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Designing an E-Learning System at SD Muhammadiyah 2 Kupang Based on Web

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ABSTRACT

SD Muhammadiyah 2 Kupang is one of the institutions engaged in the world of education, especially at the elementary school level. Learning at Muhammadiyah 2 Kupang Elementary School using conventional or face-to-face methods became disrupted due to the Covid-19 pandemic that hit in Indonesia, learning at Muhammadiyah 2 Kupang Elementary School which was originally conventional, namely teachers and students doing the teaching and learning process directly in the classroom was forced to carry out online learning activities, namely students learning and teaching teachers must keep running even though students are at home. As a result, teachers have to do online learning using online media. This results in many teachers having difficulty in using online media to deliver material and assign assignments to students. Instead, the students have difficulty in checking the materials and tasks given by the teacher. The data collection techniques used in this study are interviews, library studies, observations and questionnaires, the creation of this application using Adobe Dreamweaver and MySQL databases. The results achieved in the creation of this e-learning design will facilitate the learning and teaching process between teachers and students in online learning. It is hoped that this e-learning design can help improve teaching and learning activities at Muhammadiyah 2 Kupang Elementary School.

1. Introduction

The development of Information Technology in the field of education is increasingly rapid, the need for an IT-based teaching and learning concept is easier to obtain. E-learning brought about a change in the world of education to digital form (Damanik, 2019), both its content and its system. Currently, e-learning has been widely implemented in educational institutions. These things make it motivating to build an e-learning that is needed by educational institutions in helping the process of processing student data, teacher data, materials, and value data. E-learning allows schools to start the educational process without going through face-to-face face-to-face and the development of science to students can be done easily. E-learning systems are built with the same elements as building information technology or computers. With these elements, the e-learning system can run well so that it can support the learning process (Shadek & Swastika, 2017). The use of e-learning has a positive impact on the learning process (Muthy & Pujiastuti, 2020). The existence of e-learning can make it easier for educators and students, students can get learning materials and homework assignments not only in the same time and place, and there is a learning space to discuss learning materials between students and educators outside of school hours (Nugraha et al., 2020).

Muhammadiyah 2 Kupang Elementary School (SD) is one of the schools under the auspices of the muhammadiyah kupang foundation, this school is located at jalan pioneer kemerdekaan 1 kelurahan kayuputih kota kupang and has been accredited B. The number of students in this school is as many as 134 people. The learning process in this school still uses conventional or face-to-face methods, since the Covid-outbreak that hit Indonesia, learning at the Muhammadiyah 2 Kupang Elementary School (SD) which was originally conventional, namely teachers and students carry out the teaching and learning process directly in

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the classroom is forced to carry out online learning activities, namely students learning and teaching teachers must continue even though students are at home. As a result, teachers have to conduct online learning using online media. This has resulted in many teachers having difficulty in using online media to deliver material and assign assignments to students. On the contrary, the students have difficulty in checking the materials and assignments given by the teacher. By looking at the problems that exist in the school, the author wants to build an e-learning system design at the Muhammadiyah 2 Kupang Elementary School (SD) based on a website, which will support teaching and learning activities between teachers and students. It is hoped that the design of this e-learning system can help the school in developing the E-learning system in the future.

2. Method

In the process of providing information, MA Mathlabul Huda has been using pamphlets or banners posted along the road near the madrasa area, this is very ineffective because it requires a lot of time and costs. Therefore, it is necessary to make efforts to anticipate this, namely by creating an interactive school website so that it is more effective, efficient and easy to provide information related to MA Mathlabul Huda. In carrying out this community service, the main device is needed which includes hardware such as laptops or computers and software such as: Xampp, PHP, MySQL, web browser, and UML for website design and creation.

2.1 XAMPP

XAMPP is an apache open source web server that is distributed for free and easy to install and can display dynamic web pages, consisting of several programs including: MariaDB, PHP, and Perl (Dani et al., 2018).

2.2 PHP (Hypertext Prepocessor)

PHP is a programming scripting language designed to build web applications (Eka Wida Fridayanthie, 2016). This programming language uses a server-side system, namely the processing of the program is carried out by the server (Anggraini et al., 2020). PHP supports databases such as MySQL, Informix, Oracle, PostgreSQL, Sybase, Solid, and Generic ODBC. Before using PHP, you must install the Apache web server (IIS) as well as PHP and MySQL on the computer / server that will be used first. Php code writing is flanked by the initial and final processing instructions <?php?>. In PHP files can also contain HTML tags as well as Javascript (GManurung, 2019).

