Web-Based Student Internship Monitoring Information System (Case Study: SMK Ma'arif NU 2 Boyolali)

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Abstract

Internships are an essential component of vocational school programs, including at SMK Ma'arif NU 2 Boyolali, where students engage in six-month fieldwork during the 12th grade. The current monitoring process relies on WhatsApp and manual documentation, including paper-based journals for attendance, daily activity logs, and final report submissions. This manual approach is inefficient and complicates data management for supervisors. His research aims to develop a web-based information system to streamline the monitoring and management of student internships. The study employs observation, interviews, and literature review for data collection, alongside the SDLC method for system development through planning, analysis, design, implementation, and maintenance. The system provides three user roles: admins manage data and reports; students log attendance, activities, and submit reports; and supervisors verify submissions. Black box testing confirmed functional success, while user testing yielded an average satisfaction score of 87.53%, demonstrating the system's effectiveness and usability.

1. Introduction

Internship is one of the SMK programs where the program is placed in a certain company in accordance with their respective fields of expertise, to provide experience to third grade students in odd semesters. The implementation of this internship lasts for a minimum of one month and a maximum of three months (Aiman et al., 2023: 2).

According to the Regulation of the Minister of Education and Culture of the Republic of Indonesia Number 50 of 2020 article 12 explains that the implementation of SMK field work practices includes the placement of students in the world of work in accordance with competencies, work practices, and mentoring carried out by INTERNSHIP mentors from the world of work.

According to the Decree of the Head of the Boyolali Regency National Education Office Number: 421 / 0781 Explaining that SMK Ma'arif NU 2 Boyolali is one of the Private Vocational High Schools located in Klego District which was established in 2003 under the auspices of the Ma'arif NU Education Institution boyolali branch. SMK Ma'arif NU 2 Boyolali implements the SMK internship program in the independent curriculum to students when entering grade XII, for approximately 6 months, by placing them in companies according to their respective fields of expertise.

The use of computers at SMK Ma'arif NU 2 Boyolali has actually been applied for a long time in the student teaching process. However, in the process of internship activities until now, there is still no monitoring information system to accommodate information and data on students who take part in activities during internship. and in the process of internship activities still implementing in a manual way, which still uses paper, namely still using the internship journal where the journal is used to start student attendance on the attendance sheet, fill in daily student activities on the jobsheet, and submit the final internship report which is also still paper.

Based on the description above, to solve these problems is to design and build a Web-based Student Internship Monitoring Information System. And the concept of monitoring is carried out in the attendance menu and student activity logbook to determine the attendance or activeness of students, and daily activities while doing internship. Where by utilizing this monitoring information system, it is hoped that SMK Ma'arif NU 2 Boyolali can be more efficient, fast, and accurate in the process of monitoring, processing data, and obtaining information on students who are carrying out internship activities.

1.1 Literature Review

In this research, the author examines previous research that can be used as guidelines and help in this research, and can create a new and more useful system.

Febriani et al., (2022) from PGRI University of West Sumatra with his research entitled "Web-Based Internship Monitoring Information System at SMK Negeri 1 Sintuk Toboh Gadang". The study aims to build a field work practice monitoring information system to make it easier to monitor student activities in carrying out field work practice activities. The results of this study are in the form of a web-based field work practice monitoring information system that can be accessed by admins, supervisors or pamong and students. Admins can manage student, supervisor, and uncle data. Pamong and supervisor pages can manage student data regarding logbook validation and assessment. And for students can access the logbook page which is used to fill in descriptions of activities every day.

Jaya & Wulandari (2022) from STMIK Bani Saleh with their research "Designing a Web-Based Industrial Work Practice Program Monitoring Information System Case Study: SMK Karya Guna Bhakti 1 Bekasi City". The research has the aim of creating a web-based industrial work practice program monitoring information system as a process to facilitate the monitoring of students and save time in the monitoring process during activities. The results of this study are in the form of a web-based industrial work practice program monitoring information system that has 3 access rights, namely students, hubin, and supervisors. Which has features including the submission menu which is used to submit letters for industrial work practices and there is an attendance menu and an activity menu that is used for attendance and filling in activities during industrial work practices.

Hardianti, n.d. (2023) from Nurdin Hamzah University with his research entitled "Analysis and design of a web-based internship information system (case study: SMK Negeri 4 Batang Hari". The research has the aim of building a web-based field work practice information system that can facilitate monitoring of internship activities carried out by students to be structured. The results of this study are in the form of a field work practice system that has 3 access rights, namely admin, supervisor, and student. This system has features for data processing both from adding, changing, and deleting, including login, dashboard menu, student data, supervisor data, student attendance menu, activity menu, and report menu.

