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Web-based Extracurricular Activity Information System at MTsN 2 Bondowoso

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ABSTRACT

Extracurricular activities are activities carried out to develop skills and expand the abilities that students already have in various fields. The administration and data processing system at MTsN 2 Bondowoso is still manual, so it often causes problems in the registration process, the delivery of scheduling information, attendance, and assessment. The purpose of developing a Web-based Extracurricular Activity Information System at MTsN 2 Bondowoso is to streamline the administrative process and facilitate access to information for both teachers and students. This system was developed using the waterfall method and implemented using the PHP programming language and MySQL database. The results of this system show an increase in time efficiency of up to 60% and a decrease in the error rate by 75%. It is anticipated that this system will serve as a solution to support the management of extracurricular activities at MTsN 2 Bondowoso.

Keywords: *Extracurricular Activities, Information System, Web-Based Application, Administrative Management, Waterfall Method, PHP, and MySQL*

Introduction

According to Indonesian Law No. 20 of 2003, education is a conscious and planned effort to create a learning environment and learning process so that students actively develop their potential to choose spiritual and religious strength, self-control, personality, intelligence, noble character, and the skills needed by themselves, the community, the nation, and the state.[1]. Madrasah Tsanawiyah Negeri 2 (MTsN 2) Bondowoso is an educational institution equivalent to a junior high school (SMP). This institution not only teaches general knowledge but also religious knowledge. In addition, the institution also organizes non-formal activities such as extracurricular activities. Extracurricular activities are activities carried out outside of school hours, either at school or outside of school, with the aim of enriching and broadening students' knowledge and skills in various fields of study.[2]. At the State Islamic Junior High School 2 (MTsN 2) Bondowoso, there are various extracurricular activities, including scouting, volleyball, basketball, calligraphy, martial arts, hadrah, choir, band, soccer, athletics, table tennis, badminton, the National Science Olympiad (OSN), and the Red Cross Youth (PMR).

The management of extracurricular activities at MTsN 2 Bondowoso still experiences various obstacles. The registration process is still manual using paper forms, which are often lost or damaged, and cause delays and data duplication. Recording attendance using Microsoft Excel is also prone to error, manipulation, and inaccuracy, while physical attendance is easily lost. The delivery of activity schedule information still relies on loudspeakers and notice boards, which are often ineffective due to technical glitches or inaudible to students. The assessment process is still done manually using Excel, which has the potential to cause calculation errors and reprints due to damage or loss of paper. These issues impact both students and teachers. Students experienced delays in the enrollment process, a lack of timely information, and difficulties in accessing their attendance and grades. For teachers and coordinators, the manual system causes additional administrative burden, reduced data accuracy, and complexity in preparing reports for school leaders. To overcome these problems, the development of a web-based extracurricular activity information system is needed. This system aims to simplify the registration, attendance, scheduling, and assessment processes and ensure efficient information delivery.

Research conducted by Dwi Herlina Wati, Yuri Rahmanto, and Yusra Fernando in 2019 entitled "Designing a Web-Based Extracurricular Activity Management Information System (Case Study: SMK Ma'arif Kalirejo Lampung Tengah)" resulted in a web-based extracurricular activity management information system that can be used to assist students in selecting extracurricular activities online and accessing information easily, as well as aiding extracurricular activity advisors in the processing of extracurricular activity data[3]. Related research was also conducted by Imara Acacia Khalda, Anita Muliawati, and Bambang Tri Wahyono, entitled "Designing a Web-Based Extracurricular Information System (Case Study: SMA Negeri 6 Bekasi)." resulting in a system that can assist students in registering for extracurricular activities online, provide easy access to extracurricular information, and simplify the process for advisors in recording student attendance and grades for extracurricular activities[4]. Although previous studies, such as those by Wati et al. (2019) and Khalda et al. (2020), have developed web-based extracurricular information systems for other institutions, these systems were tailored to different school environments. They did not address the specific administrative and communication challenges faced by MTsN 2

Bondowoso. There is a lack of research that focuses on integrating registration, attendance, scheduling, and grading into a single, centralized system that reflects the unique needs of Islamic junior high schools. From this research, it can be concluded that extracurricular activity information systems can help schools manage extracurricular activities more effectively. Therefore, the purpose of developing an extracurricular activity information system at MTsN 2 Bondowoso is to facilitate students in registering and selecting extracurricular activities online and accessing information easily, as well as helping those responsible for processing extracurricular activity data.