2.3 MySQL

My Structure Query Language (MySQL) is a leading open source database software or program used for web-based applications. MySQL is free to use by any user, but with limitations the software should not be used as a derivative product of a commercial nature (Eka Wida Fridayanthie, 2016). MySQL is a derivative of SQL (Structured Query Language). SQL is a language used in retrieving data in relational databases or structured databases (Rohmana et al., 2019).

2.4 Web Browser

A web browser is a software application used to search, access and display web pages, especially websites and other content on the internet (Nurjaman & Yasin, 2020). Generally, the address format used is WWW (World Wide Web) or by typing a URL (Uniform Source Locator) in the address bar in the web browser. Next, the web browser will retrieve the data or fetching written in HTML code. There are several kinds of web browsers including Google Chrome, Opera, Microsoft Edge, Mozilla Firefox, Internet Explore, and many more (Syahputra & Kom, 2016).

2.5 Unified Modelling Language (UML)

Unified Modeling Language is a set of conversion modeling or visual language for modeling and communication of a system using diagrams and supporting texts (Kirana et al., 2018). UML is a methodology in developing object-oriented systems and is also a tool to support system development (Adhiwibowo & Daru, 2017). UML is a modeling language that uses the concept of object orientation used to specify, visualize, build, and document software systems. UML was first introduced in the 1980s by Object

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Management Group, an organization that has developed OOP models, technologies, and standards (Sugiharto, 2016). UML can be used to understand and document each information system. The use of UML in the industry continues to increase, this is an open standard that has become a common modeling language in the software and system development industry. There are several UML diagrams, namely Use Case Diagrams, Activity Diagrams, Class Diagrams, and Squence Diagrams (Santoso et al., 2018).

3. Result and Discussion

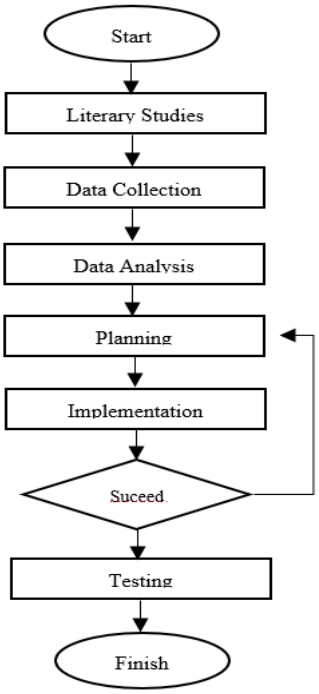

Figure 2. Process Flowchart

Based on the flowchart of the research in figure 1, it can be explained as follows:

a. Literature Study: research begins with a literature study, which is carried out by looking for references from various existing journals, books, and theses to enrich the source of this research.
b. Data Collection: data collection is carried out by conducting interviews with employees and making direct observations to the research site, namely at SD Muhammadiyah 2 Kupang
c. Data Analysis: data analysis, namely by analyzing what data will be used in this study.
d. Design: this stage is the stage of designing a design that is in accordance with the data that has been collected, analyzed and ready to be designed.
e. Implementation: at this stage, the implementation or application of programs that have been built into the field is carried out for proper use.
f. Testing: at this stage, testing of the application that has been built and designed whether it is correct and in accordance with the expected results, if the application is correct and in accordance with the expected results then the application is ready to be implemented and if the application is still not correct and not in accordance with the expected results, it will return to the design stage for improvement.
g. Done.

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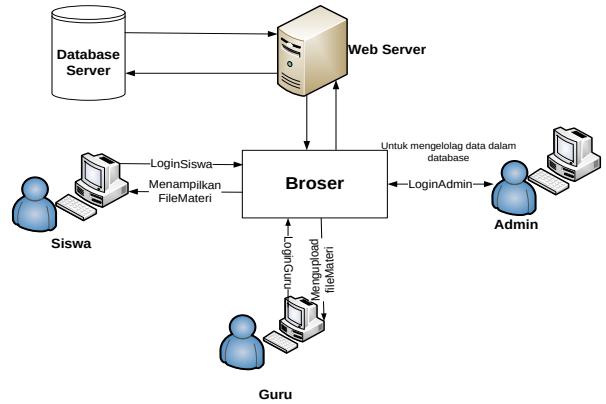

Figure 2. E-learning System Architecture Design

Figure 3. E-leaning System Diagram Usecase Design

In the picture above, it is explained that in this application there are actors who interact with the system, namely user actors (teachers) and managing actors (Admins). Each actor has different interactions and tasks where the actor (User) can only view, download and upload subject matter datawithout being able to manage data, while the managing actor (Admin) can view and manage the data contained in the database. Student actors can work on assignments, print materials and view grades