2. Research Methods

A. Data Type and Source

1) Primary data is obtained by direct observation, namely by conducting interviews and observations with the principal of SMK Ma'arif NU 2 Boyolali.
2) Secondary data is data that the author obtains by literature study, namely taking from several books, journals, and the internet.

B. Data Collection Methods

The following data collection methods were used:

1) Observation
   In this method, the author visits SMK Ma'arif NU 2 Boyolali, by observing and collecting data with the principal directly to obtain the data needed in this research.
2) Interview
   In this method, the author collects data by conducting questions and answers with sources from the principal, namely Mr. Nur Wakhid Romdhoni SE, and where the object of research is to get clarity on the problems that exist during the observation.
3) Literature Study

   In this method, the author obtains data from journals and books related to the writing being done.

C. System Development Method

In the development of a web-based student field work practice monitoring information system at SMK Ma'arif NU 2 Boyolali using the SDLC method. SDLC is a linear model with structured system development steps, namely planning, system analysis, design, implementation, and maintenance.

1) Planning
   At this stage, the author will plan to design and build a web-based student fieldwork monitoring information system at SMK Ma'arif NU 2 Boyolali.
2) Analysis or system analysis stage
   At this stage, the author will analyze the needs of this web-based field work practice monitoring information system at SMK Ma'arif NU 2 Boyolali by including collecting data on students, field supervisors, and data on the flow of field work practices.
3) Design or drafting stage
   At this stage, the author will determine the steps in processing data by design, which includes database structure, software architecture, interface design, and coding procedures according to the results of the needs analysis. And this design will be made with UML.
4) Implementation
   At this stage, the author begins to create a system from the results of the previous design, using a programming language into a computer program. And after that test the system that has been designed and built, to find out whether this system has run according to the desired needs, and to minimize errors when applied.
5) Maintenance
   At this stage, when the monitoring information system has been submitted and can be used by users, system maintenance is still carried out during use so that the system is still able to operate properly and correctly.

3. Result and Discussion

A. System Analysis

System analysis is a process to find out the general picture in an organization as the object of research to understand how the current system is running, which may still have deficiencies in some activities and allow errors to be resolved. This process involves various steps to identify the needs that will later be used as the needs of the new system to be created.

1) Functional Requirement Analysis

In determining functional requirements is a stage that aims to make the system to be built in accordance with the rules that apply at SMK Ma'arif NU 2 Boyolali in managing student internship activities. and these needs include the processes that will later be provided by the system to users. related to features that will later be provided by the system to users such as admins, students, and field supervisor teachers, and each system user has different access rights when entering the system, and the access rights of each user are as follows:

a) *Right Access for Admin:*
   1. Admin can login
   2. Admin can make profile changes
   3. Admin manages street vendor data
   4. Admin creates a recap of internship student data

b) *Right Access for Student*

1. Students can login
2. Students can make profile changes
3. Students fill in daily attendance and view daily attendance history
4. Students fill out daily logbooks and view daily logbook history
5. Students submit internship reports

c) *Right Access for Field Supervisor Teachers:*

1. Field Supervisor Teacher Login
2. Field Supervisor Teacher can make profile changes
3. Teacher Mentor Field can verify the daily attendance of internship students
4. Teacher Mentor Field can verify internship students' daily logbooks
5. The Field Supervisor Teacher can check and verify the student's internship report.

The results section summarizes the data collected for the study in the form of descriptive statistics and also reports the results of relevant inferential statistically analysis (e.g., hypothesis tests) conducted on the data. You need to report the results in sufficient detail so that the reader can see which statistical analyses were conducted and why, and to justify your conclusions. Mention all relevant results, including those that are at odds with the stated hypotheses (American Psychology Association 2001: 20).

There is no fixed recipe for presenting the findings of a study. We will, therefore, first consider general guidelines and then turn our attention to options for reporting descriptive statistics and the results of the hypothesis test.

B. System Design

a. Use Case

Where Use Case is describing a correlation (relationship) between actors and the system to be designed, to find out what functions are contained in a system and who has the right to use these functions.

