WEB-BASED ONLINE EXAM INFORMATION SYSTEM TO IMPROVE THE QUALITY OF LEARNING EVALUATION FOR STUDENTS

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Abstract

Digitalization currently refers to the use of digital-based systems. The design of the online examination system developed in this research is an online exam information system in elementary schools, more specifically for Integrated Islamic boarding schools (SDIT). The purpose of creating this system is to make it easier for students to move on exams quickly and see evaluations and scores of exam results. The creation of this system design begins with analyzing system needs and making system design in business processes, FR tables, use case diagrams, use case text, and class diagrams. Then proceed with creating a database design in ERD, relationships between tables, and table design. Furthermore, user interface design and system testing design were made using the BlackBox system. The result of this information system design is a Web-Based Online Exam Information System for students who can run exams online and display the scores of exams results that student have.

Keywords: Online Exams, Information Systems

INTRODUCTION

Information technology is a set of tools that help to work with information and perform tasks related to information processing (Triwahyuni, 2013). Information technology is developing rapidly in various aspects of life, including teaching and learning activities. One of the technological developments in teaching and learning activities is online exams. Online Exam is a method used to evaluate student learning outcomes in measuring the level of student achievement as students so that students can know the limits of their ability to understand the field of study taken during education by conducting exams using the internet, where students and teachers do not have to use papers when conducting exams.

In elementary schools, especially SDIT, where the subjects are specific, the implementation of exams and correction of exam results are still done manually. Teachers need more time to create and assess students’ exam questions so that students take longer to know the results of their work. Implementing the exam requires a lot of question papers and answer papers, so it requires much money. Along with technological development, manual exams are now replaced with computerized or online
With online exams, there is ease and speed in providing grades. Teachers and students can save on paper because of the computer implementation of exams.

This study aims to design and build a web-based online exam information system in SDIT. This research is supported by several studies carried out previously by researchers, including those carried out by (Muhammad Irfan Wahidin, 2017) from AMIK BSI Bogor with the title "Designing a Web-Based Online Exam Information System." This research resulted in a web-based information system which includes an online exam conducted by a literature study designed with system planning, system design, code writing, system testing, and good web maintenance so that it can be developed and make it easier for students to conduct exams. Questions are presented in a multiple-choice system. This online examination system is implemented with facilities including exam management, exam question management, and teacher and student data management, which will later produce grade output.

Ahmad Riyadi conducted the second research, Eni Heni Hermaliani & Dwi Yuni Utami from STMIK Nusa Mandiri Jakarta, titled "Making an Online Examination System Application at SMK Garuda Nusantara Bekasi." (Hermaliani and Utami, 2019). The research method used in this study is the development of software, especially waterfall, and data collection techniques by making direct observations about conducting school exams and interviewing school residents (Aziz et al., 2020). The study results are analyzing, designing, and implementing an online exam system application using PHP programming language with MySQL database processing. This application has made a significant impact on improving the effectiveness of the teaching and learning process. In addition, also improving value management can be done online using internet technology.

The third research is a study by Arif Budiman Sidiq & Denny Kurniadi from Padang State University titled "Designing a Web-Based Online Exam Information System at SMKN 1 Solok." (Sidiq and Kurniadi, 2021). This study aims to build an online exam information system at SMK N 1 Solok that provides services for carrying out exams at the school so that it can be more practical and follow the camps in the technology field. The design of this information system uses the Waterfall model method, which is a method that applies classical development. This model proposes a systematic and sequential approach to software development, consisting of the system's planning, analysis, design, and implementation stages. Architecture for the development of an online exam information system utilizing the model of the Model View Controller The results showed that creating an online exam information system requires facilities related to question management, exam management, teacher management, and student management. The system is built using a Codeigniter framework by implementing the PHP programming language to integrate all the services that make up a web-based information system that facilitates implementation in carrying out the school's online exams.

The research focused on developing a web-based online exam information system by applying the waterfall method. In this system, users can manage teacher data, student data, class data, lesson data,
question data, exam questions, test result scores, and student test score recapitulation. The questions presented in this exam system consist of two types: multiple choice and description.

