

BAB V

RESULTS AND DISCUSSION

5.1 Results

Analysis is the initial stage of a study that must be carried out before designing a system or application that aims to find out the problems in the study in order to create a solution to the problem such as the problem experienced by teachers or duty officers where when the teacher is absent or has permission, the duty officer is the one who takes attendance of his students at NU Ungaran Vocational High School because they still use conventional or manual attendance which still checks the attendance column and has the potential for damage, besides that the attendance book is often left behind in class.

Based on the problems faced by the teacher, a website-based attendance system is needed to help solve the problem. Therefore, the author provides an alternative way that is more efficient and practical by presenting a website that contains attendance using a smartphone and laptop camera so that teachers do not need to take attendance of their students and there is no more damage or loss of the attendance recap, because the student attendance system uses a qr code that has been done by the duty officer or teacher and the student attendance list goes directly to the database.

The next stage is that the author designs or plans a website-based student attendance system using the Codeigniter framework with the waterfall method after knowing the needs, the following is a diagram of the attendance process.

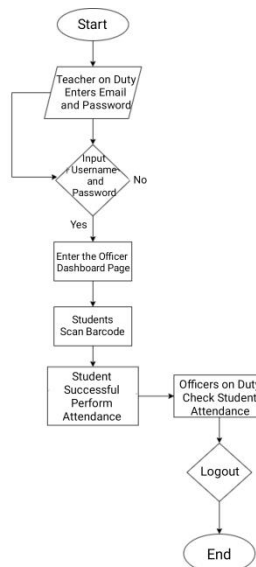


Figure 2. Student attendance flow

In Figure 2, it can be explained the flow of officers or teachers on duty to see their students' attendance information. Officers or teachers on duty can see the attendance data that has previously been scanned to students using a QR code through the student attendance feature on the system according to class with each major, by using the QR code feature, teachers or teachers on duty no longer need to do attendance manually because attendance using QR codes is more efficient and saves time.

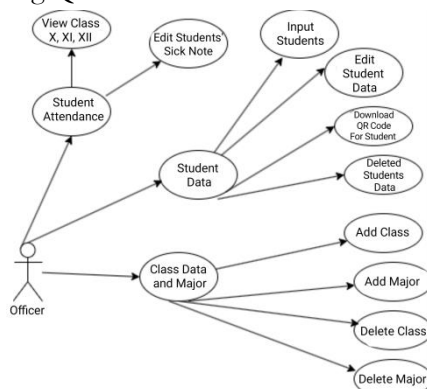


Figure 3. Use of officer diagram

Figure 3 explains the flow or features contained in the website-based attendance system using QR codes, which contain student attendance, student data, class and department data, and generate QR codes.

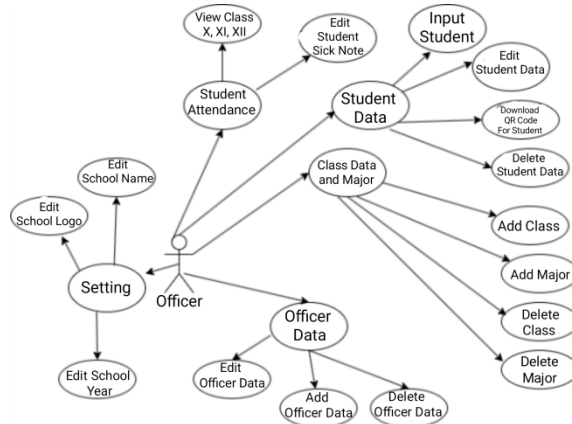


Figure 4. Use super admin diagram

In Figure 4, the super admin use diagram, Figure 5, the login diagram, Figure 6, add data, Figure 7, delete data, explains how the website-based attendance system works when the super admin on duty wants to add student data, delete data, input officer data, delete officer data, then the system will display an add or delete data form. When successfully adding data or deleting data, the system will display a notification in the navbar section.