Research Methods

Type of Research

To obtain objective data in accordance with the object that has been studied, the following types of research are used:

a. Library Research

Research that utilizes library sources in the form of books, journals, and other sources to obtain its research.

b. Field Research

Research was conducted by going directly to the field.

Data Collection Technique

a. Observation

This method collects data by observing or visiting the research object directly. Observation is a way of gathering information by conducting systematic observation and recording the object of observation.[5]–[7].

b. Interview

This method collects data by asking questions directly to the person in charge of extracurricular activities on issues that are directly related. An interview can be defined as a meeting between two or more people to conduct a formal consultation.[8].

c. Literature Study

A literature study involves collecting data from several journals as related references that can support the research.

Waterfall Method

In this system development method, the Waterfall method is used to develop a systematic and sequential information system. According to Pressman, the Waterfall method is a classic model that is systematic and sequential in building software. This model is generic in software engineering and was first introduced by Winston Royce around 1970, so it is often considered outdated. Still, it is the most widely used model in Software Engineering.[9]–[12]. It is called the Waterfall method because each stage must wait for the completion of the previous stage and proceeds sequentially.[10], [13], [14].

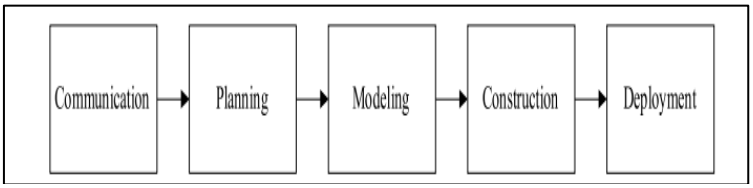

Figure 1. Waterfall method

Table 1. Waterfall Method

Stages	Description	Destination
Communication	Gathering system requirements from users through interviews, observations, or questionnaires.	Understand users' needs and expectations of the system.
Planning	Preparation of a project plan, including schedule, resources, and risk identification.	Organize the stages of work so that the project runs efficiently.
Modeling	System design, including process flow (DFD), database structure, and interface design.	Provide a blueprint for implementation.
Construction	System coding and unit testing are based on the compiled design.	Build a functional, specification-compliant system.
Deployment	Installation of the system into the operational environment and user training.	Provide a ready-made system for users to use.

Results And Discussion

Theoretical Foundation

a. Definition of Design

Design is an activity that has the intention to design a new system that can overcome the problems that befall the company/agency, through a process obtained from the selection of the best system.[15].

b. System Definition

The system can be interpreted as a collection of several components that are interconnected with one another to form a single unit to achieve certain goals. A system is a group of elements that are integrated with the same purpose to achieve a goal.[16].

c. Definition of Information

Information is the result of processing data (facts) into something meaningful and valuable for decision making. Information is data that has been processed or data that has meaning. Information is the most important part of a company/agency. Data that can provide meaning by reducing ambiguity, uncertainty, and difficulty in interpretation[17].

d. Definition of Information System

An information system is a computer-based system that is optimally integrated and can present various types of accurate data and carry out processes related to the system. In another sense, explaining that a system is a combination of people, hardware, software, communication networks, data sources, and policies or rules, which are interconnected with each other to obtain, process, and disseminate information[18].

e. Definition of Extracurricular

Extracurricular activities are activities carried out outside of class hours, both at school and outside school, with the intention of further enriching and broadening the knowledge and abilities that students already have from various fields of study.[2]. According to the KBBI (Big Indonesian Dictionary), extracurricular activities are activities that are outside the written curriculum, such as leadership training and student development.[19].

f. Definition of Website

A website is all the web pages contained in a domain that contain information. A website is usually built on many related web pages. The relationship between one web page and another is called a hyperlink.[20].

