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Design And Implementation Of Web-Based E-Learning At Smk Negeri 1 Tondano

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ABSTRACT

In the midst of the current COVID-19 pandemic, the utilization of online learning support facilities has not been optimal because there is no e-learning application at SMK Negeri 1 Tondano. Based on the existing conditions, the learning process through e-learning technology with an internet connection allows learning to be carried out more easily. This study aims to design and implement web-based e-learning at SMK Negeri 1 Tondano. The research method used is Scrum which is one of the derivative development methods of Agile Development. The results of this study indicate that the existence of e-learning applications can make it easier for teachers to provide materials and assignments and students can easily access learning materials and do assignments/exams given by the teacher. Using the Scrum method can make it easier to create applications.

Keywords : *Web, E-Learning, Scrum*

INTRODUCTION

The current pandemic has greatly affected the current education system. Most governments have issued policies to temporarily close educational institutions by switching to online education. Closing schools, not only has an impact on students, teachers and families, but also on the economy and society. The Ministry of Education and Culture (Kemendikbud) issues policies related to current educational issues, by prioritizing the health and safety of students, educators, education personnel, families and the community, in accordance with the government's decision to temporarily close all educational institutions and transfer

them online. In order to support the learning process from home, the use of e-learning applications is the best solution. E-learning is a method by which learning. With electronic media using networks such as the internet and other media which aims to convey material more optimally (Wassalam, Umar, and Yudhana 2017). With the web-based e-learning application, it is easier for the learning process from home to be accessed using a web browser on a computer or mobile phone that involves the internet network. A web browser is a program for displaying pages in the form of HTML code. Hypertext Markup Language (HTML) is the standard language used to display web pages (Rahmayu 2016).

Realizing that the use of the e-learning system will provide teaching and learning support, in the implementation and development of the e-learning system at SMK Negeri 1 Tondano which is carried out to enrich teaching in conveying information that can facilitate students in mastering the field of knowledge they are studying. The purpose of this research is to design and implement into the application.

METHOD

The method used is Scrum with the process of this method as shown in Figure 1.

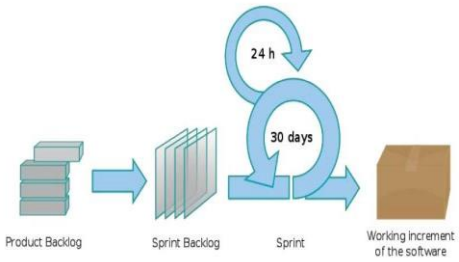


Figure 1. Gambar 1. Scrum Development Process

1) Product Backlog

According to subekti, the product backlog is making a list of needs in accordance with those obtained from data collection. (Subekti et al. 2014).

2) Spirit Backlog

The sprint backlog is a number of parts that have been divided from the product backlog to be worked on in the later sprint phase.

3) Sprint

Making the application at this stage has begun, with stages consisting of In Progress, Review, Testing, and Done.

4) Working Increment of the software

At this stage to review the application whether it is in accordance with the sprint that has been made by testing.

Tools and materials

The materials and tools used in this study consisted of software (software) and hardware (hardware).

1) Software (Software)

a. Windows Operating System

b. Visual Studio Code Text Editor 1.41.1

c. Chrome Browser 80.0.3987.106

d. XAMPP v3.23

e. http://elearningsmk1tondano.rf.gd (student login) and http://elearningsmk1tondano.rf.gd/admin (admin and teacher login).

2) Hardware (Hardware)

a. RAM memory 8 GB DDR3

b. CPU AMD A8-7410 @2.20 GHz

RESULTS AND DISCUSSION

The results of the application development process can be explained as follows.

A. System Requirements Analysis

The following is a note regarding the collection of information carried out.

ELICITATION NOTES

System : E-Learning SMK Negeri 1 Tondano

Documentation Method : Interview

Source of data: homeroom teacher for class X multimedia A (Anggreini Fillia Kalangi S.Pd)

Implementation date : -

Feature :

• Users: There are 3 users in the system, namely Admin (to control the system), Teachers and Students.

• Teachers can upload materials and give exams to students.

• Students can download materials and take exams.

• Students can view test results (scores).

• Announcements (news) in the system.

Classification :

• Input Student and Teacher Data.

• Uploading and downloading materials.

• Online exams.

• Announcements (News)

E-Learning User Access

User access in the resulting e-learning application there are three types of users namely admin, students and teachers can be seen in Figure 2.

