

# Design to Build E-learning Application in SMP N 2 Busalangga

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**Abstract:** The development of technology today is growing so rapidly, almost all aspects of human life all use technology. The need for it-based teaching and learning concepts and mechanisms is increasingly advanced which then became known as E-learning brought the influence of the transformation of conventional education into digital forms, both in content (contents) and systems. E-learning is a learning model that utilizes information and communication technology facilities. With this information technology can act as the provision of information between students and students, learning resources and a means to streamline learning evaluation. SMP Negeri 2 Busalangga as one of the state schools whose teaching and learning activities process still use conventional means. To educate students or students in the face of national exams, teachers or schools always hold tutoring or try out, national pre-exams outside of school hours. A system is needed that can facilitate the teaching and learning process in schools between students and teachers, namely e-learning. The results obtained in the form of e-learning website media that can be used for teaching and learning activities where teachers and students can access the subject matter easily and quickly and can be accessed from anywhere and will be a plus because the system is based on information and technology.

**Keywords:** E-learning, Information, School, Website

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## 1. Introduction

The development of technology today is growing so rapidly, almost all aspects of human life all use technology. The need for a concept and mechanism of TEACHING AND LEARNING (education) based on IT is increasingly advanced which is then known as E-learning this brings the influence of the transformation of conventional education into digital form, both in content (contents) and the system. Currently the concept of E-learning has been widely accepted by the world community, as evidenced by the rampant implementation in educational institutions by the community, as evidenced by the rise of E-learning in educational institutions (schools, training centers and universities) and industry (Cisco System, IBM, HP, Oracle).

E-learning is a learning model that utilizes information and communication technology facilities. With this information technology can act as a provision between students and students, learning resources and means to streamline learning evaluation. SMP Negeri 2 Rote Busalangga as one of the public schools that already use computer-based national

examinations (online), so this school tries to maintain the quality of its students. To educate students or students in facing national exams, teachers or schools always hold tutoring or Tri Out, a national pre-exam outside of school hours. Tutoring is a student who learns guided by a teacher of the field of study by exploring the material studied, while Tri Out is a test or test of competence and ability held for students in the face of national examinations. Tutoring and Tri Out national pre-examination is carried out twice per odd semester and three times even permester.

The tutoring program and Tri Out which was implemented at State Junior High School 2 Rote Busalangga so far using conventional learning methods whose implementation takes approximately 2 hours every 1 subject. So that students do not have much time to do problem training and explore existing materials. This indicates that tutoring or Tri Out that uses conventional systems still has limited time owned by students making students not maximal to learn and work on the given problem exercises so that the resulting grades are not in accordance with the expected graduation standards. Then

additional methods are needed, namely online-based E-learning system which will help students to learn and do problem exercises to face national exam preparation to the maximum so as to produce the value expected by teachers.

## 2. Research Methods

### 2.1. Understanding E-Learning

According to [1] E-learning as any teaching and learning that uses electronic circuits (LAN, WAN or Internet) to convey the content of learning, interaction or guidance. [2] Emphasize that E-learning refers to the use of internet technology to deliver a series of solutions that can improve knowledge and skills.

### 2.2. Characteristics of E-learning

According to [3] explaining some of the characteristics of E-learning, among others:

1. Utilizing the services of electronic technology,
2. Utilizing the advantages of computers,
3. Using self-taught materials,

Utilizing learning schedules, curricula, learning progress outcomes, and matters related to educational administration can be seen at any time on the computer.

### 2.3. Benefits of E-Learning

The use of E-learning in learning according to [3] is:

1. On E-learning students independently at a certain time and responsible for their learning.
2. E-learning provides a set of tools that can enrich the value of conventional learning.
3. E-learning does not replace conventional learning models, but strengthens those learning models.
4. Student capacity varies greatly depending on the form of content and delivery, the better the alignment between the content and the learning presenters will give better results.

### 2.4. Website

The website is the location on the internet presents a collection of information in relation to with the profile of the site owner [10].

### 2.5. PHP

PHP programming language is a programming language for creating websites that are server-side scripting. PHP is dynamic. PHP can be run on a wide variety of operating systems such as Windows, Linux, and Mac Os. [8].

According to Kustiyahningsih PHP (Hypertext Preprocessor) is a server-side script that is added to HTML. PHP stands for Personal Home Page Tools [9].

