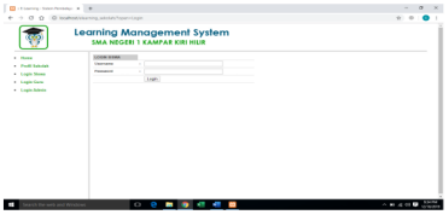

Figure 5. Student Login Page

Student Profile Display

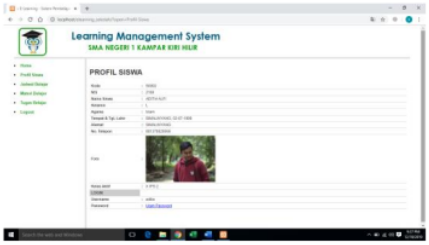

Figure 6. Student Profile Page

Learning Schedule Display

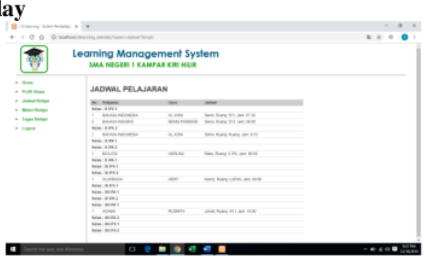

Figure 7. Learning Schedule Page

Learning Materials Display

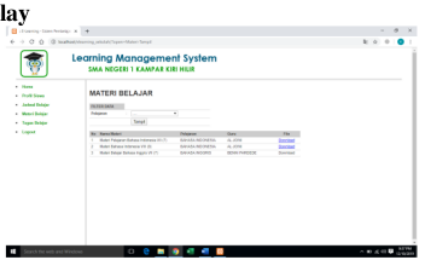

Figure 8. Learning Material Page

Learning Task Display

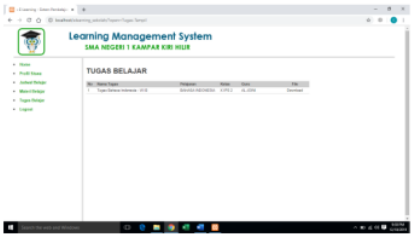

Figure 9. Learning Task Page

Teacher Login Display

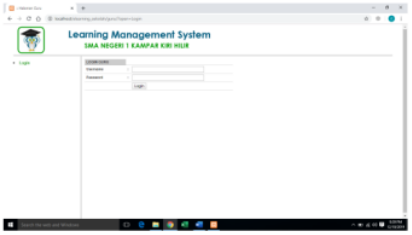

Figure 10. Teacher Login Page

Testing

Before this system can be used, it must first be tested. Some testing is done by the author himself. Learning Management System Application Testing is done using the black box testing approach. Testing is needed as one of the stages of implementation to test the minimum level of error and the accuracy of the software designed. Testing is done by black box testing method. The black box testing method was chosen because the testing method did not pay attention to the internal logic structure (coding) in the software.

Black Box Testing

Black box testing is a test that allows software engineers to get a set of input conditions that fully use all functional requirements for a program (Pressman, 2005). Black-box testing is also a complementary approach that allows a large class to be able to reveal the error class rather than the white-box method. Black-box testing tries to find errors in the following categories:

a. Incorrect function or missing function
b. Interface error
c. Errors in data structures or external database access
d. Error behavior (behavior) or performance errors
e. Initialization and termination of errors

The advantages of black box inclu

a. Black box testing can test the overall functionality of the software.
b. Black box testing can choose a subset of tests that can effectively and efficiently find defects. In this way black box testing can help maximize testing investment. Black box deficiencies include.
c. When the tester does black box testing, the tester will never be sure whether the software being tested has actually passed the test.

5. CONCLUSIONS

In this article, it has been described how the design of the system in the development of LMS (Learning Menegement System) based on this website. Therefore, the author can conclude that the teaching and learning process in SMA Negeri 1 Kampar Kiri Hilir website that allows

students to have their own materials or materials that can be downloaded directly through the website and so that the level of interaction between teachers and students increases online communication media is needed where students and teachers can interact with each other through this LMS application (Learning Menegement System).

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