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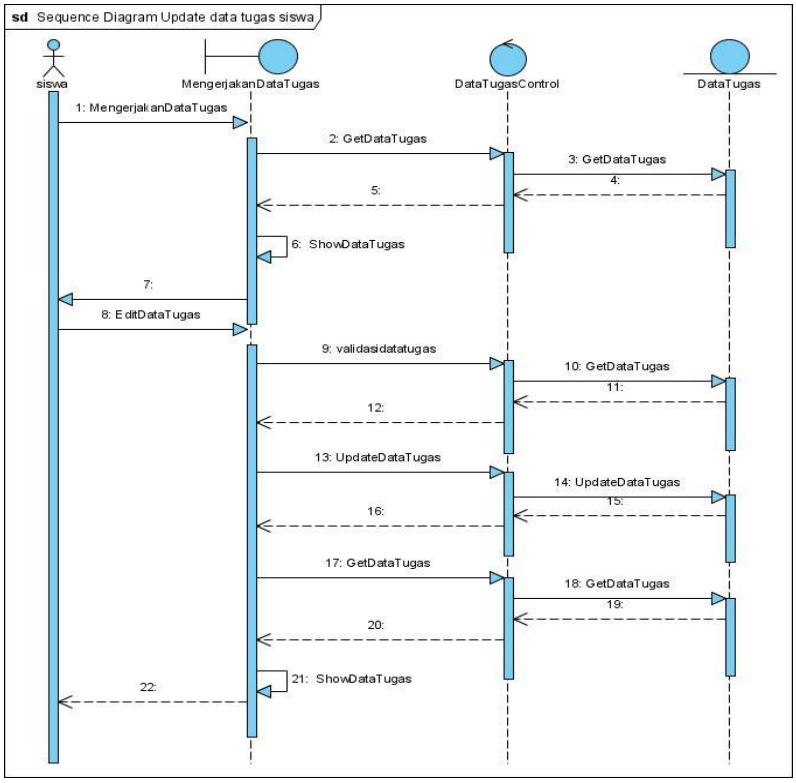

