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e-Logbook Application Design for Job Training During the Covid-19 Pandemic (Case Study : Business Administration Department of Politeknik Negeri Samarinda)

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***Abstract*---This research was conducted to design an e-Logbook Application Design for Job Training. The application that will be built in this research is an e-Logbook, the goal is to make it easier for final year students to do job training. This application will then be used by Practitioner Lecturer and Supervisor to monitor the student progress and assess students' daily activities when carrying out job trainings. The system to be built is simpler, easier to understand and use. starting from attendance to final assessment when students have finished carrying out job trainings. The method used for the development of this system is the SDLC method, which is a system development methodology, the roles and skills required for systems analysts, the basic characteristics of object-oriented systems.**

***Keywords*— Job Training, e-Logbook Application, System**

I. INTRODUCTION

Student Job Training (PKL) is a mandatory course that must be taken by every final year student of D3 Business Administration at the Samarinda State Polytechnic. When carrying out the PKL, students are expected to be able to implement the knowledge they have gained in college into the real world of work in an agency. The student also must carry out the procedures established by the study program starting from registration to compiling reports. In line with this, the need for a communication tool also plays an important role in supporting the delivery and processing of information, as well as monitoring Study Programs through supervisors for students so that the PKL process runs smoothly even though the supervisors do not meet face-to-face with students during the Covid-19 pandemic.

Along with technological advances that are growing very rapidly, many organizations and educational institutions use computer-based technology and networks to assist their work, especially in the management and delivery of information systems because they are effective and efficient [3]. But until now, the PKL student reporting process is still using paper records which will be submitted to the Supervisor at the end after the PKL time period is over, this is very ineffective because the process of exchanging information is very slow and inefficient which the supervisor cannot monitor the student daily progress during the PKL. For this reason, it is necessary to create an information system, namely e-Logbook Application that is easily accessible by students, supervisors, and Industrial supervisors, as well as the admin of the Business Administration Study Program to make it easier to monitor student activities and developments during street PKL.

Creating an e-Logbook Application based website aims to allow students to improve security reporting attendance, daily activities journal, and the appraisal

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during the PKL session. Those document will not lost or damaged and facilitate the student to know the results of assessment or any revision of the report from the supervisor. The Supervisor also can easily see the development of student, because student work will be automatically updated while using the e-Logbook application.

The design of the e-Logbook Application For PKL is designed and built on a website-based basis using the SDLC Waterfall method, which is expected to meet the needs of students in recording reports, attendance, daily activity journals, and computerized assessments to improve performance, service quality, competitiveness and the quality of PKL it self.

II. LITERATURE REVIEW

2.1 Job Training

Job training according to [2]. is job training or in schools often referred to as on the job training is a training model that aims to provide the skills needed in certain jobs in accordance with the demands of abilities for workers. This is very useful for students to be able to adapt and be ready to enter the world of work, so that in the future the student can work in accordance with the demands of the world of work.

Job training is an activity that used to be called dual system education, namely education and training carried out in schools, practiced in the industrial world, so that there will be a match between the abilities obtained at school and the demands in the industrial world [1]. In essence, the application of street vendors includes implementation in universities and in the business or industrial world . Placement of the implementation of street vendors is based on their respective fields of expertise. Higher education provides students with general education material (normative), supporting basic knowledge (adaptive), as well as theory and basic vocational skills (productive), then the business world or industry is expected to help be responsible for increasing professional skills through a special program called Work Practice field.

2.2 e-Logbook

According to the Indonesian Dictionary (KBBI) the meaning of the word logbook in the English-Indonesian dictionary is the definition of meaning and the meaning of the word logbook is a book of recording events [6]. Log Book is a notebook or document needed by students to document in detail all activities in the learning process which contains self-identity, competency information, daily notes, learning activity notes, student reflections, assessment sheets, research sheets, questionnaires, teacher supervision sheets and industrial supervisor if it is in the form of work practice in the industrial field.