System Design

This study uses a Context Diagram as a top-level Data Flow Diagram (DFD), which is the least detailed diagram of an information system that describes the flow of data into and out of the system and into and out of external entities.[21]. The Context Diagram of the extracurricular activity information system at MTsN 2 Bondowoso is as follows:

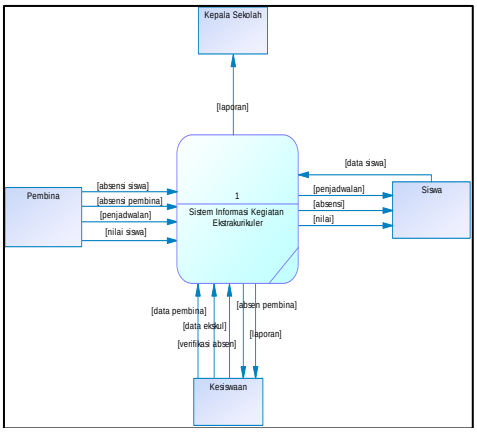

Figure 2. Context diagram of the extracurricular activity information system at MTsN 2 Bondowoso based on WEB

System Implementation

The implementation plan for the extracurricular activity information system at MTsN 2 Bondowoso can be seen in the image below.

1. Login Form

   The design of the login page of the extracurricular information system of MTsN 2 Bondowoso (SIEKSTRA) displays a clean and informative interface with the division of two main columns. On the left side, there is a login form with email and password input, with a “Login” button and a “Remember password” option for user convenience. Underneath is a registration link for new users.

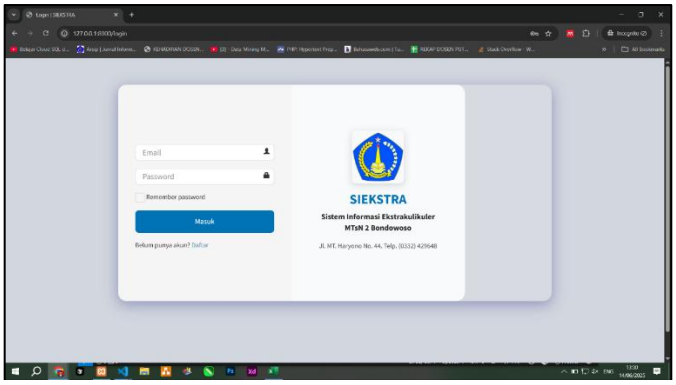

Figure 3. Login Form

2. Dashboard Admin

Here is the admin dashboard display. This dashboard also contains several types of data, such as student, extracurricular, mentor, extracurricular schedules, and student grade data.

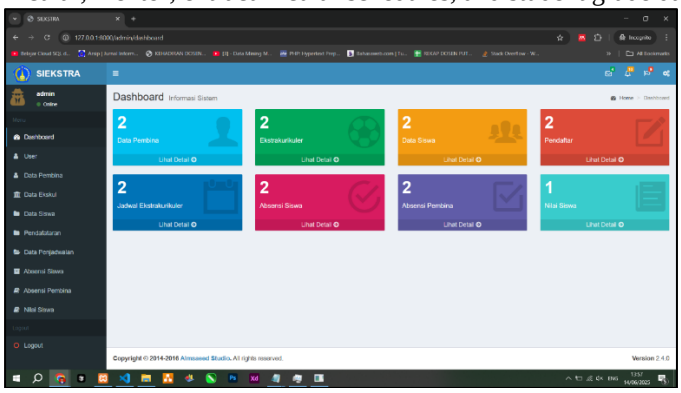

Figure 4. Dashboard Admin

3. User Data Display

The “User Data” page on the extracurricular information system of MTsN 2 Bondowoso (SIEKSTRA) is designed to facilitate the admin in managing user accounts. The interface displays a list of users in a table format consisting of number, name, email, role, and action columns. Available action buttons allow admins to edit, delete, or reset user access. This design supports information organization as well as efficiency in managing access rights and user activities in the system.

