Development of Web-based Learning Media For Vocational High School (SMK) Negeri 3 Bengkulu City

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Abstract: This research aims to develop web-based learning media that can be used at SMK Negeri 3 Bengkulu City motivated by the need to improve the quality of learning in the digital era, where technology can be an effective tool to support the teaching and learning process. This research uses the ADDIE (Analysis, Design, Development, Implementation, Evaluation) model development method which consists of five stages, namely needs analysis, learning media design, media development, implementation, and evaluation of the effectiveness of the developed media. The results of this web-based learning media development include materials presented interactively, with features such as quizzes, learning videos, and discussion forums that can facilitate communication between teachers and students. In addition, the responses from teachers and students to the use of this learning media are also positive, with most stating that this media can increase students' interest and motivation to learn. Based on the evaluation results, this learning media is expected to be implemented more widely in SMK Negeri 3 Kota Bengkulu and other schools, to support more interactive and efficient teaching in the future.

Keywords: Web-based Learning Media, SMK Negeri 3 Kota Bengkulu, ADDIE, Educational Technology, Media Development

Introduction

Currently, the field of technology and information has a very rapid development, almost all sectors have used information technology, especially in terms of data processing. Along with the development of information technology, it has become a dream for every organization to be able to obtain information that can be processed quickly and accurately.

Web-based learning is an event or learning activity by utilizing website media connected to internet access in the learning process . Web-based learning offers several advantages, namely speed and unlimited space and time to access information. Web-based applications are software systems that are based on technology. and World Wide Web Consortium (W3C) standards. They provide specific web resources such as content and services through a user interface and a web browser.

The development of information technology that is always developing, will bring benefits and help human mobility. Human needs for information technology are very much needed because they help in fast information services. To support the presentation

of this information, a device or device is needed as a tool used to process information data according to procedures that have been prepared to facilitate and speed up the completion of work. In the era of very fast mobility, the use of information system technology has become a primary need for companies to support and improve their performance. Almost every procedure in a company can be replaced with a computerized system, because this can provide more effective and accurate services, especially in the sales management process run by PT. Hadi Teknikhe advancement of science and innovation, especially in the field of computerization, has brought many changes in all fields. These changes are able to form a fast and precise information handling system with a very small risk of error. The presence of computer software is currently needed in all aspects of life, not as needed in the world of trade, but to various educational institutions, universities, and many others in organizing to help scheduled and highly competent exercises.

On this basis, the author proposes the development of web-based learning media for SMK Negeri 3 Kota Bengkulu , Ratu Samban District , Bengkulu City, Bengkulu Province . Based on the description above, the formulation of the problem in this study is the limited web-based learning that can facilitate users and the less than optimal web that is to be developed as a learning tool, especially for students and teachers. Therefore, website design can solve problems with web-based learning media by designing websites so that the learning system is more modern so that it is not boring for students. and can be accessed anytime and anywhere easily and quickly. In order for the research not to deviate from the existing problem path and the results are obtained well, the researcher sets the limitations of the problem being studied. The form of the problem limitation is that this research only covers the creation of a learning website, design (planning) and content containing learning materials.

Methodology

The method used in this development research is the research and development (RnD) method by applying the development steps of the ADDIE model (Analyze, Design, Develop, Implementation, Evaluation). This research method begins with an analysis of the problems that occur and finding solutions to solve the problems . The existence of these problems requires problem solving by developing web-based learning media that are tailored to students' needs . In order for web-based learning media to have an interactive impression, researchers use tables in this development. The following Figure 1 shows the method steps in this development research .
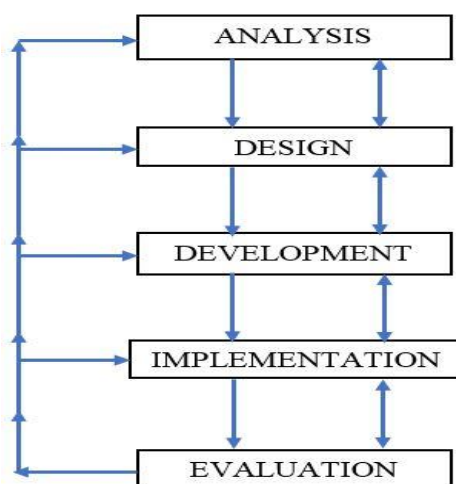
Figure 1. Research Methods

Data collection was done by interviewing and filling out questionnaires. Interviews were conducted with teachers class X TKJ at SMK Negeri 3 Bengkulu City . The questionnaire was filled out by students to determine the feasibility of the product being developed. The analysis stage is carried out by interviewing subject teachers. The interview results are then summarized to find solutions to solving the problem . At the design stage, the aim is to design the material concept based on the analysis results and design the framework . At the development stage, the aim is to realize the design results into a product. At this stage, the product development process is carried out. The results of the web products that have been developed are implemented to class X TKJ students. The web that has been implemented for respondents is used to determine the feasibility of the product that has been developed. The evaluation stage is intended to analyze validation data obtained from teachers . In the results of data processing, there are suggestions or comments given in the validation assessment in the form of improvements to the material or web products developed. The results of the product revision are discussed in the evaluation stage. The eligibility of the web is determined based on the results of the validation assessment carried out by teachers and students .