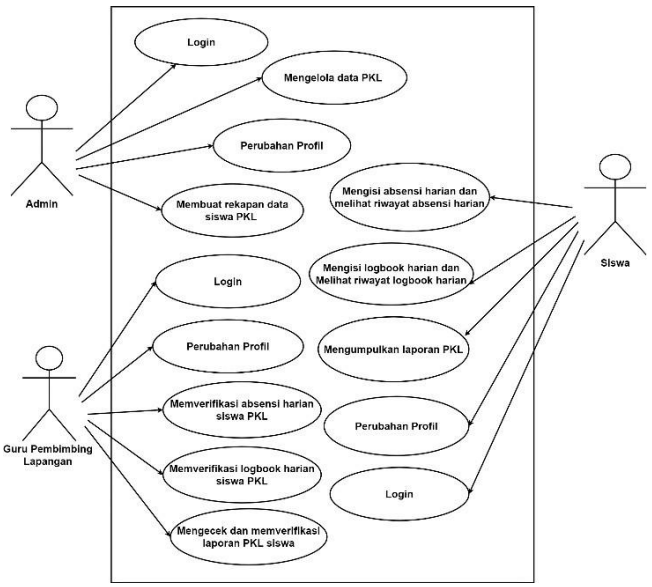

Fig. 1 Use Case Diagram

a) There are 3 actors involved, namely admin, student, and field supervisor teacher.
b) Admin tasks (INTERNSHIP committee) manage INTERNSHIP data such as department & class data, supervisor data, and INTERNSHIP student data.
c) Tasks Students fill out daily attendance, fill out daily logbooks, and submit reports.
d) The Field Supervisor Teacher's job is to monitor student activities such as checking and verifying daily attendance, daily logbooks, and student reports.