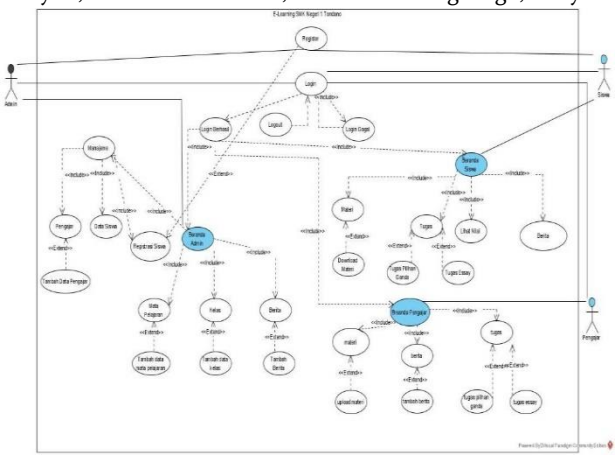


Figure 2. Use Case Diagram

From Figure 2 can be seen the access of the three users. In Figure 3 you can see the admin access page on the e-learning application.

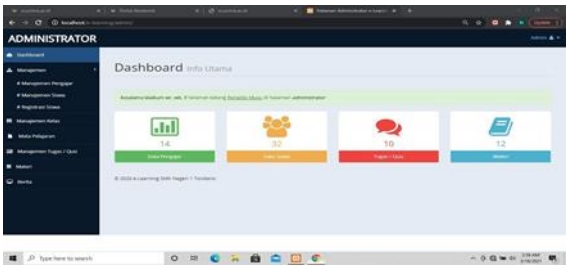


Figure 3. Admin Access Page

In Figure 4 you can see the student data management page by the admin on the e-learning application.

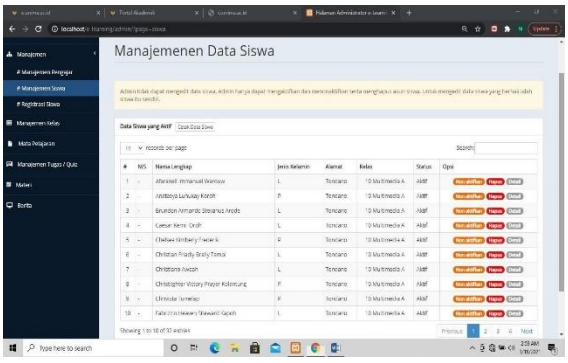


Figure 4. Student data management page

In Figure 5 you can see the class management page by the admin on the e-learning application.

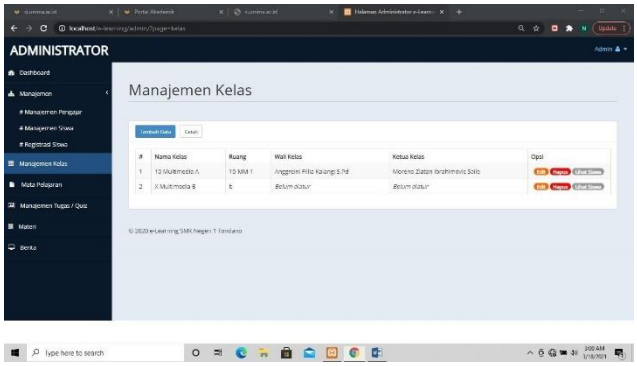


Figure 5. Class management page

In Figure 6 you can see the subject management page by the admin on the e-learning application.

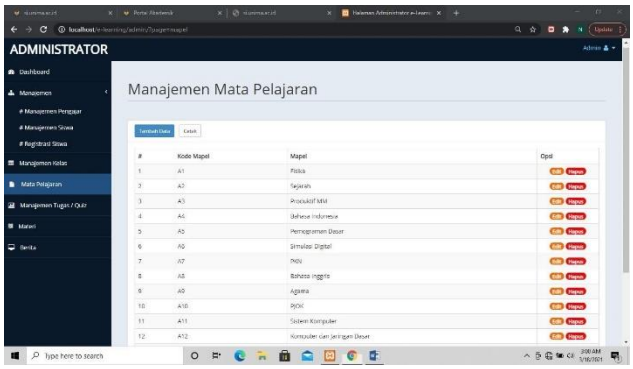


Figure 6. Subject management page

In Figure 7 you can see the task management page by the admin on the e-learning application

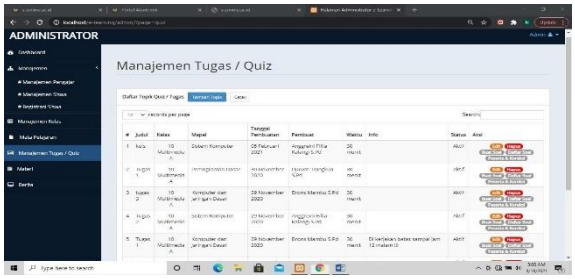


Figure 7. Task management page

In Figure 8 you can see the material input page by the teacher in the e-learning application.