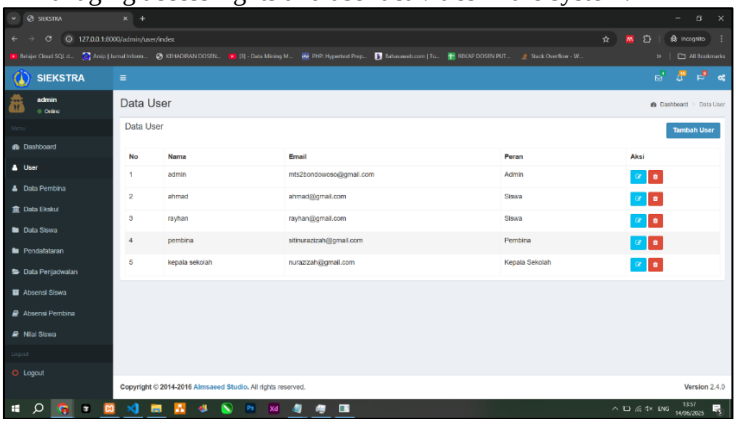

Figure 5. User Data Display

4. Student Data Display

The “Student Data” display in the SIEKSTRA system of MTsN 2 Bondowoso presents student information in a structured and easy-to-read table. Each row displays the NISN, full name, class, and type of extracurricular activities attended by the student. The action column provides buttons to view details, edit, and delete data, making it easier for admins to perform data management. This design supports easy monitoring of student activities and efficiency in digital data management.

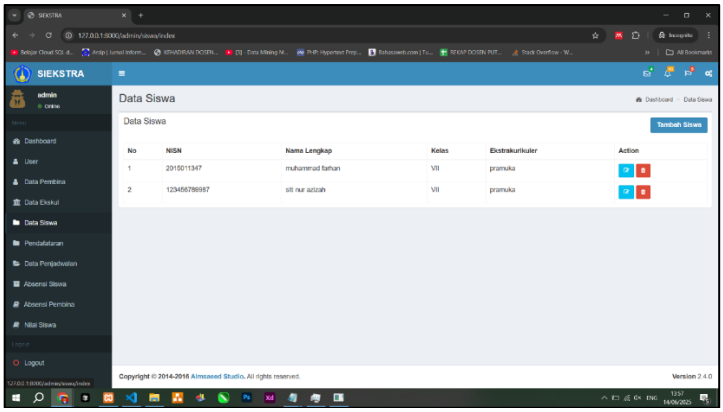

Figure 6. Student Data Display

5. Supervisor Data Display

The "Coach Data" interface in the SIEKSTRA system of MTsN 2 Bondowoso is designed to facilitate the management of extracurricular coach information digitally and efficiently. The interface displays a list of coaches in a table format with important information such as name, gender, mobile number, address, and action buttons to edit or delete data. The "Add coach" button at the top allows for quick addition of new data.

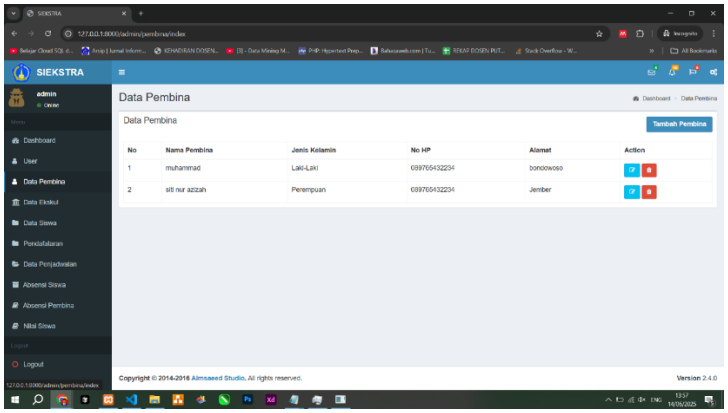

Figure 7. Supervisor Data Display

6. Extracurricular Schedule Display

The "Extracurricular Schedule Data" view in the SIEKSTRA system of MTsN 2 Bondowoso is designed to present activity information in a structured and easy-to-monitor manner. The main table displays columns such as Activity Name, Coach, Schedule, and Action, which makes it easy for admins or coaches to manage and update student activity schedules. For example, scouting and volleyball activities are listed complete with the name of the coach and the schedule.