C. Interface Implementation

a. Login Page

The image below is a view of the login page

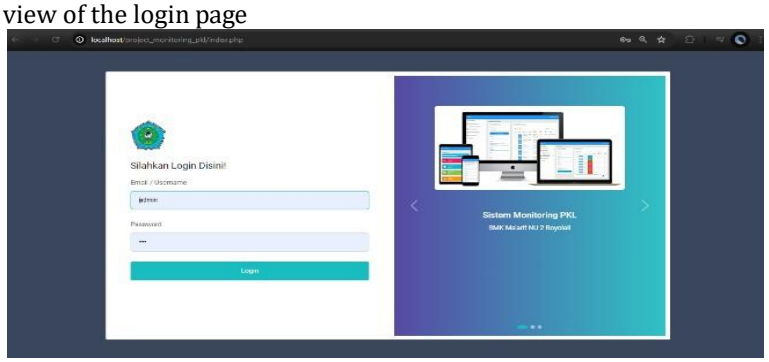

Fig. 2 Login page

b. Admin Dashboard Page

Image under This is admin dashboard view

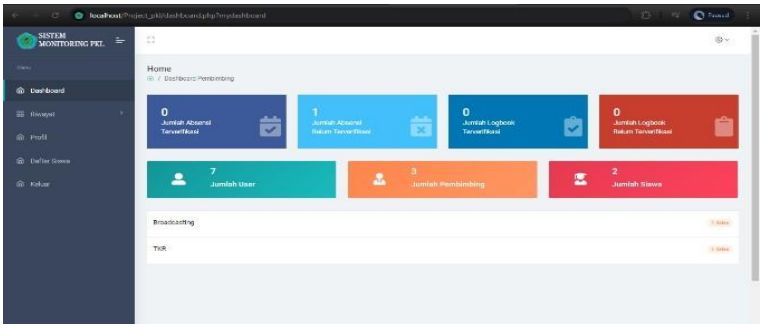

Fig. 3 Admin Dashboard Page

c. Department & Class Menu Page

The image below is a view of the majors & classes menu

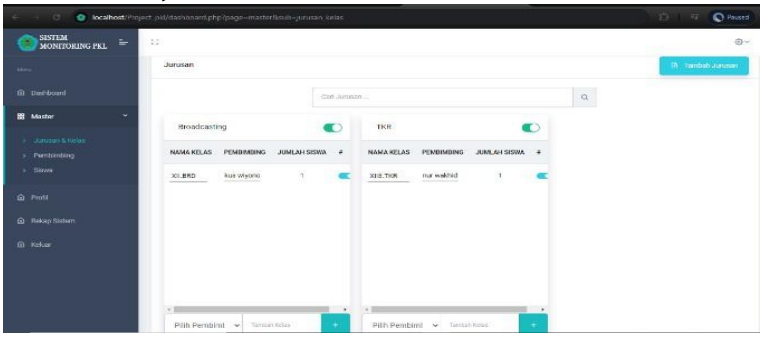

Fig. 4 Department & Class Menu Page

d. Supervisor Menu Page

The image below is a view of the supervisor menu

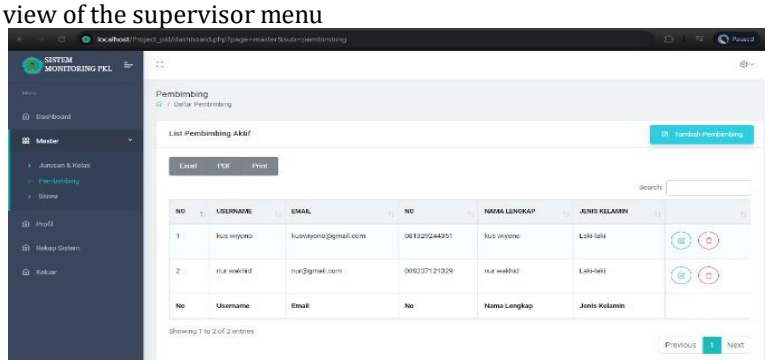

Fig. 5 Supervisor Menu Page

e. Recap Menu Page

The image below is a recap menu display

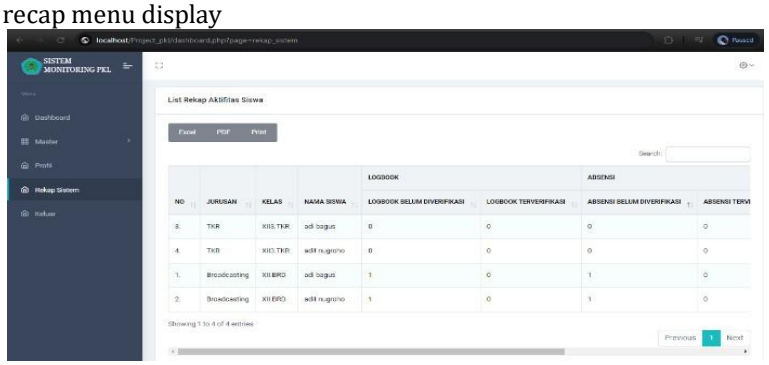

Fig. 6 Recap page

f. Profile Menu Page

The image below is a profile view

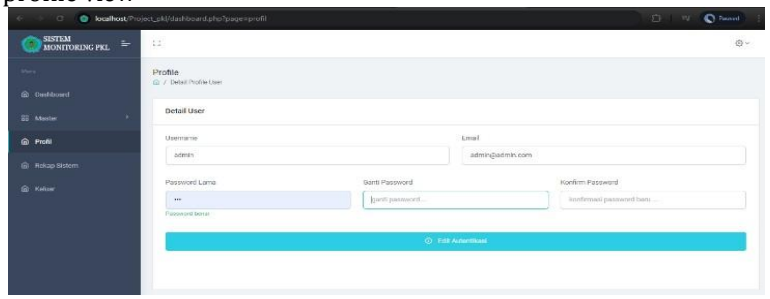

Fig. 7 Profile Menu Page

g. Student Dashboard Page

Image under This is student dashboard display