Figure 4. Draft Sequence diagram of student assignments

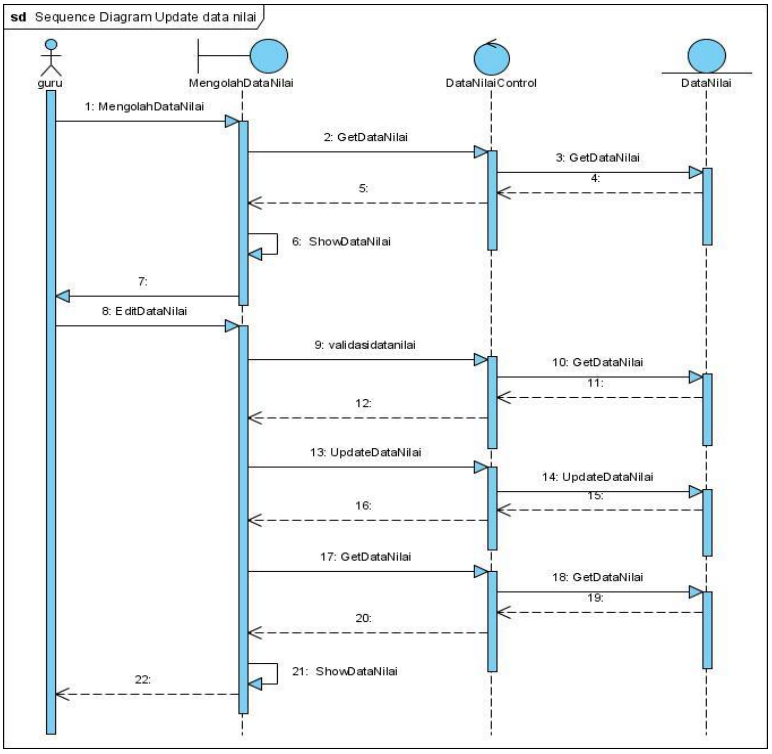

Figure 5. Design Sequence Diagram Of Value Data

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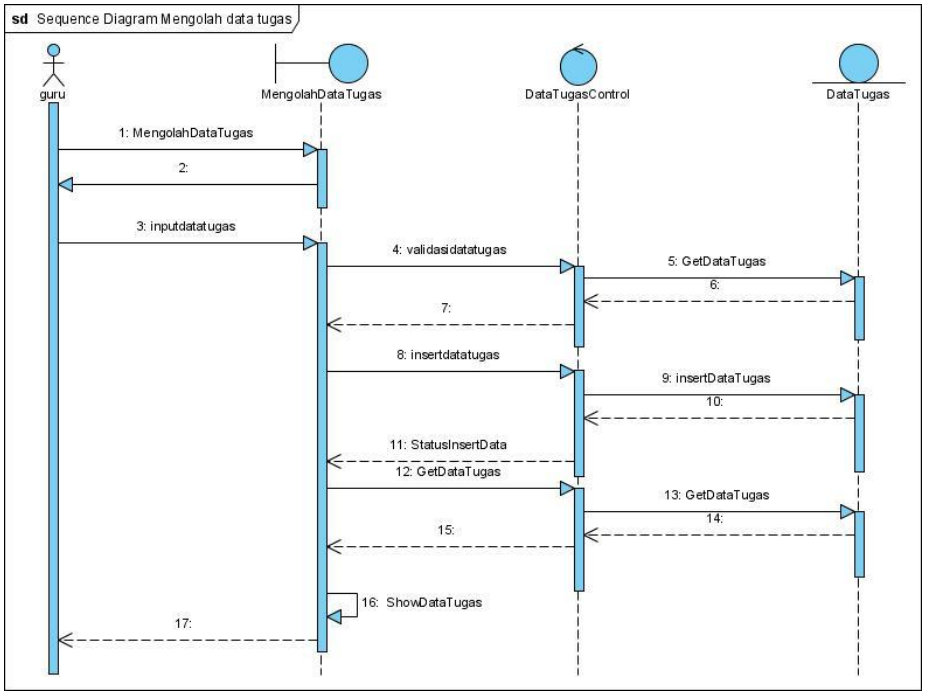