2.3 System Development Life Cycle (SDLC)

SDLC is a set of processes used to understand how an information system can support business needs by designing a system, building it, and delivering it to users. The person in the SDLC is a systems analyst, who analyzes the business situation, identifies opportunities for improvement, and designs information systems to implement them. There are two critical aspects of the SDLC to grasp. To begin, you should gain a general understanding of the phases and steps that an IS project goes through, as well as some of the methodologies that yield specific outcomes. Second, it is important to understand that SDLC is a gradual improvement process of an is project [4]. SDLC Waterfall is a series of processes that involve several stages of development which include: Planning, Analysists, Design, and Implementation. In principle, one stage must be completed first before proceeding to the next stage [5].

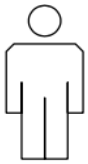
2.4 Unified Modeling Language (UML)

UML is a widely used method for describing and telling the design of software systems. UML uses object-oriented design concepts, but is independent of a particular programming language and can be used to describe general business processes and requirements [7]. Unified Modeling Language (UML) is divided into several series of diagrams that are interconnected and each have their respective roles in explaining the function of the designed system. To explain in detail about the business processes and flow of a system that is being developed or a system that will be developed.

1) *Use Case Diagram*

Use Case Diagrams are usually the first step in understanding and analyzing system requirements when designing a proposed system. The use case diagram is a diagram for the IS behavior that will be made. Use cases are usually used as a description of the functions contained in SI and to find out who operates these functions [8]. In other words Use Case diagram is typically used to manage and explain the processes run by a system and describe function expected from a system. Use case diagrams contain symbols in the form of actors, the relationships between them can be seen in Table 1.

Table 1. Symbol Use Case Diagram

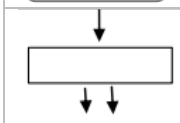
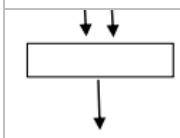
Symbol	Information
 Actor	Actor is a description of the person who will run the system and activate the functions of the system that will be run. To identify actors, there are provisions for the division of labor and the processes carried out in relation to the processes to be carried out by the system. Both people and internail system have several roles.
	Use Case describes the functionality provided by the system as units that exchange messages between units with actors, writing in using a use case is to use a verb to describe the function of the use case.
	Association as a liaison between actors and use cases, which are lines without arrows, acts as a relationship between actors and systems that interact directly.
	The association with the open arrow is a link that connects the actor with the use case to indicate the actor has a one-way interaction with the system.
	Include, are features or functions that run when the actor runs the use case. So that when the actors run the use case will run a use case in point with the sign is ot include omatis

Source: Simbol Use Case Diagram [8].

2) *Activity Diagram*

Activity diagram shows system activity in the form of a collection of actions, how each - each action was initiated, a decision that may occur until the end of the action. Activity diagrams can also describe the process of more than one action at the same time [9]. The symbols used in the activity diagram can be seen in Table 2.

Table 2. Activity Diagram Symbol

Symbol	Information
	Start Point, is the starting point of a system running or starting.
	End Point, serves as a sign that the activities that occur in the system have ended
	Activities, describes a process / business activity that is being carried out.
	Fork or branching, shows activities that are carried out simultaneously to combine two parallel activities into one activity
	Join or rake, shows the existence of 2 or more activities that will merge into one activity

Source: Activity Diagram Symbol [8].

2.5 Entity Relationship Diagram (ERD)

Is a set of databases used to describe the Entity Relationship model that contains components. Entity Set and Relationship Set, each of which is equipped with attributes that represent all the facts from the real world that we are reviewing [10].

2.6 Wireframe

Wireframe is the basic framework or blueprint of an application page that will be built by application developers. Broadly speaking, in this wireframe we place the important elements of the application page in their respective positions such as banners, body content, menu links, columns, footers and other features that will be in the application later. Visually the appearance of this wireframe only consists of boxes and lines that indicate the position of each element of the application page layout [11].