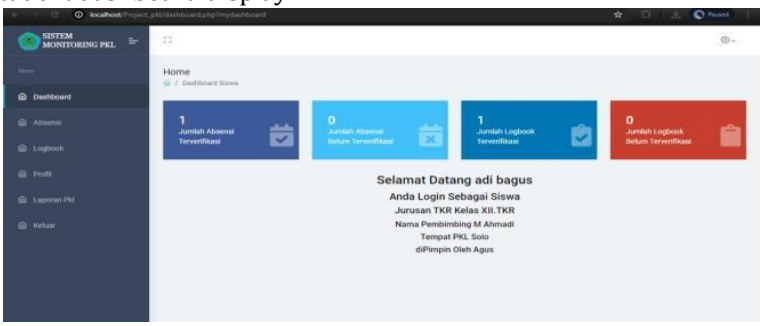

Fig. 8 Student Dashboard Page

h. Student Attendance Menu Page

The image below is a student attendance display

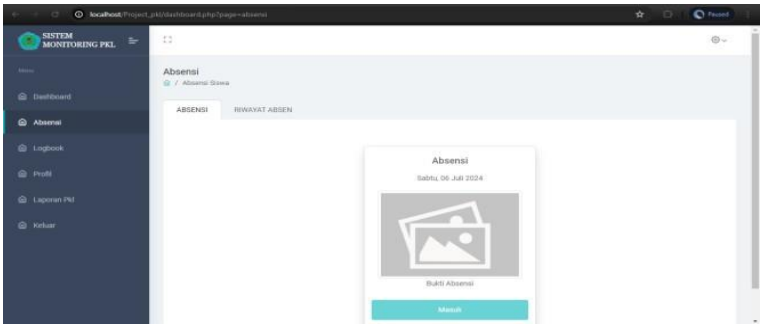

Fig. 9 Student Attendance Menu Page

i. Student Logbook Menu Page

The image below is a student logbook display

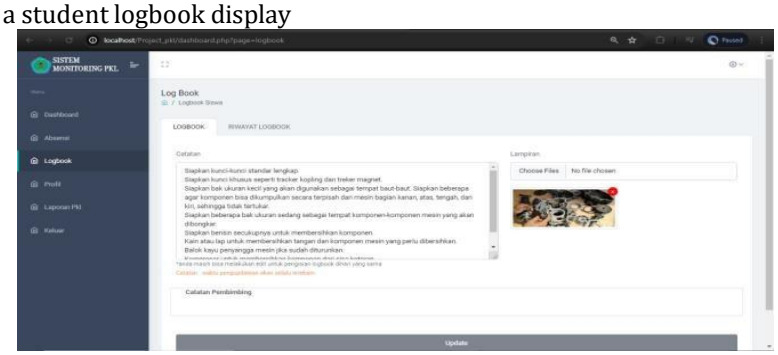

Fig. 10 Student Logbook Menu Page

j. Internship Report Menu Page

The image below is a display of the internship report

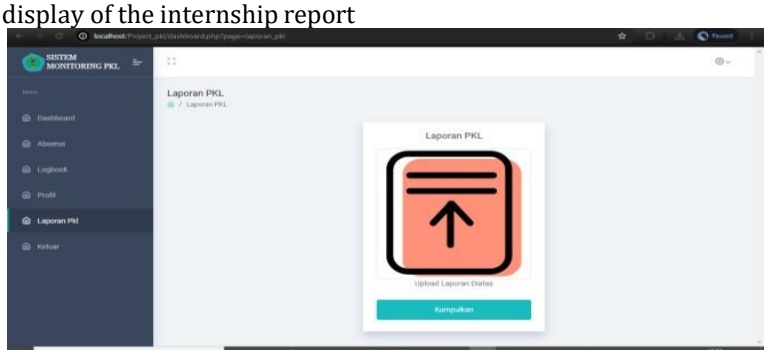

Fig. 11 Internship Report Menu Page

k. Supervising Teacher Dashboard Page Field

Image under this is dashboard view of the field supervisor teacher

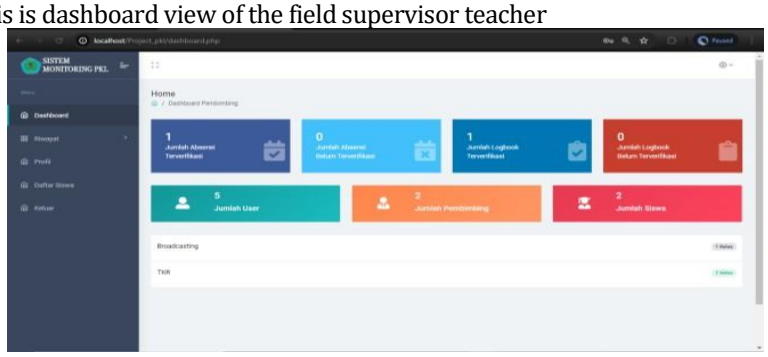

Fig. 12 Supervising Teacher Dashboard Page Field

l. History Menu Page (Attendance)

Image under This is display of attendance history

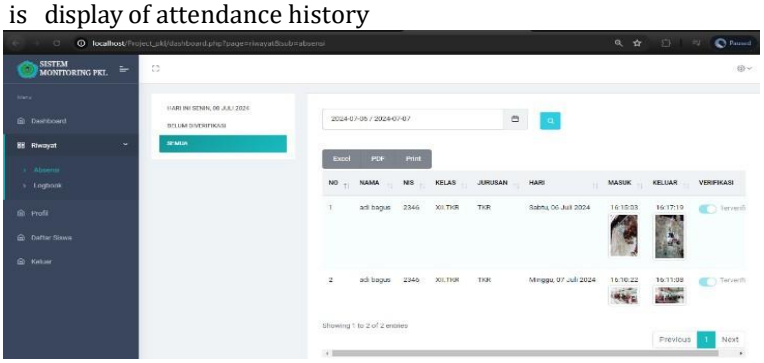

Fig. 13 Attendance History Menu Page

m. History Menu Page (Logbook)