Result and Discussion

Result

The results of the development of this web-based learning media include materials presented interactively, with features such as quizzes, learning videos, and discussion forums that can facilitate communication between teachers and students. In addition, the response from teachers and students to the use of this learning media was also positive, with most stating that this media can increase students' interest and motivation to learn. Based on the evaluation results, this learning media is expected to be implemented more widely in SMK Negeri 3 Kota Bengkulu and other schools, in order to support more interactive and efficient teaching in the future.

Discussion

Based on the implementation results of the design that has been made, it can be divided into two, namely the user interface and backend. Here is the implementation of the system that was made:

User Interface
Register Page

Figure 2. Register Page View

The registration page is the first step that potential users must take before they can access the application. On this page, users are asked to fill in important information such as full name, email, password. The page design includes core elements such as a title and a registration form that contains input fields for full name, email, password, and a role dropdown to select the user's role. After the registration process is complete, the user will be redirected to the login page to enter the application. One of the rules that is applied is that no email can be registered more than once. If the user tries to register an existing email, the system will display a warning that the email has been used.

Login Page

Users who want to access the application must first log in by filling in their login information on the page provided. On the login page, there is an input column to enter a username or email and password. If the data entered is incorrect or the account has not been registered in the system, the user will not be able to log in and will receive a warning notification.

Figure 3. Login Page View

User Admin
Home Page

The home page is the first page displayed after a user successfully logs in, designed to display information related to the application. On the Admin homepage, this page functions as a dashboard that displays several menus to manage various aspects such as adding classes, subjects, viewing attendance reports, permission reports, user management, and the settings menu. When the page is scrolled down, a list of active users and the latest attendance reports will appear, providing a quick overview of recent activity. Here's what the home page looks like:
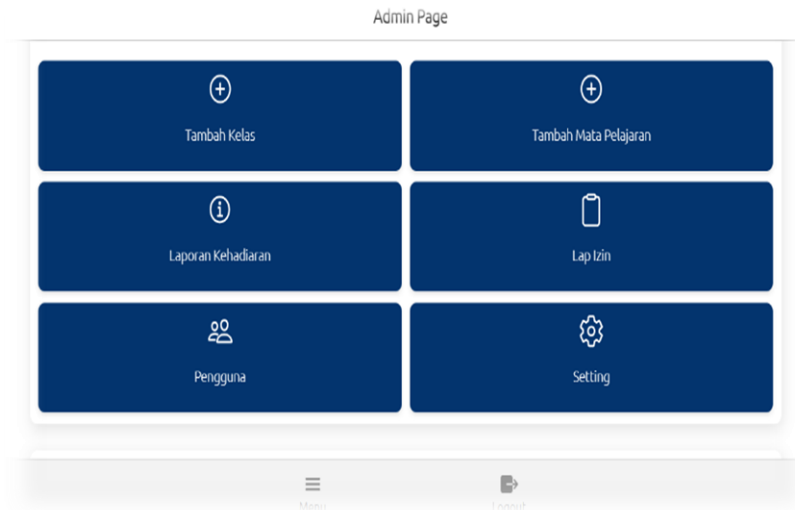
Figure 4. Admin Home Menu View

Figure 5. User Data Admin Home View

Figure 6. Admin Home View of Attendance Report

Add Class Menu Page

The flow of adding classes in this system is very simple. The admin starts by accessing the "Add Class" page. On this page, there is a special column to input the name of a new class, for example X IPA 3. After filling in the column, the admin only needs to click the "Add Class" button. The system will process the request and automatically add the new class to the list of existing classes.

Figure 7. Add Class Menu Page View

Subject Menu Page

The flow of adding lesson materials to this system is very simple and similar to the flow of adding classes. On this page, there is a special column to input the name of the new lesson material, for example "Mathematics". After filling in the column, the admin only needs to click the "Add Lesson Material" button. The system will process the request and automatically add the new lesson material to the existing list.