### 2.6. MySQL

MySQL is a database that connects PHP scripts using the same query commands and escapes characters as PHP.

MySQL has a client display that makes it easy to access databases with a password to allow biased processes to be performed. phpMyAdmin is a software that is shaped like a site page contained on a web server. The function of this page is as a MySQL database controller so that MySQL users do not have to bother to use SQL commands. Because with this page all these things can be done just by clicking the function menu on the phpMyAdmin page [6].

MySQL is an RDBMS software (or database software) that can manage databases very quickly, can hold very large amounts of data, can be accessed by many users (multi-user), and can perform a process in sync or simultaneously (multi-treaded) [11].

MySQL is one of the most well-known types of database servers and is widely used to build web applications that use databases as their source and data processing [12].

### 2.7. Understanding Information

Information is data that is processed into a more useful and more meaningful form for those who receive it [13].

Information is data that has been classified or processed or interpreted for use in the decision-making process [14].

### 2.8. Understanding Information System

An information system is a set of interconnected components, which work to collect and store data and process it into information for use [15].

### 2.9. Research Procedures

There are several stages that are carried out, namely the study of literature by studying references related to the research being done, data collection from SMP Negeri 2 Busalangga, system analysis in the form of problem analysis, solving, and needs, then the next step is the overall system design, after which the system testing whether it runs in accordance with the research objectives. If the system shows the expected results then the system is ready to be implemented. It can be described as follows:

Based on the flowchart in figure 1 can be explained as follows:

- a. Literature Studies, conducted by looking for sources of literature both directly and indirectly, with the source of books, journals, and related sources that support this research.
- b. Planning is done by conducting a survey of the location of research objects, interviews with PT ASDP kupang branch and so on.
- c. Creation at this stage of system creation is done based on data and user needs that have been obtained before.
- d. Testing at this stage is conducted testing the system whether it is in accordance with the needs of the user.
- e. Evaluation, this process is done to know the weaknesses or deficiencies of the system if it is not appropriate then it will be evaluated, and if it is completed then the system is ready to use.

Flowchart E-learning system at SMP N 2 Busalangga.

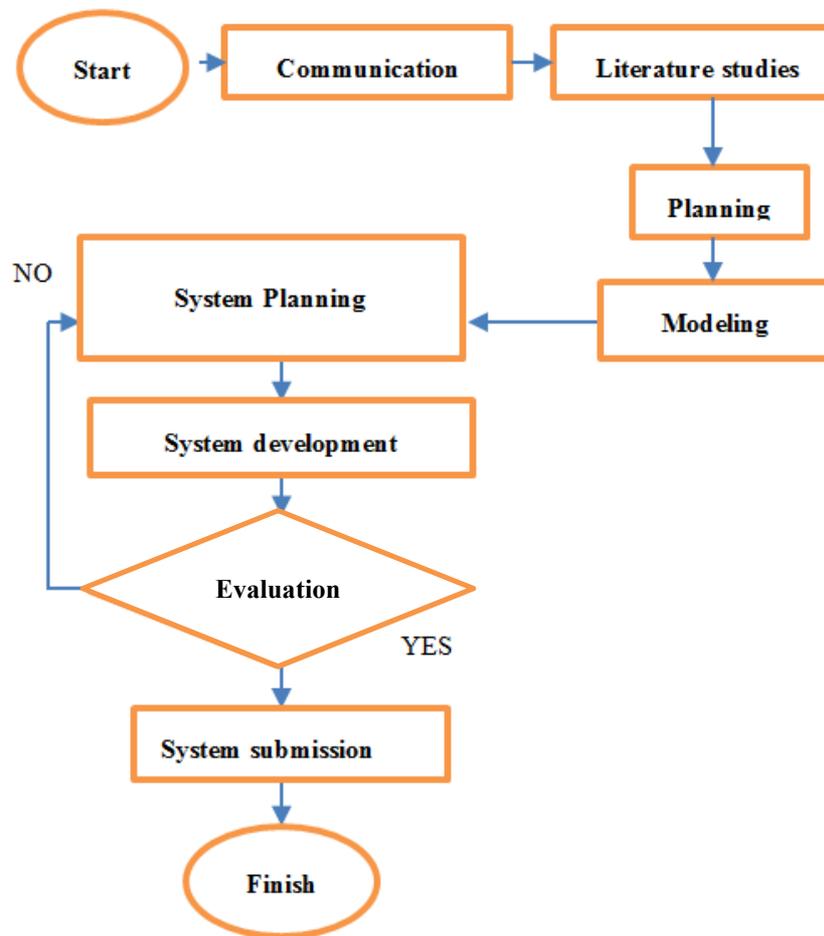


Figure 1. Flowchart Research.