The image below is a view of the logbook history

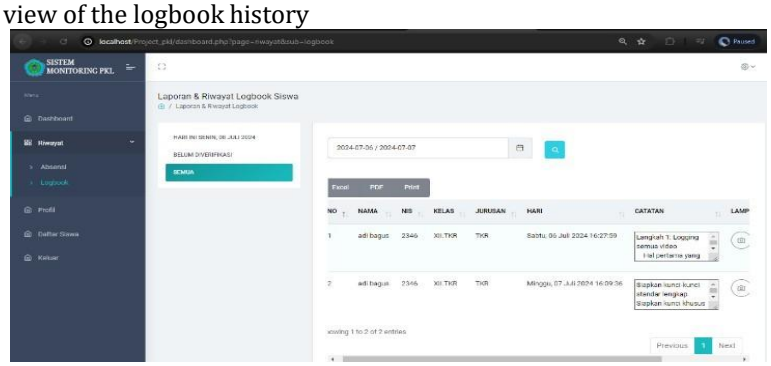

Fig. 14 Logbook History Menu Page

n. Student List Menu Page

The image below is a student list display

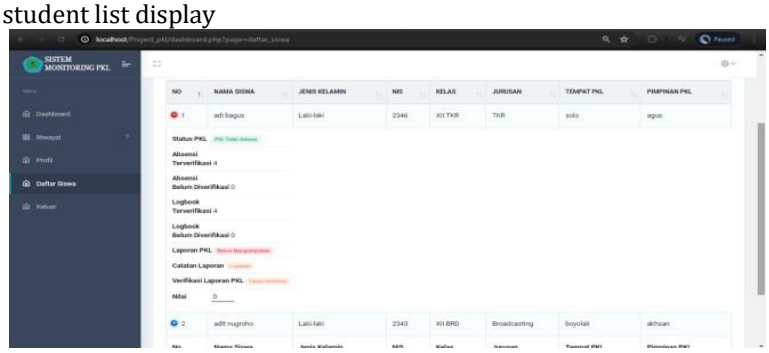

Fig. 15 Student List Menu Page

D. Testing

6. Black Box Testing

At this stage, system testing is carried out using the Black Box method. The purpose of this test is to ensure that each component of the system has functioned as expected, and runs according to its function or not. Here are some tests of the student login page, student attendance menu page, student logbook menu page, and student internship report menu page.

a. Testing the Login Page

Table 1. Login Page Testing

Activities	Expected result	Test results	Availability
Students input username, password and press the login button.	Login to dashboard page	Display the dashboard page	Fulfilled

b. Testing the Admin Dashboard Page

Table 2. Testing the Admin Dashboard Page

Activities	Expected result	Test results	Availability
Admin selects the menu *dashboard*	Login to dashboardpage	Display the dashboard page	Fulfilled
Admin selects the mastermenu (majors & classes)	Login to department & class page	Display the department & class page	Fulfilled
Admin selects the mastermenu (supervisor)	Login to advisor page	Display the advisor page	Fulfilled
Admin selects the menumaster (student)	Login to student page	Display the student page	Fulfilled
Admin selects the profilemenu	Login to profile page	Display the pageprofile	Fulfilled
Admin selects the recapmenu	Login to recap page	Display recap page	Fulfilled

c. Testing the Student Attendance Page

Table 3. Testing the Student Attendance Page

Activities	Expected result	Test results	Availability
Students select the menu attendance	Login to attendance page	Display the attendance page	Fulfilled
Students fill in the login attendance by uploading a jpg/jpg/png format file, and selecting the login button.	Save attendance data	Display successful attendance message	Fulfilled
Students fill out the outgoing attendance by uploading jpg/jpg/png format files, and Selecting the exit button	Save data Exit attendance	Display successful attendance message	Fulfilled
Students select the Attendance history form	Login to Attendance history page and Display the history of incoming and outgoingattendance	Display the incoming and outgoing attendance history data page	Fulfilled

d. Testing the Student Logbook Page

Table 4. Testing the Student Logbook Page

Activities	Expected result	Test results	Availability
Students select the logbookmenu	Enter the logbook page	Display the logbookpage	Fulfilled
Students fill in the logbook by uploading jpg/jpg/pngformat files, and fill in logbook notes, then save it	Save datalogbook	Display logbook message saved successfully	Fulfilled
Students update the logbook by deleting attachments and selecting the update button.	Save datanew logbook	Display logbook message saved successfully	Fulfilled
Students select theLogbook History form	Log in Logbook history page and display data logbook history	Display the logbook history data page	Fulfilled