Figure 6. Sequence Diagram Processing Task Data

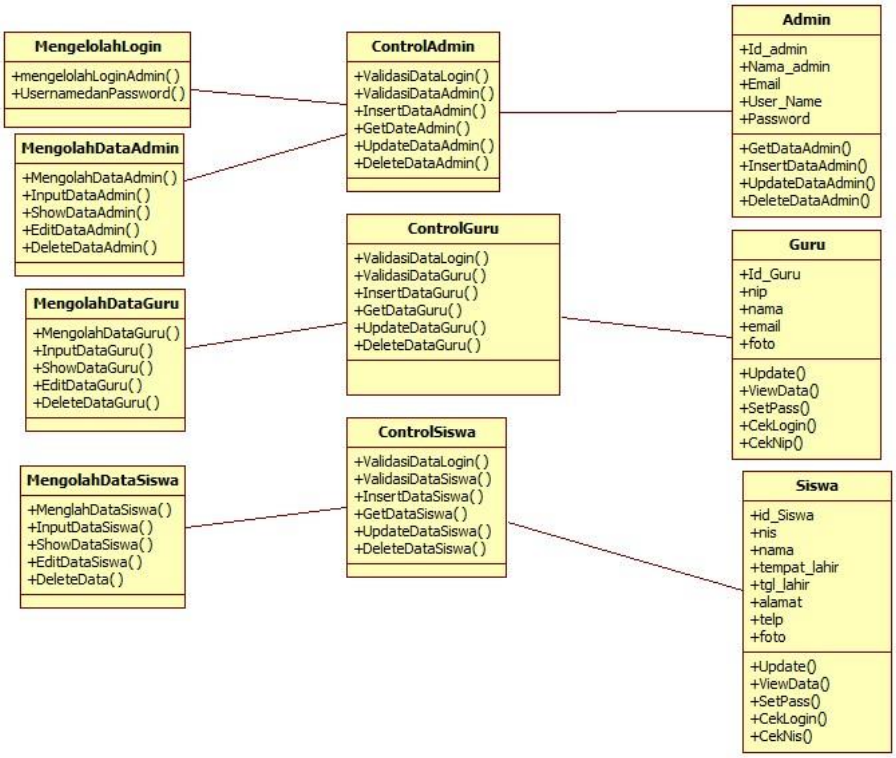

Figure 7. E-Learning System Diagram Class Design

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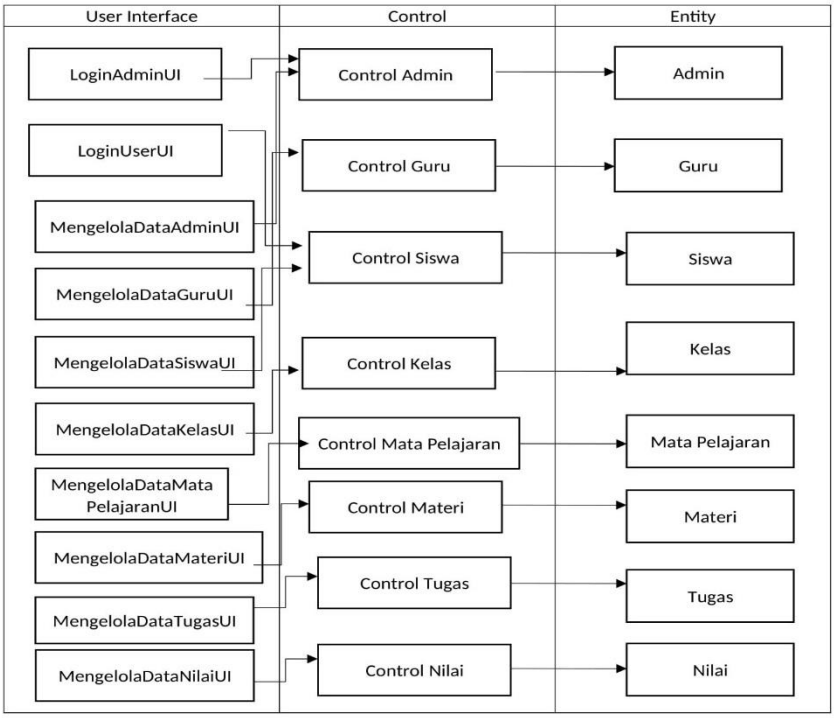

Figure 8. Application Screen Architecture Design

Application Interface Design

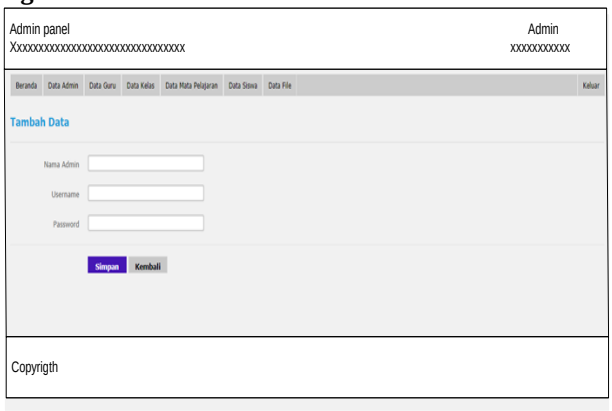

Figure 9. Admin Menu Form Design

The add admin data form is a form that will be used by the admin to manage the system admin username and password

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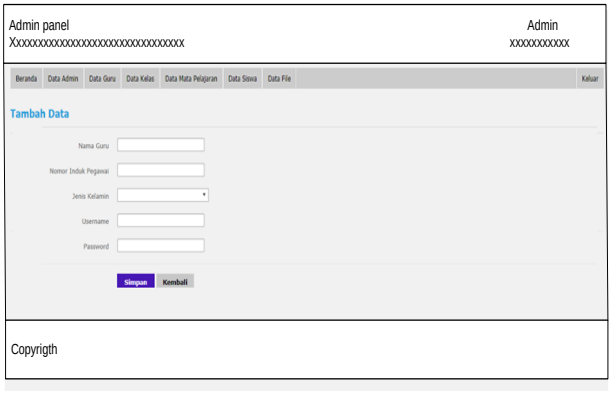

Figure 10. Teacher Data Add Form Design

Form design This teacher data display will display the teacher data that has been inputted.

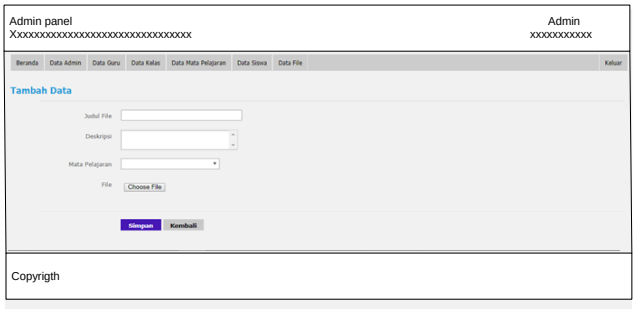

Figure 11. Design Of The Form To Add Material Data

Form Design plus material file data This form is used by admins to input material file data, this form can also be used by teachers to upload material.

4. Conclusion

The design of this application will later make it easier for teachers and students to learn and teach, practice questions and can overcome obstacles to the teaching and learning process activities and the implementation of e-learning at SD Muhammadiyah 2 Kupang. Teachers can also log into the system to cover news, learning materials, articles, practice questions. Meanwhile, students can view news, announcement articles and download subject matter.

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