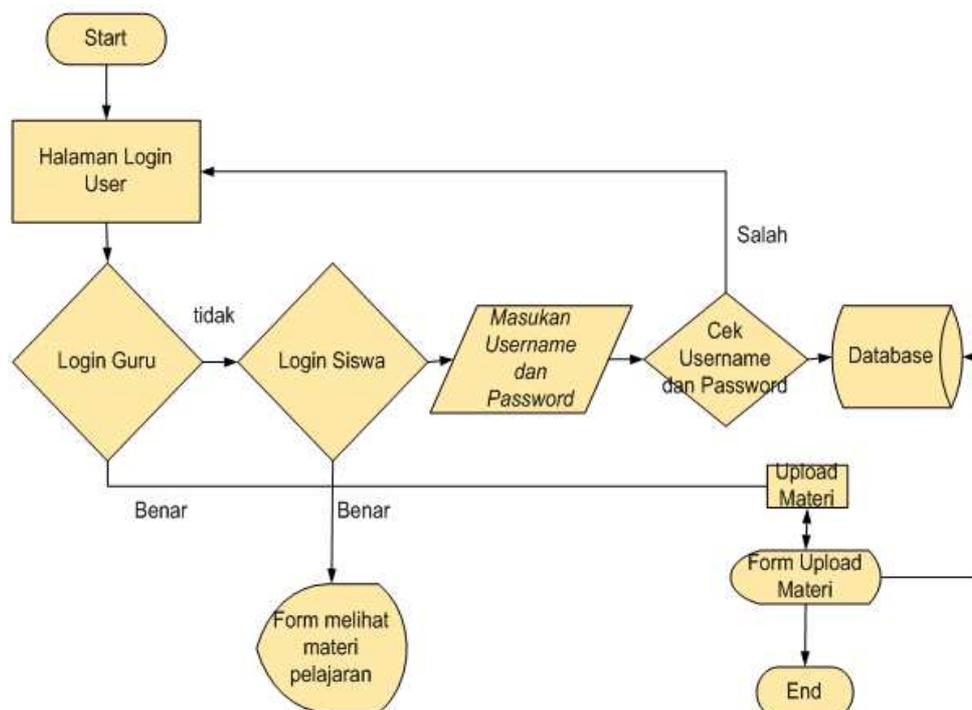


Figure 2. Flowchart System Login Teachers and Students E-learning Application.