e. Testing the Student internship Report Page

Table 5. Testing the Student internship Report Page

Activities	Expected result	Test results	Availability
Students select the internshipreport menu	Enter the internship report page	Display the internship reportpage	Fulfilled
Students submit the internship report by uploading docx/pdf formatfile, and selecting the submit button.	Save internship report file data	Display message report file uploaded successfully	Fulfilled

f. Testing the Attendance History Page

Table 6. Testing the Attendance History Page

Activities	Expected result	Test results	Availability
Field Supervisor Teacher selects the History menu (attendance)	Enter the attendancehistory page	Display the attendancehistory page	Fulfilled
Field Supervisor Teacher checks the student'sattendance data, and selects the verification button.	Can perform the attendance verificationprocess	The system can performthe verification processand Display theverified attendance data verified	Fulfilled
Field Supervisor recap attendance data with excelformat	Printing excel formatattendance data recap	Recap of attendance datain excel	Fulfilled
Field Supervisor recap attendance data in pdfformat	Printing pdf format attendance data recap	Recap of attendance datain pdf form	Fulfilled
Field Supervisor Teacher prints attendance data recap	Printing attendance datarecap	Well printed data recap	Fulfilled

g. Testing the Logbook History Page

Table 7. Testing the Logbook History Page

Activities	Expected result	Test results	Availability
Field Supervisor Teacher selects the History(logbook) menu	Log in to Logbook history page	Display the logbookhistory page	Fulfilled
Field Supervisor Teacher checks student logbookdata and selects verification button	Can perform logbookverification process	The system can performthe verification processand Display theverified logbook data	Fulfilled
Field Supervisor recap logbook data with excell format	Printing excell formatlogbook data recap	Recap of logbook datain excel	Fulfilled
Field Supervisor recap logbook data in pdf format	Printing pdf format logbook data recap	Recap of logbook datain pdf form	Fulfilled
Field Supervisor Teacherprints logbook data recap	Printing logbook datarecap	Well printed data recap	Fulfilled

h. Testing the Student List Page

Table 8. Testing the Student List Page

Activities	Expected result	Test results	Availability
Field Supervisor Teacher selectsthe student list menu	Log in to the student list page	Display the student list page	Fulfilled
The Field Supervisor Teacher updates the student's internship status and selects the internship status button.	Can perform the process of changing the student's internship status	Displays a description of the work placement has been completed	Fulfilled
Field Supervisor Teacher checked the student's internship report	Featuring student's internship report file	Display student work-study report file	Fulfilled

Field Supervisor Teacher uploads student reportfiles that have been checked and revised	Can save uploaded reportfiles	Save the file and displaythe revised report revised report	Fulfilled
Field Supervisor Teacher gave notes on student's internshipreport	Can save student's internshipreport records	Save student's internship report record	Fulfilled
Field Supervisor Teacher verifies student's internship report	Can perform the verification process student work-study report	The system can perform the verification process	Fulfilled
Field Supervisor Teacher fills in student grades	Can store values	Save and value display	Fulfilled
Field Supervisors recap student data in excel format	Printing student data recapin excel format	Data recap studentdata in excel	Fulfilled
Field teachers recap student data in pdf format	Printing student data recapin pdf format	Data recap studentdata in pdf form	Fulfilled
Field Supervisor Teacher prints student data recap	Printing student data recap	Well printed data recap	Fulfilled

7. User Testing

At this stage the researcher conducts user testing by giving questionnaires to system users, to find out responses and assessments of the system that has been developed can be accepted or not by users. If the results in this test are considered to have met user needs, then this system can be implemented. At this stage the author provides a questionnaire filled out by users to find out the user's response. The questionnaire consists of 3 types according to the access rights of each user, namely questionnaires for admins, field supervising teachers, and for students. the results of the questionnaire are rated with 5 categories, namely SS (Strongly Agree), S (Agree), C (Fair), TS (Disagree), and STS (Strongly Disagree). The following are the details of the questionnaire results that have been filled in by users:

