Development of Industrial Practice Monitoring Information System (SEMPI) As a Solution to Improve Services. Case Study: Department of Informatic Engineering State University of Surabaya

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Abstract. Educational Institutions, especially higher education, have a responsibility to produce quality graduates in various fields of science. Universities develop curricula as a basis for students to take education. The mechanism for appointing supervisors and examiners as well as scheduling Industrial Practices, especially in the Informatics Engineering Department, is carried out by the department while the schedule and exam examiner team are informed through a notice board in the Informatics Engineering department. The web-based Industrial Practice Monitoring Information System (SEMPI) is a system that can provide information about industrial practice programs online. This system has an advantage in terms of the speed of presentation of the resulting information. In addition, this system is web-based so that it can be accessed at any time. This process takes a long time and good management, so that students get a supervisor who is in accordance with their field of expertise and the right exam schedule so as not to interfere with lecture schedules and lecturer schedules The conclusion that can be drawn in this study is that an Industrial Practice Monitoring Information System is produced that can help the Process of Monitoring Industrial Practice within the Informatics Engineering Department, Faculty of Engineering, Surabaya State University can run smoothly. In addition, with this information system, it is hoped that it can help the work of the informatics engineering department in carrying out the administration of these activities.
Keywords: Monitoring; Information System; Industrial Practice.

I.   Introduction

The rapid development of information technology has affected many fields, including the world of business, services, education and others. The world of education, especially higher education, is one of the fields that is strongly influenced by the development of information technology. According to Choldun (2006) Globalization in the field of education requires universities to be able to manage information well, so that the information needs of each interested party can be met quickly and accurately.

Student academic guidance is one of the most important supporting elements in establishing relationships between educators and students for any formal educational institution. Academic guidance itself is held because it does function as a form of attention for a formal educational institution of its students in the academic field and other fields that support the process of academic activities of the students themselves. According to Afni & Samosir (2013), This requires every formal educational institution, especially universities and institutes, to have an academic guidance system that can help supervisors relate directly to academic problems with their respective students.

According to Wardiman Djojonegoro (1998), Industrial practice (PI) is a form of providing vocational expertise education that combines systematically and synchronously educational programs in schools and mastery programs of expertise obtained through working directly in the business world or the industrial world in a directed manner to achieve a level of professional expertise.

According to Adiwinata, Sarwoko, & Indriyati, (2012) The Final Project Information System and Field Work Practice that can help the process of final project courses and field work practices in the Environment of the Informatics Engineering study program at Diponegoro University can run smoothly. In addition, with this information system, it is hoped that it can help the work of each thesis coordinator and Field Work Practice which is then referred to as PKL in administering the course. Students and lecturers of the Informatics Engineering study program can also use this information system as a source of information and journal data about TA and PKL courses.

According to Handayaningsih & Pujiyono, (2010) the Informatics Study Program of Ahmad Dahlan University has a student body of 1350 students. The number of mentors is also limited. By looking at the heavy workload of lecturers with a large amount of final project guidance, it results in TA supervisors being less than optimal in providing guidance. This paper will discuss the design and implementation of a web-based consulting system application and final project guidance report. The application is run and integrated with the system in IT Center. The results of this final project guidance report are in the form of guidance cards based on input on the start to finish time of guidance. Lecturers

provide guidance by downloading material sent by students and providing comments or by having discussions by chatting. The supervisor approves for the examination of the proposal and awareness seminar. Guidance cards can be printed and used as physical evidence of submitting proposal and awareness seminar exams at the faculty and university levels.

According to (Pertiwi, 2013) Thesis Guidance System Design and Implementation of the Final Project Report (LTA) is a system design that will be built to create centralized data related to research carried out in an educational institution in this case carried out at STMIK – PalComtech Politeknik Palembang. Thesis Guidance System Design and Implementation Final Project Report (LTA) as a system that helps communication between lecturers and students to carry out face-to-face obstacles between students and lecturers. Lecturers will be able to see research reports submitted by students through worksheets. The lecturer will check and provide a record of improvement directly to the report submitted by the student. However, this system cannot be 100% replacing the role of face-to-face with lecturers, but direct discussions with lecturers on better results Thesis Guidance System Design and Implementation of Final Project Reports (LTA) is also a system that collects all research titles that have been carried out by STMIK - PalComTech Polytechnic students and lecturers. Students and lecturers can see the direct research that has been carried out in the previous semester. The system development method used in the system design process is to use the spiral method.

II.   Literature Review
Information Systems

The design of the system before the system developed for real, then the first rangangan created from the design of the system, namely the global picture of the system to be developed further. According to Teguh Cahyono,(2013) The purpose of the system design are generally gives an overview to the user about the system to be built. Components of the information system will be built, among others, are:
1.   Model sistem
2.   Input sistem
3.   Output sistem.
4.   Database.