Figure 8. Add Subject Page View

Figure 9. Add Subject Successfully Display

Attendance Report Page

This attendance report feature is specifically designed to meet the needs of admins in managing attendance data. With various filter options available, such as filters based on role, date, and late status, admins can effectively filter data and get relevant information. For example, admins can review attendance reports of all students for a particular month or search for data on students who are often late.

Figure 10. Attendance Report Page View

Meanwhile, the search results will be displayed in detail at the bottom of the attendance report section, allowing the admin to analyze the data in more depth. After the search results are obtained, the admin can easily export the data to Excel format by clicking the "Export Attendance Report to Excel" button, which data can be used for further analysis or reporting purposes or integrating attendance data with other systems.

Figure 11. Attendance Report View

Figure 12. Display of Attendance Report Results in Excel Format

Permit Application Page

This page is where admins manage student permission requests. Each permission request will appear in a list, and admins can review the permission reason and decide to approve or reject. The "Approve" button will change the permission status to "Approved", while the "Reject" button will change the status to "Rejected". This page also features a search and filter feature by month to make it easier for admins to find permission requests faster.
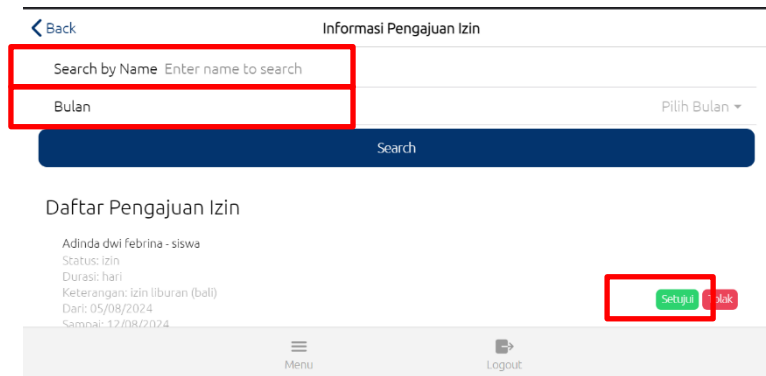
Figure 13. View of the Permit Application Page
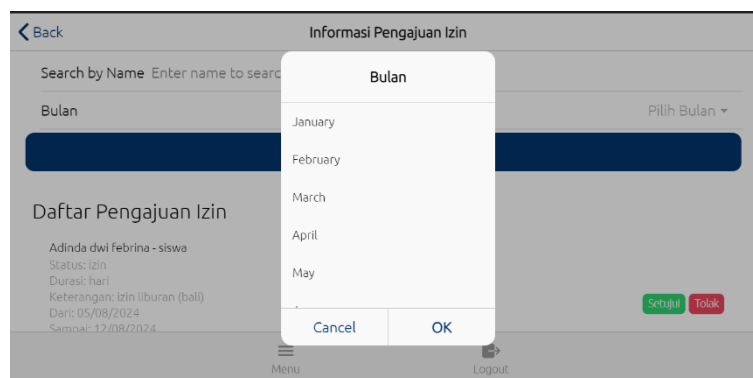
Figure 14. Display if you click Select Month

User Data Page

This page is the user management page on the application. This page gives full access to the administrator to manage all user accounts, from editing, setting user account status, sending password reset verification emails to users to deleting accounts. And the search feature allows admins to search for users specifically by full name, username, or email. Here's a look at the user page:
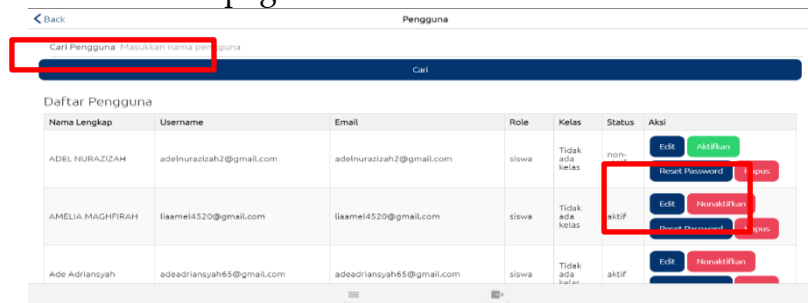
Figure 15. User Page View

Conclusion

Based on the results of this study it can be concluded that:

1. The I-Sekolahku application that was built can function according to needs and the system that was created has fulfilled the initial objectives of the research.

2. The application can make it easier for teachers to deliver material, provide exam questions and give assessments according to the class being managed.

3. The application can also make it easier for students to take attendance, view lesson materials, work on exam questions and view exam results.

It can facilitate the licensing process for both teachers and students and summarize attendance reports to be more effective .

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