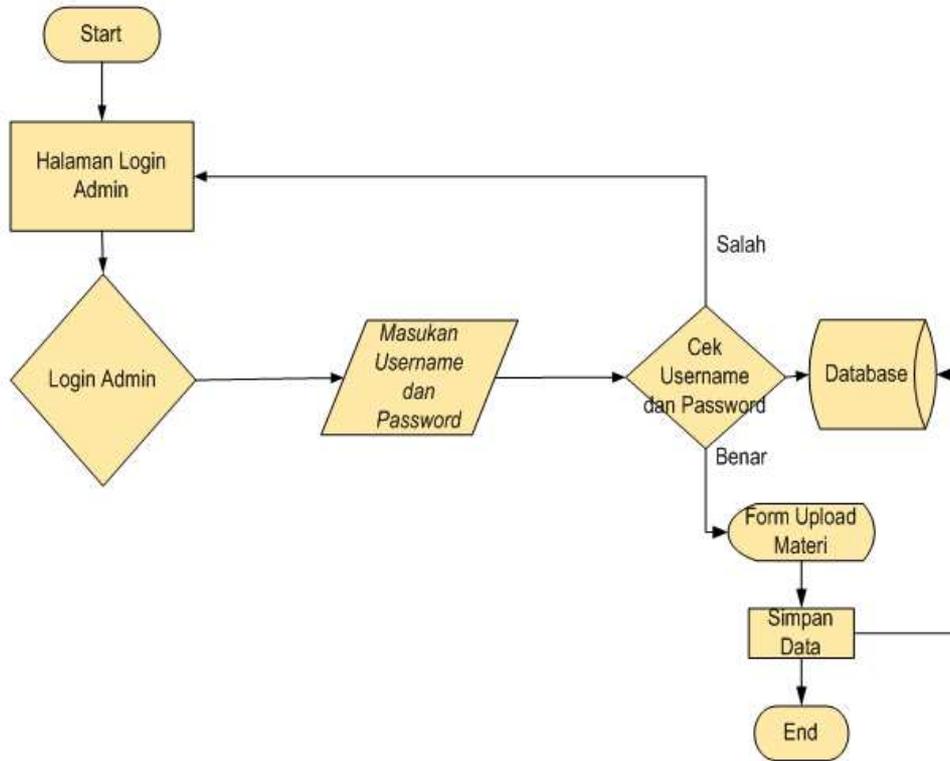


Figure 3. Flowchart System Login Admin E-learning Application.

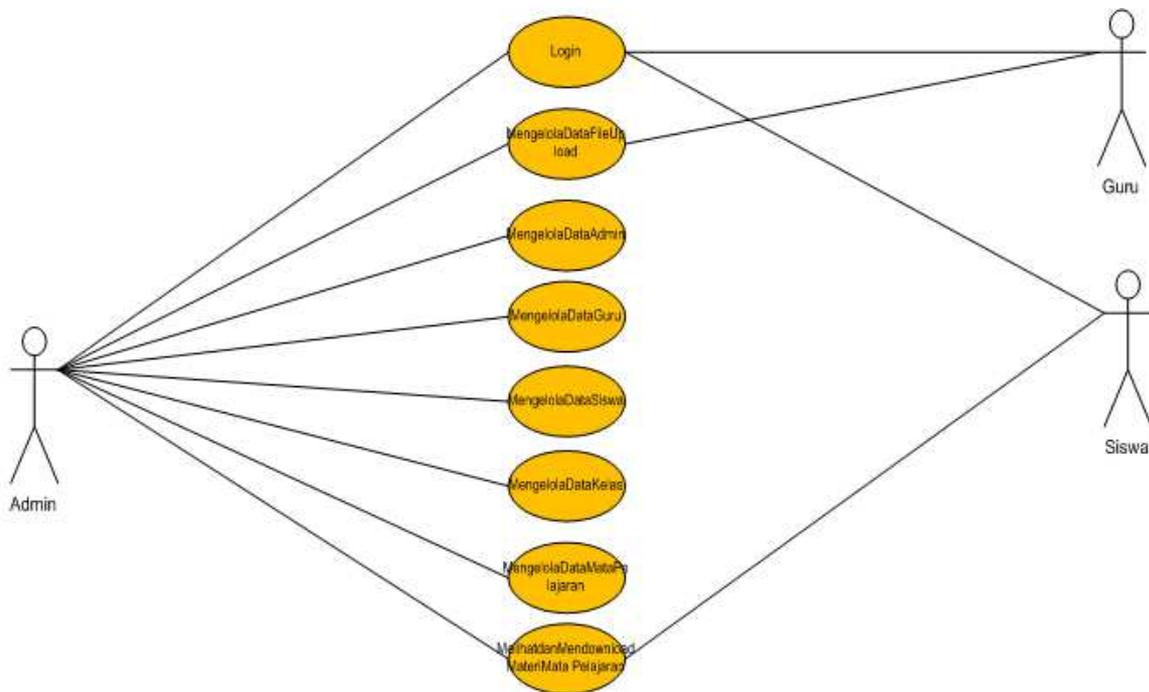


Figure 4. Usecase system diagram.

In the picture above it is explained that in this application there are actors who interact with the system, namely user actors (Users) and managing actors (Admin). Each actor has different interactions and tasks where the actor (User) can only see, upload and upload data subject matter can not manage data, while the managing actor (Admin) can see and manage the data contained in the database.

### 2.10. Layer Architecture Design

The design of the screen architecture serves to describe the system category as a link between user interface components. The architectural design used is a screen architecture (layer architecture) where there is a separation of responsibilities from each layer, layer architecture design can be seen in figure 5 below.