1) Questionnaire for admin

The admin questionnaire was conducted to find out whether the admin access rights page was as expected by the user or not. This questionnaire was filled out by 1 respondent who is the internship committee of SMK Ma'arif NU 2 Boyolali, with the following results:

a. Number of Admin Respondent Results

Strongly Agree : 13
Agree : 25
Moderate : 2
Disagree : 0
Strongly Disagree : 0
Total Number : 40

b. Total Score or determine the sum of the weighted values on the respondent's answer

Formula = Value result * weight value

Strongly Agree : 13*5 = 65
Agree : 25*4 = 100
Moderate : 2*3 = 6
Disagree : 0*2 = 0
Strongly Disagree : 0*1 = 0
Total Number : 171

c. Maximum Score = Number of respondents * Number of Questions * Criteria
= 10 x 4 x 5
= 200

d. Determining the final result (Index % formula)
= T / Y x 100

Where:

T	: Total Score
Y	: Maximum Total
Result	= (171 / 200) x 100
	= 85,5%

2) Questionnaire for Field Supervisor Teachers

The field supervisor teacher questionnaire was conducted to find out whether the field supervisor teacher's access rights page was as expected by the user or not. This questionnaire was filled out by 10 respondents who were INTERNSHIP supervising teachers at SMK Ma'arif NU 2 Boyolali, with the following results:

a. Number of Teacher Respondent Results Field Supervisor

Strongly Agree	: 35
Agree	: 13
Moderate	: 2
Disagree	: 0
Strongly Disagree	: 0
Total Number	: 50

b. Total Score or determine the amount of weighted value on the respondent's answer

Formula = Result value * weight value

Strongly Agree	: 35*5 = 175
Agree	: 13*4 = 52
Moderate	: 2*3 = 6
Disagree	: 0*2 = 0
Strongly Disagree	: 0*1 = 0
Total Number	: 233

c. Maximum Score

= Number of respondents*Number of Questions*Criteria

= 10 x 5 x 5

= 250

d. Determining the final result (Index % formula)

= T / Y x 100

Where:

T	: Total Score
Y	: Maximum Total
Result	= (233 / 250) x 100
	= 93,2%

3) Student Questionnaire

The student questionnaire was conducted to find out whether the student access rights page was as expected by the user or not. This questionnaire was filled out by 42 respondents who are students of SMK Ma'arif NU 2 Boyolali, with the following results:

a. Number of Student Respondent Results

Strongly Agree	: 76
Agree	: 99
Moderate	: 35
Disagree	: 0
Strongly Disagree	: 0
Total Number	: 210

b. Total Score or determine the sum of the weighted values on the respondent's answer

Formula = Result value * weight value

Strongly Agree	: 76*5 = 380
Agree	: 99*4 = 396
Moderate	: 35*3 = 105
Disagree	: 0*2 = 0
Strongly Disagree	: 0*1 = 0
Total Number	: 881

c. Maximum Score

= Number of respondents*Number of Questions*Criteria

= 42 x 5 x 5

= 1.050

d. Determining the final result (Index % formula)

= T / Y x 100

Where:

T	: Total Score
Y	: Maximum Total
Result	= (881 / 1.050) x 100
	= 83,9%

4. Conclusions

Based on the results of the above discussion about the Web-Based Student Field Work Monitoring Information System (Case Study: SMK Ma'arif NU 2 Boyolali), the following conclusions can be drawn:

1) The results of the analysis in building a Web- Based Student Field Work Practice Monitoring Information System (Case Study: SMK Ma'arif NU 2 Boyolali) consist of 3 access rights, namely admin, student, and field supervisor teacher. And can process and manage student internship data, such as student daily attendance data, student daily logbooks, and student internship reports. and based on the results of system functionality testing using the blackbox method from admin access rights, student access rights, and field supervisor teacher access rights, it is concluded that the test results or output results are as expected (fulfilled). So that it shows that the system that has been built has met the functional requirements.
2) And based on the results of the test questionnaire that has been distributed to 10 admins, with the results of the test percentage getting a score of 85.5%, then 10 field supervising teachers, with the results of the test percentage. getting a score of 93.2%, and 42 students, with the test percentage getting a score of 83.9%. Then the results of the average value of testing 3 users, namely admins, students, and field supervising teachers, were obtained with a percentage of 87.53%. And it can be concluded that the system built can be well received by users, and shows that the system meets the functional requirements, is in accordance with user needs, and is quite feasible to use.
3) So that the Web-Based Student Field Work Practice Monitoring Information System (Case Study: SMK Ma'arif NU 2 Boyolali) can carry out the data management process properly, and help the process of monitoring student field work practice activities during INTERNSHIP runs.

5. References

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