III. METHODOLOGY

The method used for system development is the SDLC method, which is a system development methodology, the roles and skills needed for systems analysts, the basic characteristics of object-oriented systems. In working on a project, the phases and steps of the SDLC proceed in a logical path from start to finish. In other projects, the project team moves through successive steps, incrementally, iteratively, or in another pattern. SDLC has 4 basic phases which include, Planning, Analysis, Design, Implementation which is common to all information systems development projects. In Figure 1, the SDLC model according to David Tegarden, can be seen the phases that the SDLC stage goes through [4].

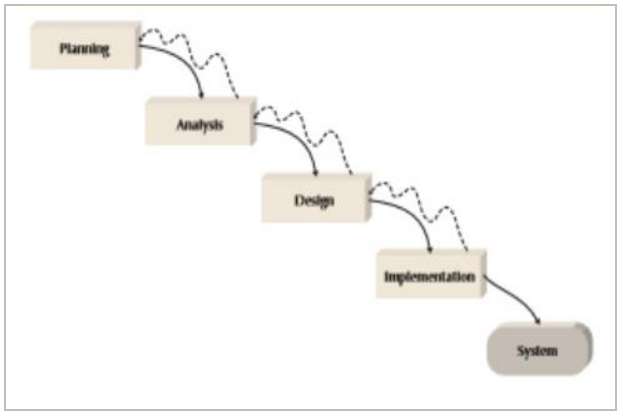


Figure 1. SDLC : 4 Basic Phases

Source : SDLC [4]

3.1 Planning

The design phase is the basic process for understanding why an information system should be built. Usually at this stage an interview is conducted to understand what system will be built. Planning has 2 steps which include:

1) During the project initiation process, the system request presents a brief summary of the business requirements, and it describes how the systems that support the requirements will create business value. To undertake a feasibility analysis, this department collaborates with the person or department who initiated the request (referred to as the project sponsor).
2) The project is moved to project management once it has been authorized. The project manager develops a work plan, staffs the project, and employs tactics to assist the project team in controlling and directing the project throughout the SDLC. Submission to project management is the project plan, which describes how the project team will develop the system.

3.2 Analysis

After the planning step is completed, an analysis is determined or begun to answer questions regarding who will use the system, what it will do, and where and when it will be used. During this phase, the project team investigates each of the current systems, identifies opportunities for improvement, and develops concepts for the new system. This phase has 3 stages, namely:

1) The project team develops an analytical strategy to guide their activities. An analysis of the current system (referred to as the system as it is) and its problems, as well as how to build the new system, are frequently included in such a plan (called the future system).
2) The next step is to collect the requirements (through interviews). The analysis of this information leads to the development of concepts for the new system. This system concept is then used as the basis for developing a set of business analysis models, which describe how the business will operate if a new system is developed.
3) The analysis, system concepts, and models are then compiled into a systems proposal, which is given to the project sponsor and other key decision makers.

3.3 Design

Begin deciding how the system will operate in terms of hardware, software, and network infrastructure; user interfaces, forms, and reports; and the exact programs, databases, and files that will be required after the study phase is completed. The design phase is divided into 5 stages, namely:

1) The design strategy is first developed. Design and clarify the system will operate
2) This step leads to the creation of a system's basic architectural design, which outlines the system's hardware, software, and network architecture. The system's interface design dictates how users will navigate the system, as well as the forms and reports that will be used..
3) At this stage the database and file specifications are developed. Then it's time to figure out exactly what data will be saved and where it will be saved.
4) Then create a program design that specifies which programs must be written and what each program will accomplish.
5) Wireframe of application

3.4 Implementation

This is the stage where the system is actually built following the design that has been made. This is the phase that receives the greatest attention, as it is the single longest and most expensive component of the development process for most systems. There are three steps to this phase.