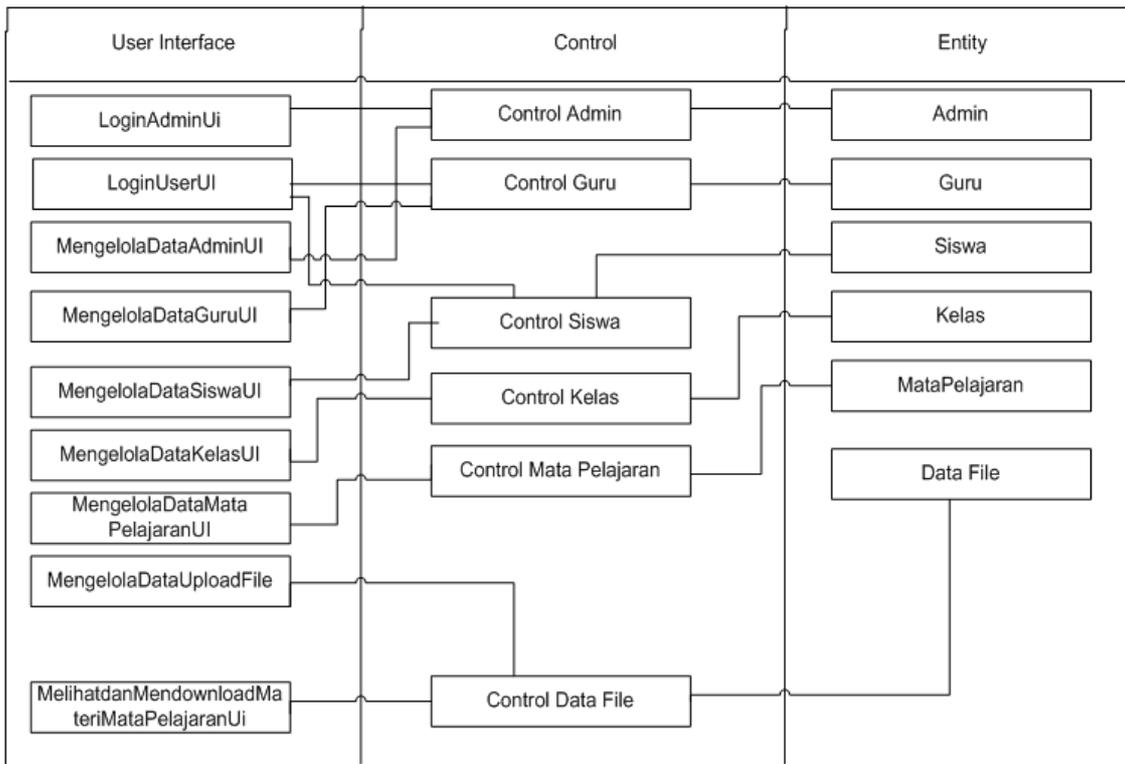


Figure 5. E-learning Application Screen Artektur.

### 3. Results and Analysis

SMPN 2 Busalangga E-learning application of Rote Ndao regency has several important things, namely: product perspective, product function, flowchart data input, process and display display, socialization of web-based e-learning application to teachers in SMP N B2 Busalangga.

#### 3.1. Application Architecture

SMPN 2 Busalangga E-learning application rote Ndao district is a Web-based software application developed for

online learning needs for students / students quickly and easily to get material from existing elearn applications. Windows XP, 7, 8, 10 is created using php programming language as the application builder, SQL to help the database creation process. Users of this application are the responsibility of admins and Teachers to input data, admins use the mouse and keyboard while to display the output used monitor screen. In this system the software architecture is used in the form of an internet network, where all data can be accessed through many clients. Each request from the client will only be served by one server. For more details, look at figure 6:

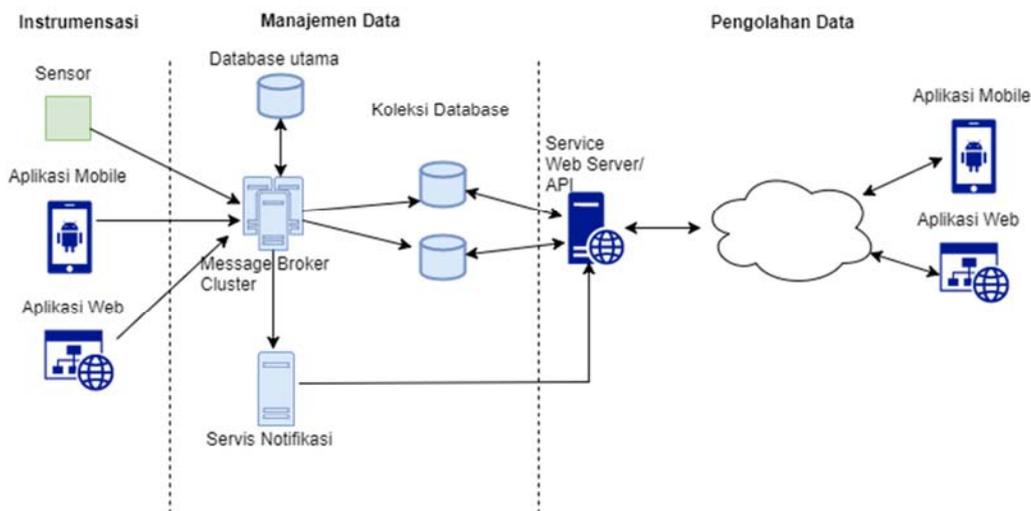


Figure 6. SMPN 2 Busalangga e-learning Application Architecture.

### 3.2. E-learning Application Interface View

In implementing this system, a simple interface is created to make it easier for customers and administrators to use this system. The interface is made based on responsive websites, making it easier to use on a wide variety of mobile devices. The following will discuss the functions and workings of each page and the menus produced by the application.

#### 3.2.1. The Login Home Interface

The Login Home Interface is the Page that will first appear when students / users want to login to the website system. User entered username and password on login page.



Figure 7. E-leaning Application login interface.

#### 3.2.2. Home Interface

The home interface is the page that will first appear when students / users successfully log into the E-learning Website. This page consists of several menus namely Home and subjects.



Figure 8. Interface Baranda E-learning Application.

#### 3.2.3. The Subject Interface

The Subject Interface is a page for students to view subjects and assignments uploaded by the subject teacher.