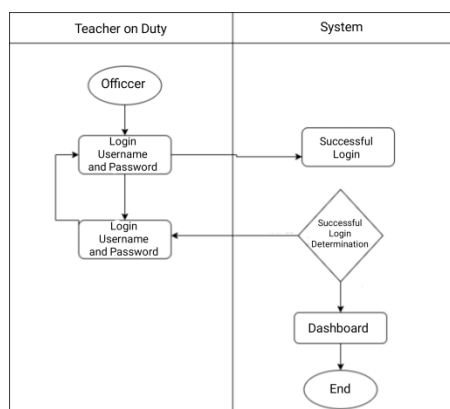


Figure 5. Login diagram

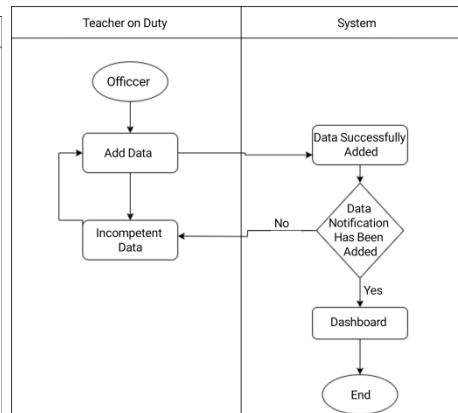


Figure 6. Data addition diagram

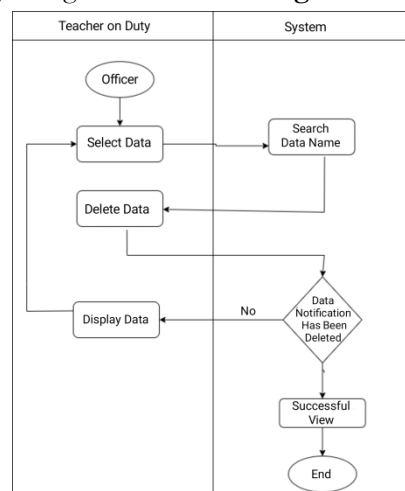


Figure 7. Data deletion process diagram



Figure 8. Website attendance application page

The implementation of this website-based attendance system begins with development using the codeigniter framework using a combination of MySQL which functions as a database on localhost. This process uses PHP version 8.2.12. Figure 9 shows the appearance of the landing page as well as the admin and super admin login pages can be seen in Figure 8.

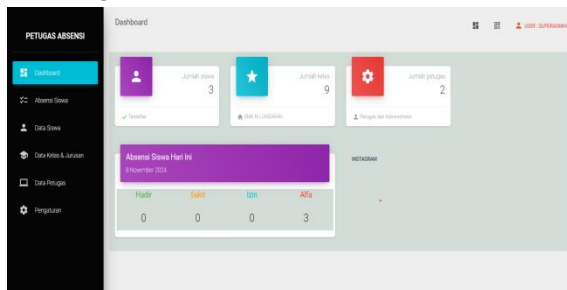


Figure 9. Dashboard page

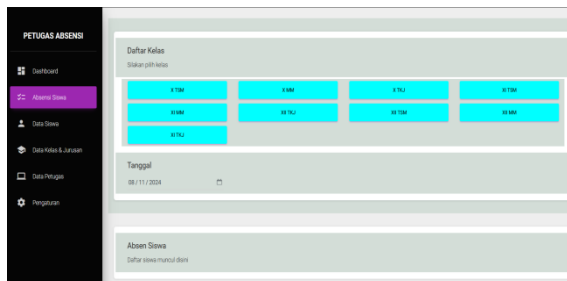


Figure 10. Student attendance data page

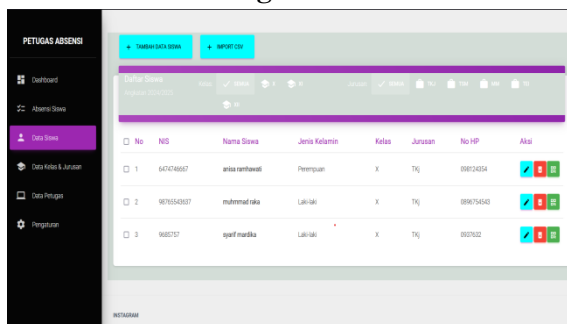


Figure 11. Student data page

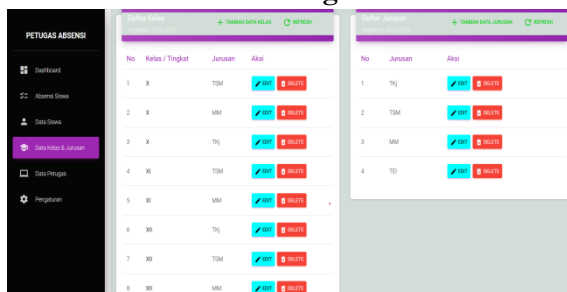


Figure 12. Class and department page

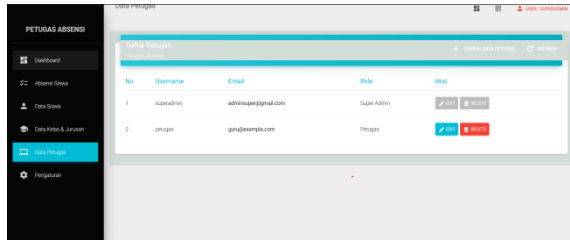


Figure 13. Officer data page

After logging in, the super admin or admin system will go to the dashboard in Figure 9, Figure 9 explains the dashboard that contains the features of the student attendance system. Next, in Figure 10, it goes to the main feature system for student attendance, officers or teachers can see their students' attendance per class or department. Next, Figure 11 shows student data containing the names of students with their respective departments or classes, officers or teachers on duty can add student names or edit student names and can also print barcodes on the system. Next, Figure 12 goes to the class and department data feature, officers or teachers on duty can input or edit and delete class names and department names. Next, in Figure. Next, in Figure 13, it goes to the officer data feature which can be input or edited and deleted by the super admin only.