1) The construction of the system is the initial step in the implementation process. The system is constructed and tested to ensure that it performs as intended. Testing is one of the most important steps in the implementation phase, as the cost of fixing bias bugs is enormous.

2) At this stage the System is installed. Installation is the process by which the old system is shut down and the new one is started. The establishment of a training plan to teach users how to use the new system and help manage the changes created by the new system is one of the most significant components of conversion.
3) Then at this stage make a support plan for the system. A formal or informal post-implementation review, as well as a systematic technique to identify large and minor system modifications, are frequently included in this plan.

3.5 *Validation Phase*

Is the stage where the system or e-Logbook Application Design for Job Training is ready to used.

IV. Results and Analysis

The following are the stages of the e-Logbook Aplication design for job training information system that will be built using SDLC Waterfall:

4.1 Planning

At this stage, case studies are conducted in the form of interviews with the admin of the Business Administration Study Program, students, and supervisors from the Business Administration Study Program to identify the system requirements to be built. After he made a work plan that describes the prose 's work will be used. From the results of these interviews can be concluded that the system is needed merup a right e-Logbook Application Design For Job Training to facilitate the monitoring and reporting of student PKL.

4.2 Analysis

After the planning stage, it is known that the student street vendor reporting system currently in use still uses paper and books. So the system is still going through a long process to find out the progress of each PKL student. For the process, PKL students usually recapitulate PKL attendance, PKL daily activity journals, and PKL assessment forms which will then be written down on paper, after which PKL Students will submit them to Practitioner Lecturer and Supervisor after the PKL time is over. After being checked, the Practitioner Lecturer and Supervisor will provide an assessment of whether the report is appropriate or not and provide a signature and assessment. From the system there are obstacles, namely the Supervisor cannot monitor student activities while carrying out street vendors in the industry.

Therefore, at this stage, do a needs analysis of the planning system that includes e- logbook that will be designed in which the student PKL can wheezing n put attendance and daily activities PKL journals that can be seen and demonstrate appropriate or not appropriate (verification) by the relevant. Practitioner Lecturer. The report will be automatically updated by the Supervisor and the administrator so that the student can see the progress of the PKL session.

All of that is designed into a web-based application that uses the Laravel framework. By using a database storage system in the form of My SQL. This allowing the supervising clicking e check the report that created the students PKL anywhere with an internet connection.

4.3 Design

At this stage a design is made based on the results of the analysis. It can be concluded that the design of the e-Logbook Application Design For Job training has 5 steps which include:

1) *Unified Modeling Language (UML)*
At this stage, start designing the architecture related to using UML, then create a structural and behavioral diagram that describes the description of the problem domain class and its interactions. The following is a use case diagram and activity diagram can be seen in Figure 2 .
Use Case This diagram illustrates some of the functions of each actor in the application. There are 4 actors involved in the e-Logbook Application Design For Job training , namely :

a. Administrator of Business Administration department. The administrator users can input the master data into the e-Logbook which includes status categories, PKL Student data, Supervisor data, Practitioner Lecturer data, and create user e-Logbook.
b. Students. Users can input the attendance report in the form of form, and see the updated status verification of lecturer and print the report.
c. Practitioner Lecturer. Users of Practitioner Lecturer can approve reports that have been written by street vendors students, can print out the progress of street vendors' student reports , and make assessments of street vendors in the form provided.
d. Supervisor user can see the progress of reports and can print out the progress of street

vendors' student reports, conduct assessments of street vendors in the available form

2) *Use Case Diagram*

Use Case This diagram illustrates some of the functions of each actor in the e-Logbook Application Design For Job training , as can be seen in Figure 2.