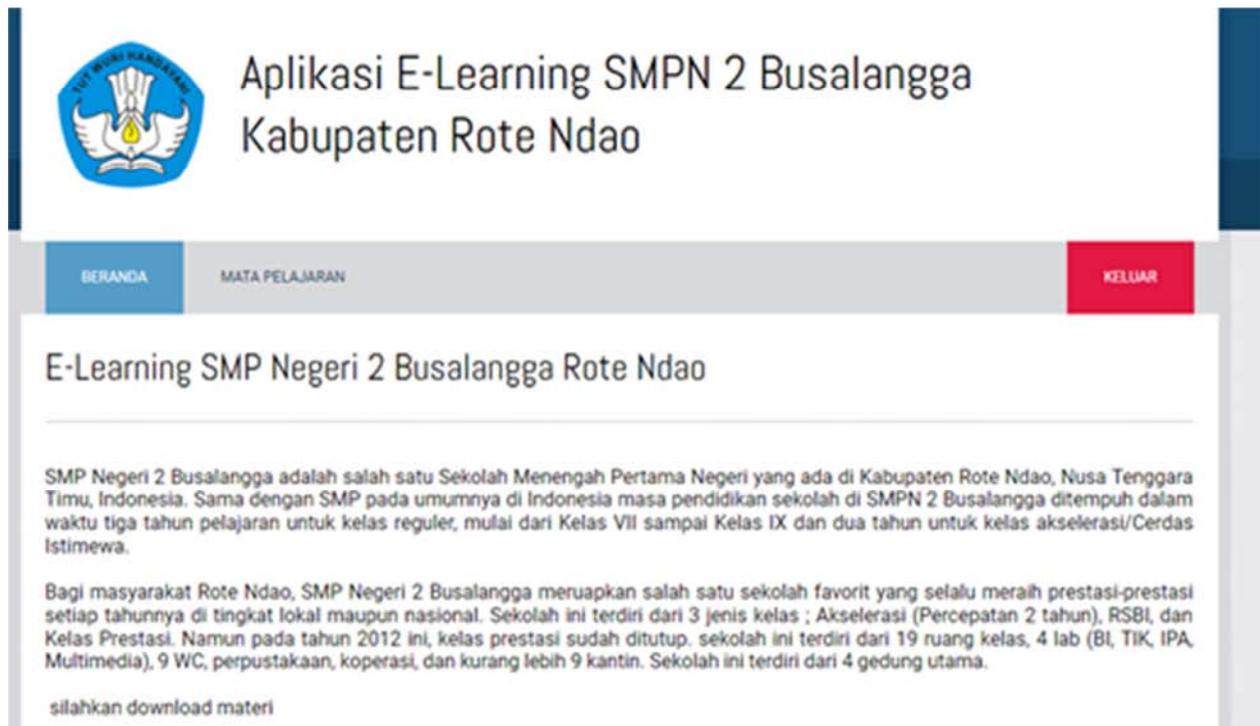


Figure 9. Subject menu interface.

### 3.3. System Testing

#### System Testing by Users

User testing uses several methods to determine the number of respondents and assessment of the app. The slovin method is used to determine a sample population with the desired degree of accuracy by providing an idea of how large a sample size is needed to ensure accurate results. The slovin formula is as follows [7].

$$n = N / (1 + [(Na)^2])$$

Where:

n = Number of samples

N = Population

a = error tolerance limit

To use this formula, it is first determined what the error

tolerance limit is. This fault tolerance limit is expressed by a percentage, the smaller the fault tolerance, the more accurately the sample describes the population. Here the author determines the error tolerance limit of 10% means it has an accuracy rate of 90%.

Known: N =

a = 10%

Asked: n = ?

Settlement:  $n = N / (1 + Na^2) = 598 / (1 + 598 \cdot [(0.01)]^2) = 598 / (1 + 598 \cdot 0.0001) = 598 / (1 + 0.1) = 598 / 1.01 = 86$

The results of the calculation of 86 respondents from among Teachers and Students in SMP Negeri 2 Busalangga. Respondents were given a questionnaire statement and then respondents gave responses. The results of app user respondents can be seen in table 1 of the following:

Table 1. E-learning Application User Questionnaire Results.

| Statement  | SS | S | N | TS | STS | $\sum JR$ | SI  | CI% | Ket |
|--|----|---|---|----|-----|-----------|-----|-----|-----|
|  | 5  | 4 | 3 | 2  | 1   |           |     |     |     |
| Easy login page  | 30 | 3 | 0 | 0  | 0   | 150       | 165 | 91  | SS  |
| The selection of colors and images of banners on each page of the website is appropriate and comfortable to see. | 28 | 5 | 0 | 0  | 0   | 140       | 165 | 85  | SS  |
| The text used on every page of the website is comfortable to read.   | 30 | 3 | 0 | 0  | 0   | 150       | 165 | 91  | SS  |
| The interface design on each page is easy to understand.   | 25 | 7 | 0 | 0  | 0   | 125       | 165 | 76  | S   |
| You will be alerted when the data is filled incorrectly  | 29 | 4 | 0 | 0  | 0   | 145       | 165 | 88  | SS  |
| Website can help teachers in teaching and learning prose   | 33 | 0 | 0 | 0  | 0   | 165       | 165 | 100 | SS  |
| Website is easy to operate   | 33 | 0 | 0 | 0  | 0   | 165       | 165 | 100 | SS  |
| Content and information presented by the original website  | 33 | 0 | 0 | 0  | 0   | 165       | 165 | 100 | SS  |
| The combination of websites in order to desire the teacher   | 30 | 3 | 0 | 0  | 0   | 150       | 165 | 91  | SS  |
| Safe, fast and convenient website usage  | 33 | 0 | 0 | 0  | 0   | 165       | 165 | 100 | SS  |