The next stage is the testing stage for the student attendance website system using black-box. This testing is carried out according to the description expected by the author. In order for the author to know whether the system is running or not, the results of the test can be seen in Table 1.

Table 1. Black box test results

Number	Testing	Hope	Results	Conclusion
1	Student attendance data per class or department	Successfully Showing	Attendance data successfully displayed	Valid
2	Add data or edit student data All majors and classes	Can add or edit student data	Data successfully added or edited	valid
3	Deleting student data	Can delete student data	Notification that student data has been successfully deleted	Valid
4	Display each student's qr code	Can download qr code for each student	Qr code successfully downloaded	valid

5	Add class data	Can add class list	Data notification successfully added	valid
6	Editing class list	Can edit class list	Class edit notification successful	valid
7	Delete class list	Class list can be deleted	Notification to delete class data	valid
8	Add major data	Can add major data	Notification of successful major addition	Valid
9	Edit department name	Department can be edited	Notification of successful editing of department	Valid
10	Deleting major data	Can delete majors	Notification of successful major deletion	valid
11	Adding officer list	Can add officer data	Successfully added officer data	Valid
12	Edit officer name	Can edit officer name	Notification of successful officer edit	Valid
13	Delete officer data	Can delete officer data	Notification officer data can be deleted	Valid

5.2 Discussion

The research conducted by the author is the analysis of student attendance data. The results of this analysis can implement website-based student attendance needed by NU Ungaran Vocational High School. Data collection through interviews and observations, then the author makes a flowchart that shows the flow when the system process is successfully logged in, the flow of the website-based attendance system as in Figure 2, in Figure 3, namely explaining how the picket officer works on the website-based attendance system implemented at NU Ungaran Vocational High School to process attendance data to make it easier and more effective. The student attendance data will be stored directly in the phpMyAdmin database which is created using the CodeIgniter 4 framework using the PHP language.

The implementation of this absentku website can manage the attendance data of all students at NU Ungaran Vocational High School aims to make it easier for picket officers so that they do not recap the student attendance data provided by the class teacher and the teacher does not need to take attendance of their students again because the attendance is carried out by students directly by scanning the qr code according to the name and major, with this absentku student attendance data goes directly to the school database.

In this final stage, testing the system using the black-box method, to find out whether this attendance system is running as desired, such as adding data, editing data, and deleting data, but one of the systems does not run as expected, namely invalid in downloading all student data and downloading student data per class, the results of the black-box test can be seen in table 1.

My attendance system is a website-based attendance system to make it easier for teachers and on-duty officers not to manually recap data, likewise teachers do not need to take student attendance recaps in the administration then teachers take attendance by calling students one by one, which Where it takes quite a long time to start learning, by using this system it makes it easier for teachers and on-duty officers when taking attendance at NU Ungaran Vocational High School.

1. CONCLUSION

The results of the study revealed that this website-based attendance facilitates the management of student attendance data which was previously carried out manually by teachers and picket officers at SMK NU Ungaran including: Making it easier for picket officers to recap student attendance data provided by the teacher after completing the lesson and shortening the teacher's time to start learning time because the attendance is carried out by students directly using a qr code scan. The implications of this research are that the attendance system that has been developed can be expanded with additional features to increase functionality and user satisfaction. For example: integration with face or fingerprint recognition systems for attendance verification, automatic notifications to parents about student absences, a more comprehensive and customizable reporting module, integration with a more integrated academic information system, and attendance data analysis features to identify student absence trends. Future research needs to pay more attention to the security aspects of the system. This includes the implementation of strong authentication and authorization mechanisms, protection against cyber attacks, and data encryption to maintain the confidentiality of student attendance data. The system needs to be designed to handle a large number of users and data. Future research can focus on system performance optimization to ensure system responsiveness and stability, especially during high loads. System testing needs to be done more comprehensively, including functionality testing, performance testing, security testing, and user acceptance testing. This testing needs to involve various users with different roles and levels of expertise. Future researchers can explore the integration of attendance systems with other technologies such as IoT (Internet of Things) for attendance process automation, or with data analytics systems to generate deeper insights into student attendance.