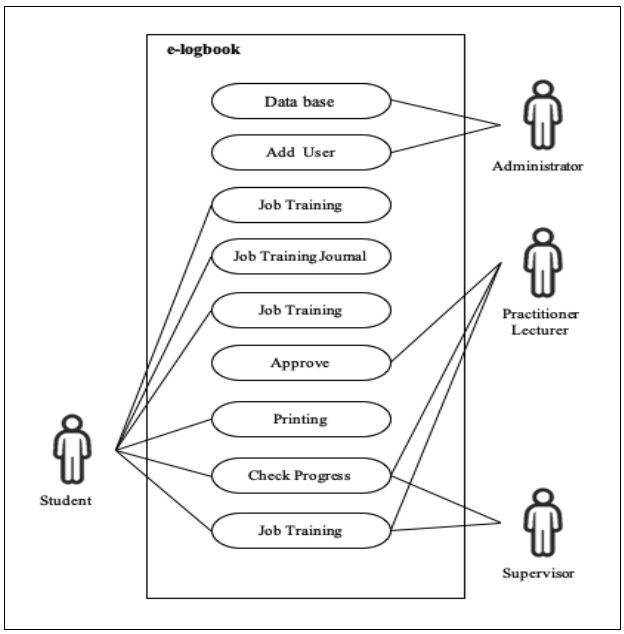


Figure 2. Use Case Diagram of e-Logbook Application Design For Job training Source: data processed by the author

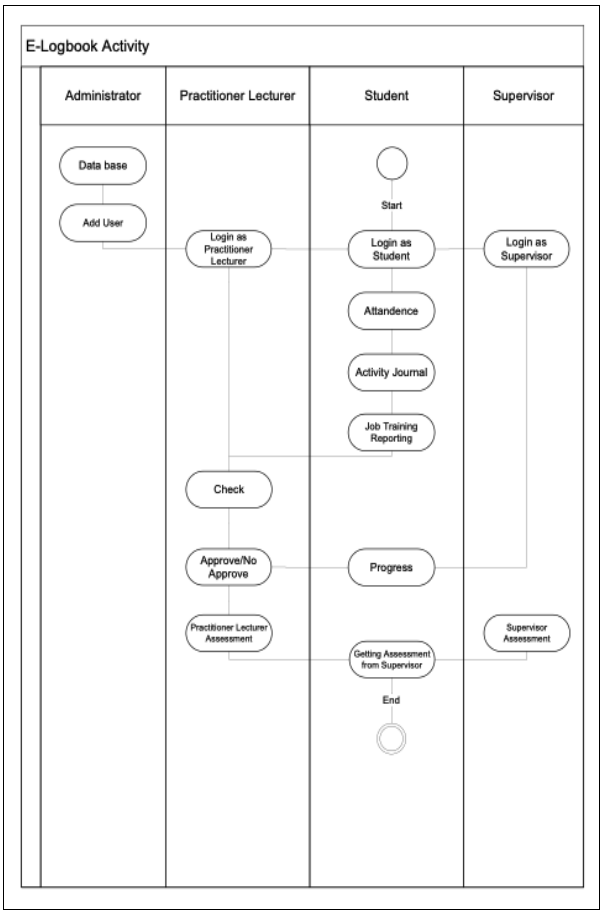


Figure 3 . Activity Diagram e-Logbook Application Design For Job training Source: data processed by the author

3) *Activity Diagram*

In Figure 3, Activity Diagram explaining the process and activities of users in the e-logbook, the application starts when the administrator input the master data and create a user for each participant, then Students PKL log in, and input reporting, where the inputted report will be automatically sent to the Practitioner Lecturer for checking. The Practitioner Lecturer who checks will give approval if it is appropriate, after the Practitioner Lecturer gives approval and assessment , the application will automatically add reports that have been approved and assessed to the relevant information. Supervisor from the can monitor the activities and reports carried out by student, as well as provide an assessment when the student finish reporting the PKL report.

4) *Entity Relationship Diagram (ERD)*

Database e-Logbook Application Design For Job training using crowfood notation on the composition of the data has been normalized last described it in the form of ERD which can be seen in Figure 4.