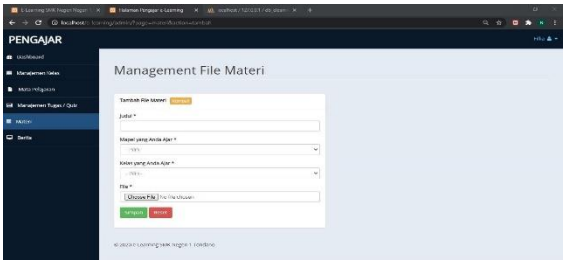


Figure 8. Material input page

In Figure 9 you can see the task input page by the teacher on the e-learning application. There are 2 types of questions, namely multiple choice and essay.

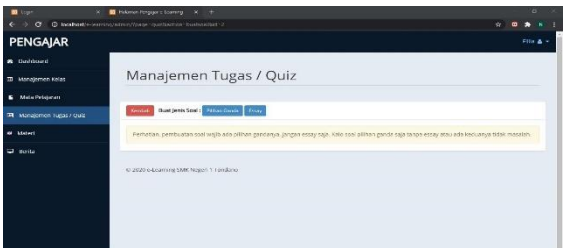


Figure 9. Task input page

In Figure 10 you can see the value management page by the teacher and the bias also from the admin on the e-learning application.

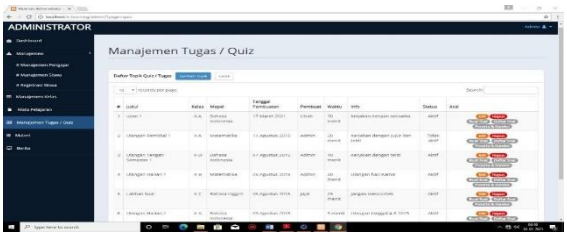


Figure 10. Value management page

In Figure 12 you can see the page for downloading material by students on the e-learning application

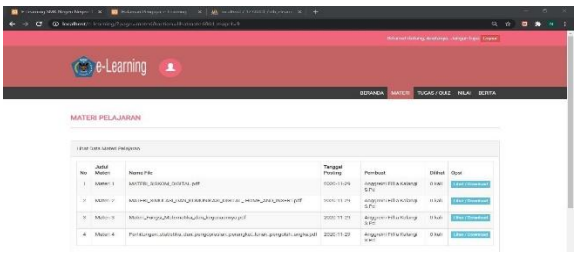


Figure 11. Material download page

In Figure 12, it can be seen the page for doing assignments by students on the e-learning application.

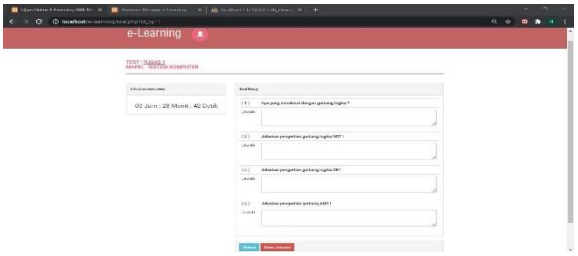


Figure 12. Assignment page

In Figure 13 you can see the page to see the value by students on the e-learning application