**METHOD**

*General Organization of the Paper*  

The research methodology used in making this system is the waterfall method. The waterfall method is a method that approaches systematically and sequentially. Some of the stages of the waterfall method are:

a. Needs Analysis  
The needs analysis stage collects complete needs and then analyzes users' needs, software and hardware, and database creation needs. Analysis of hardware needs in the manufacture of this system is a laptop with a processor specification Intel® Core™ i3-6006U CPU @ 2.00GHz 1.99 GHz, RAM 4.00 GB. Analysis of required software needs, i.e., Windows 7 Operating System, Sublime text, XAMPP, PHP programming language, Google Chrome, and MSQL Server.

b. System Design  
System design is the stage of preparing processes, data, process flows, and relationships between data to run business processes and meet needs according to the needs analysis results. The design is carried out to help to provide a complete picture of what must be done, such as the design of the user interface display of the Online Exam Information System, the design of the Use Case Diagram, Use Case Text, Entity Relationship Diagram (ERD), and Activity Diagrams. (Hartatik, 2020)

c. Coding  
This stage is to change the design that has been made into a system that can be run as needed. This stage is the coding of the design into a programming language. The programming language used is PHP programming language.

d. Program Testing  
Program testing is conducted to test whether the system is by design and has run as desired. (Hartatik, 2022)

e. Program Maintenance  
It is a stage of system maintenance that has been developed, such as software maintenance, hardware, and other connected media, so that the performance of the system that has been made remains stable.

**RESULTS AND DISCUSSION**  
Research in the design and implementation of online examination systems is carried out by first analyzing the needs of a web-based online examination system at SDIT. This business process describes
the process or flow of design needs for entities of the system user (Hartatik, 2018)(Hartatik, Pet al, 2019 ). More details of the observations obtained in business processes are shown in Figure 1.

Figure 1. Business Process

In designing databases to make it is easier to describe data that has relationships or relationships in the form of a design or diagram using an Entity Relationship Diagram (ERD). The following is the ERD of the web-based online exam system at SDIT, as shown in figure 2.

Figure 2 Entity Relationship Diagram (ERD)

The implementation of this system design consists of a login page, an exam token entry page, an exam details page, an online exam page, and an exam results page. Students use the login page to log in to the system and gain access according to student access. The login page is created according to the student’s name and student id (Hartatik et al., 2018) (Wardhani, 2017). Here's the implementation of each page:
Figure 3. login page

Figure 4. implementation of the entrance exam token page

Figure 5. implementation of the exam detail page
The system test results shown above show that the test results are as expected. It means that the design of the information system scenario used by the user, namely students, is by the design and implementation of the system seen in table 1.

Table 1. Information System Testing Results for Students

<table>
<thead>
<tr>
<th>No</th>
<th>Test Name</th>
<th>Scenario</th>
<th>Hope</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Login</td>
<td>Access the login page, enter your username, password, and role, and click the login button</td>
<td>The system can enter the dashboard according to the user's role</td>
<td>As Expected</td>
</tr>
<tr>
<td>2</td>
<td>Checking the exam token</td>
<td>Students select the exam menu to enter the exam token</td>
<td>The system can display exam details</td>
<td>As Expected</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Display student exam pages</td>
<td>The student enters the exam token (\rightarrow) displays the exam details (\rightarrow) presses the done button.</td>
<td>The system can display student exam pages</td>
<td>As Expected</td>
</tr>
<tr>
<td>4</td>
<td>Display the exam completion page</td>
<td>Students press the finish exam button</td>
<td>The system can display the exam completion page</td>
<td>As Expected</td>
</tr>
<tr>
<td>5</td>
<td>View test scores</td>
<td>Teachers and students encourage the marking menu</td>
<td>The system can display test scores</td>
<td>As Expected</td>
</tr>
</tbody>
</table>

Based on the results of the system design, a test of user use testing was carried out about the features and benefits of the student side tie system, namely the following figure 8 and figure 9[12]:

Figure 8. the use of student online exam information systems

![Figure 8. the use of student online exam information systems](image)

Figure 9. easy of usability

![Figure 9. easy of usability](image)

Evaluation with the online system has its advantages not obtained for the assessment with a
manual design or conventional evaluation, namely the speed of processing results. With online exams, the system provides evaluation results in real time. The valuation results are immediately known when one ends the exam without having to wait for days, which gives a very high usability rating for students, as shown in Figure 9.

CONCLUSION
Web-Based Online Exam Information System is designed and implemented using PHP programming language, CodeIgniter framework, and MySQL database. This system creates to encourage students to conduct exams. The system Students complete has a feature to conduct exams and view exam results. This online exam information system is tested using the Black Box Testing method. This method pushes the information system's functionality by admin actors, teachers, and students. The test results of the Web-Based Online Exam Information System are successful in the design and implementation of the information system.

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REFERENCES