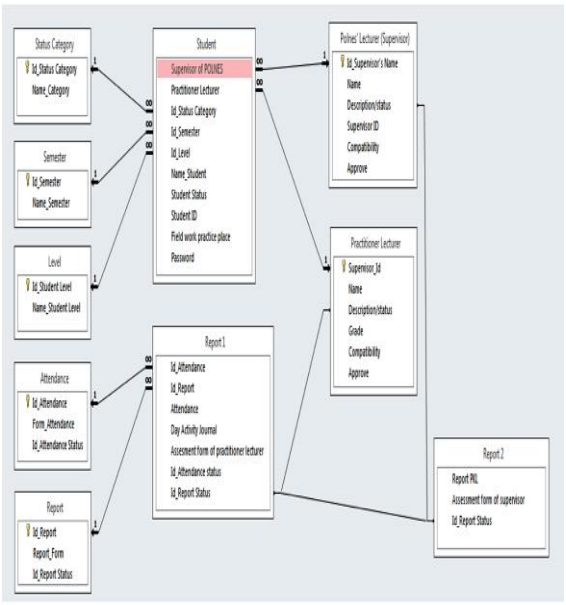


Figure 4 . ERD Diagram e-Logbook Application Design For Job training (Source: data processed by the author)

5) *Wireframe*

e-Logbook Application Design F or Job training can be accessed on http://pklab-elogbook.org/login

In Figure 5 shows the login form that functions to login with each user for Admin, PKL Students, and Supervisors, to restrict access rights for peoples who can access this website.

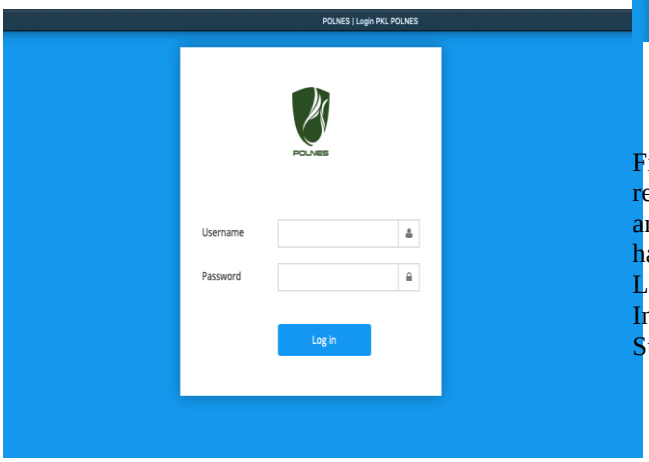


Figure 5. Login Form
Source: e-Logbook Application Design For Job training by the author

After logging in, the user will enter the home page as shown in Figure 6 and Figure 7, showing the home form that functions as the first display after a successful login which has several menus that can be selected as needed to continue the next process.

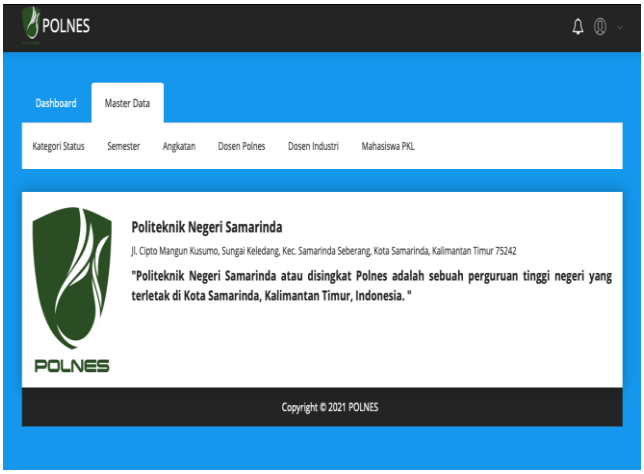


Figure 6. Form Home
Source: e-Logbook Application Design For Job training by the author