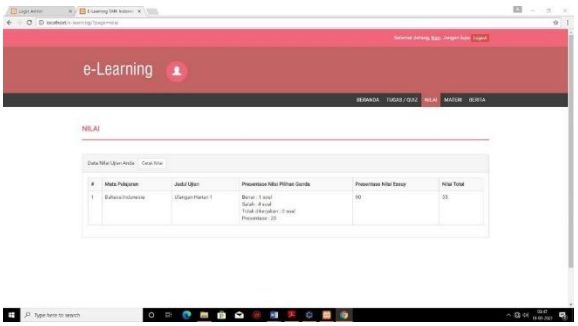
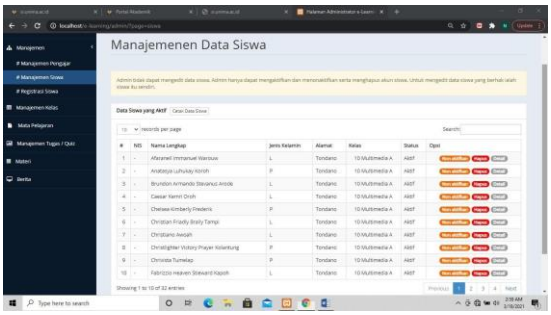
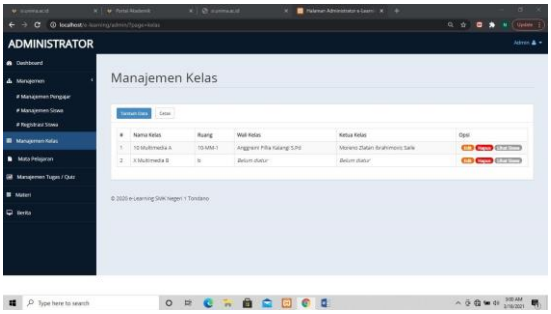
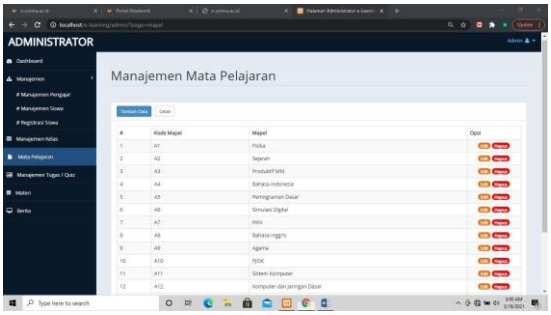
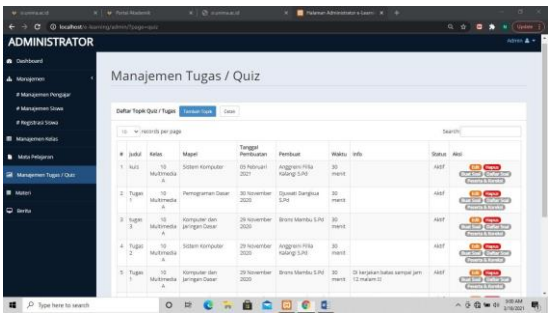


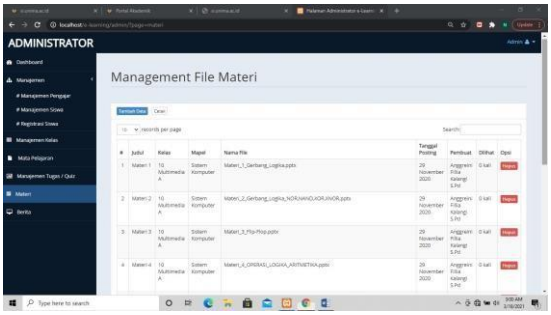
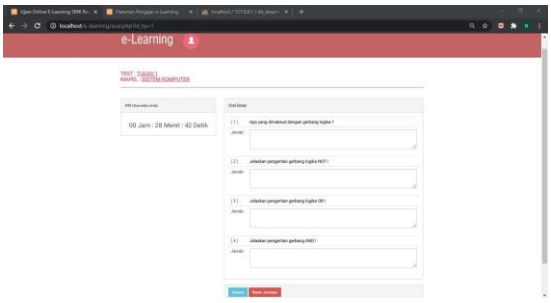
Figure 13. Values page

E-Learning Application Testing

Testing the e-learning application is a form of certainty whether the e-learning application is running or not. Application testing is done by black box technique. In Table 1 below, are the results of testing with the black box technique

Table 1. Black Box Test Results

Objek Uji	Pengamatan	Teknik Uji	Hasil Pengamatan
Pengelolah data siswa		*Black Box*	Berfungsi (*Accepted)*
Pengelolahan Kelas		*Black Box*	Berfungsi (*Accepted)*
Pengelolahan Mapel		*Black Box*	Berfungsi (*Accepted)*
Pengelolahan tugas		*Black Box*	Berfungsi (*Accepted)*

Pengelolahan materi		*Black Box*	Berfungsi (*Accepted)*
Pengerjaan Tugas		*Black Box*	Berfungsi (*Accepted)*

CONCLUSION

In accordance with the results of the research, using the Scrum method, e-learning applications made for SMK Negeri 1 Tondano as an effort to meet the needs of the online learning process in the midst of the current pandemic are as follows: (1) e-learning applications that are made can be one of the alternative solutions for the online learning process in the midst of a pandemic at SMK Negeri 1 Tondano. (2) the resulting e-learning application shows that it can carry out the process of distributing material and exams. (3) the e-learning application developed using the scrum method and proven from the results of testing using black box techniques, the application is functioning.

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