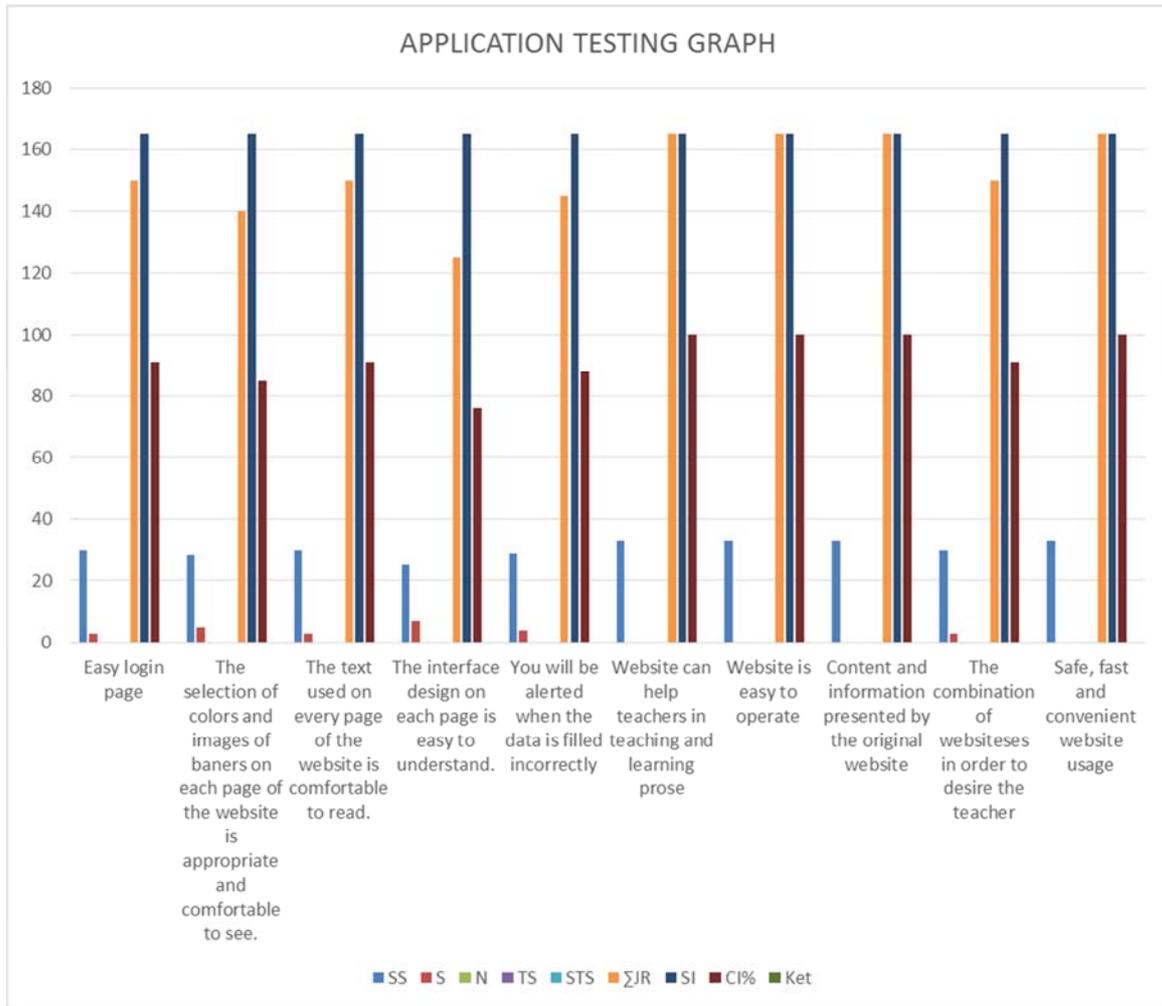


Figure 10. E-learning Application Testing Graph.

Based on the results of the respondents' tests, it can be concluded that in general this system has fulfilled the main goal, which is to help in the process of teaching and learning activities. In terms of display is good, interactive and easy to read and understand and the selection of colors and images that are comfortable and beautiful to look at.

## 4. Conclusion and Recommendation

### 4.1. Conclusion

This application will make it easier for teachers and students to teach and learn activities, problem training and can overcome the obstacles of teaching and learning process activities and the implementation of e-learning in SMP Negeri 2 Busalangga. In addition, it is expected that this system will help students to learn and do problem exercises to face national exam preparation to the maximum to produce expected grades.

### 4.2. Advice

Research conducted there are still some shortcomings, so the author provides the following advice: (1) There needs to be

improvements in internet network infrastructure, especially in Rote Ndao Regency. (2) There needs to be guidance on the use of e-learning applications in teachers. (3) The need for the development of systems with more interesting interactive media for the learning process in applications.

## Acknowledgements

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