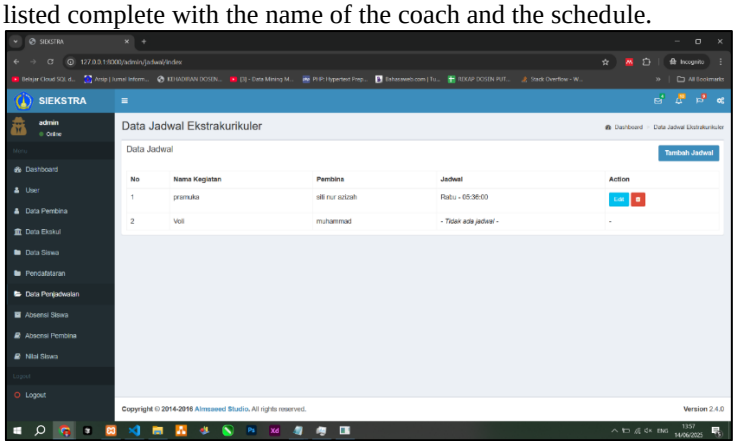

Figure 8. Extracurricular Schedule Display

7. Attendance Display for Supervisors

The "Coaches' Attendance Data" view in the SIEKSTRA system of MTsN 2 Bondowoso is designed to facilitate the digital and verified recording of coaches' attendance. The table interface displays

information such as the coach's name, attendance date, attendance status, and verification status, complete with action buttons to approve, edit, or delete entries. The system makes it possible to monitor and manage coaches' attendance efficiently, while ensuring data validity through the verification feature.

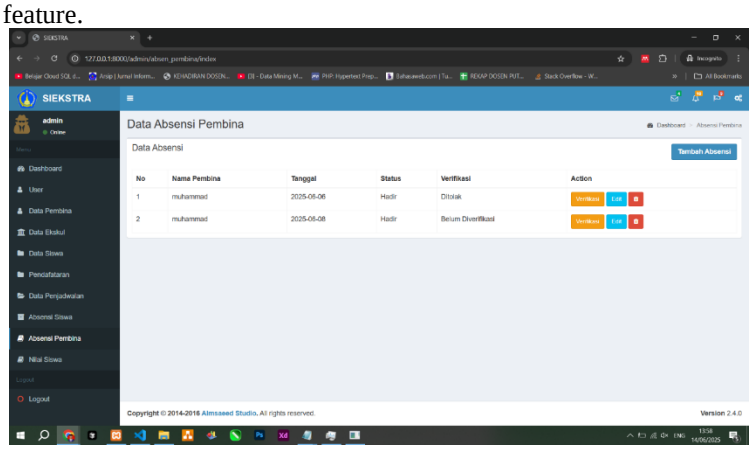

Figure 9. Attendance Display for Supervisors

8. Student Attendance Display

The "Student Attendance Data" display in the SIEKSTRA system of MTsN 2 Bondowoso displays a digital and structured recapitulation of student attendance. The data is displayed in tabular form with columns such as student name, extracurricular type, date of attendance, and attendance status (admission, permission, illness).

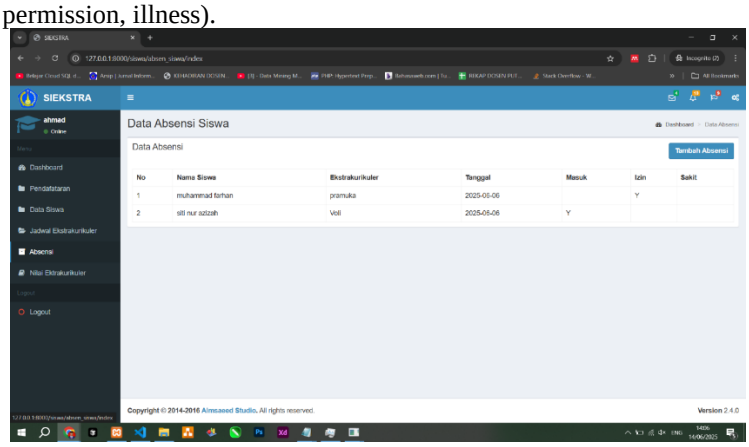

Figure 10. Student Attendance Display

9. Student Grade Input

The "Add Student Grades" display in the SIEKSTRA system of MTsN 2 Bondowoso makes it easier for coaches to input student grade data. The form consists of three main inputs: student name options, type of extracurricular activity participated in, and a column to enter the grade. The "Save" button allows data to be saved directly to the database, while the "Back" button allows navigation to the previous page.