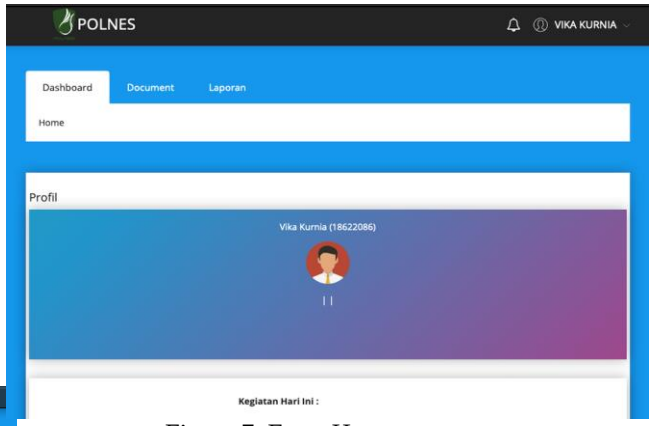


Figure 7. Form Home
Source: e-Logbook Application Design For Job training by the author

Figure 8 shows the PKL student reporting form which is recorded in the e-Logbook and automatically updates to display reports that have been approved by the Practitioner Lecturer. And there is an assessment form the Industrial Practitioner Lecturer and the Supervisors.

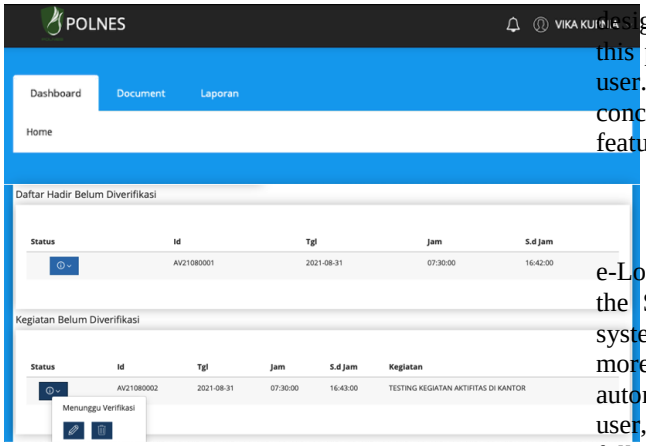


Figure 8 . PKL Student Reporting Form
Source: e-Logbook Application Design For Job training by the author

4.4 Implementation

The implementation of the e-Logbook Application Design For Fieldwork is in accordance with the analysis and design that has been made in the previous stage, then this prototype system has been tested and operated by the user. After the user tested the system, it can be concluded that the system has met the needs and all features are running well and there are no complaints. Apart from that there are no features to develop. Therefore, it can be concluded that the system can be applied to the next stage, namely the implementation of the prototype system into the final system that will be use by Business Administration Study Program.

4.5 Validation Phase

At this stage, the e-Logbook Application Design For Fieldwork that was built has been completed and is ready to be run in the Business Administration Study Program. This application is very flexible because it can be done adding features or menus are new to to heal & condition in the future will shortly come. The Supervisor in this application find out updates from each PKL Student user concerned.

The model were used to generate the application is SDLC waterfall, SDLC has 4 basic phases which include, Planning, Analysis, Design, and Implementation. The design phase (planning) is the basic process for understanding why the e-Logbook Application should be built. After the planning stage do a needs analysis of the planning system that includes e-Logbook Application that will be designed for student, Practitioner Lecturer, and supervisor. And then is design, at this stage a design e-Logbook Application is made based on the results of the analysis. The last is implementation, the e-Logbook Application is in accordance with the analysis and design that has been made in the previous stage, then this prototype system has been tested andoperated by user. After the user tested the system, it can be concluded that the system has met the needs and all features are running well

V. CONCLUSION

e-Logbook Application Design For Fieldwork using the SDLC waterfall method can help the reporting system and monitoring the progress of street vendors more easily and effectively because the system will automatically be updated to each interested party or user, and this application can be added with the following feature: features or menus newly coresspond to heal and condition in the future will shortly come.

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