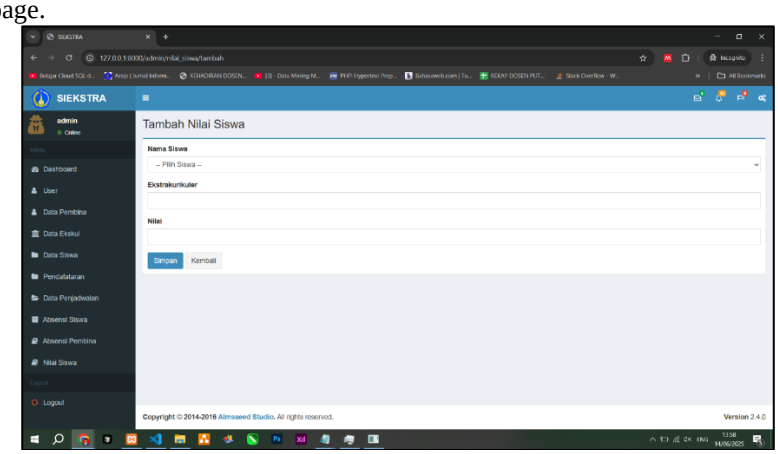

Figure 11. Student Grade Input

10. Student Grades Display

The "Student Grade Data" print view in the SIEKSTRA system of MTsN 2 Bondowoso presents a recapitulation of student assessments in a neat and informative table format. The printed information includes the student's name, type of extracurricular activity, grade obtained, and date of assessment. At the bottom of the document, the location and date of creation are also listed as data corroboration.

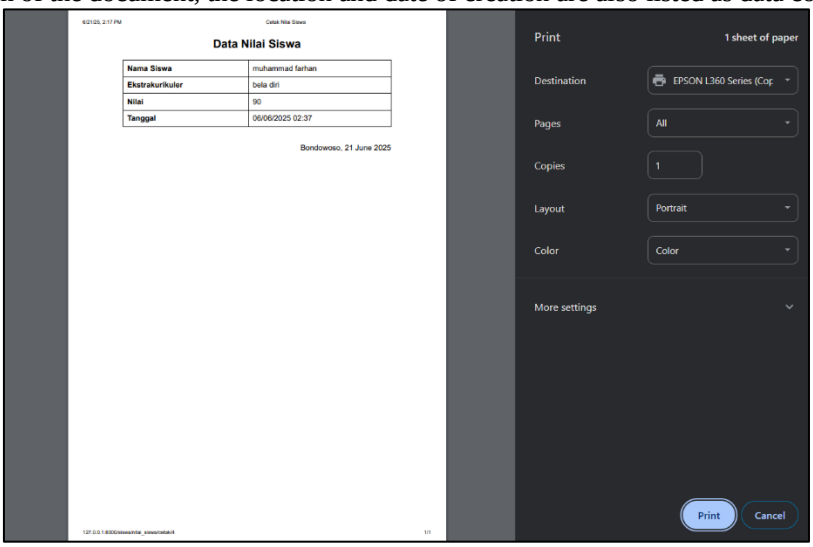

Figure 12. Student Grades Display

Conclusion

The extracurricular activity information system at MTsN 2 Bondowoso can have a positive impact on the effectiveness of extracurricular activity management. This system also facilitates the registration, scheduling, attendance, and grading processes and is a concrete example of the use of information technology in education, particularly in extracurricular activities. The system can only be accessed through the school's local network, limiting the flexibility of users in accessing information outside the school environment. For this reason, future system development is recommended to include several important aspects, such as the system needs to be hosted online so that it can be accessed anytime and anywhere by users.

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