From most representations of the above components will not be able to give you details to the user about the system to be built. The methodology used to provide to the user the depiction, among others, data flow diagrams, design of interfaces, table structure, and table relationships.

According to Cornford & Shaikh (2013), Information systems can improve organizational management in operating and help ease the work. This is achieved by collecting, storing, and processing and sharing data and information. The statement pointed out that the study of the information system requires four different purposes but are interrelated, are as follows:
1.   Computer-based digital technology, used to handle information.
2.   The user becomes part of the information system.
3.   Complete the tasks that are expected for the needs and specific requirements.
4.   Build the system.

There are two approaches in defining the system, namely the emphasis on procedure and emphasis on components or elements to it. Systems approach that put more emphasis on the procedure defines a system as follows: "a system is a network of procedures which are interconnected, gathered together to perform an activity or to complete a certain goal". A systems approach is the work of the procedure more emphasis the operation in the system.

A system approach to a greater emphasis on elements or components defining a system as follows: "the system is a collection of elements that interact to accomplish a particular purpose". A systems approach is a set of elements or components or subsystems-subsystem definition is wider and more accepted because it is in fact a system composed of several subsitem or system-system parts. Components or subsystems in a system-subsystem cannot stand on its own, everything is interconnected and interacting to form a single entity so that the target system can be achieved.

Information is data that is processed into a form that is more useful and more meaningful to who receives it, whereas the data is a source of information describing an event (the facts). Information system, according to Leitel and Davis in his book "Accounting Information System" defines that: "information system is a system in an organization that meet the needs of daily transaction processing, supporting the operation, activities and strategies of the managerial nature of an organization and provides a certain outside parties with the necessary reports".

According to Jogiyanto (2005), A common definition, information system is defined as a system in an organization who process data into a form that is more useful to achieve a goal. According to Kenneth c. Laudon and Jane p. Laudon (2008), the information system is a set of interconnected components, assembled (or get), process, store, and distribute information to support decision-making and supervision in an organization.

According to Scott (1996) says that the system composed of the elements – elements such as input, processing, and output as shown in Picture 1. According to Jogiyanto (2005) in his book entitled information systems analysis and design explained that: "the system is the network of procedures which are interconnected, gathered together to do an activity to complete certain target"

Input → Processing → Output

Figure 1. Block Of Information Systems, Scott (1996)

Model

Model The development of the system used in the Application of Industrial Practice Monitoring Information Systems (SEMPI) in the Department of Informatics Engineering uses a waterfall.

According to Rosa & M. Shalahuddin (2013) The SDLC model of waterfalls (waterfalls) is often also called the linear sequential model (linear sequential) or classic life cycle . The waterfall model provides a sequential or sequential or sequential approach to the software life flow starting from analysis, design, coding, testing, and support stages. According to Pressman (2002), the waterfall method is a type of application development model and belongs to the classic life cycle, which emphasizes sequential and systematic phases. For the development model, it can be analogous to a waterfall, where each stage is worked out sequentially from the top to the bottom. So, for each stage should not be worked out simultaneously. Thus, the difference between the waterfall method and the agile method lies in the SDLC stage. This model is also included in software development which is somewhat less iterative and flexible. Because, the process that leads to one direction is just like a waterfall.
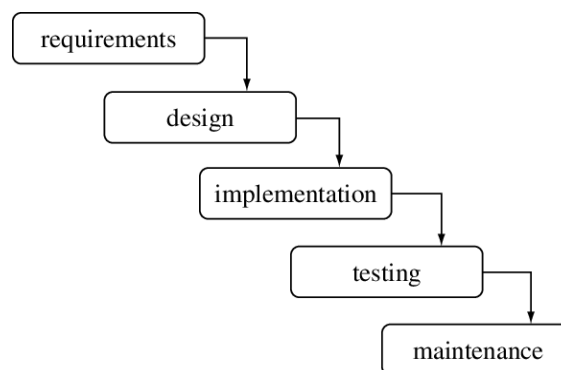
requirements → design → implementation → testing → maintenance

Figure 2. The SDLC model of waterfalls, Sommerville, (2011).

III. Research Method

The methodology used in doing this research is:

1. A Survey Of The Field.
   At this stage to preserve a survey to get the data – data administration of partners who are willing to become a place of case study research and data mining.
2. The Study Of Literature.
   At this stage the collected documents, references, books, Ebook from the internet, or other sources that are required to design, build, test, validate, and document applications.
3. Analysis and design of the application
   From the results of the literature study and the field survey results, an overview of the system design, system architecture, and system requirements analysis will be published, in addition to the initial design of the application that will be made, so that it will be produced and the interface design process is ready to be implemented.

4. Development The Application.

At this stage the most take is because the models and designs that have been made are implemented to build applications. Application development is carried out collectively and then gradually integrated.

5. Test and evaluation application.

At this stage, the completed application will go through several test scenarios and test results will be evaluated to determine whether the application is worth releasing or needs further maintenance.

IV. Result and Discussion
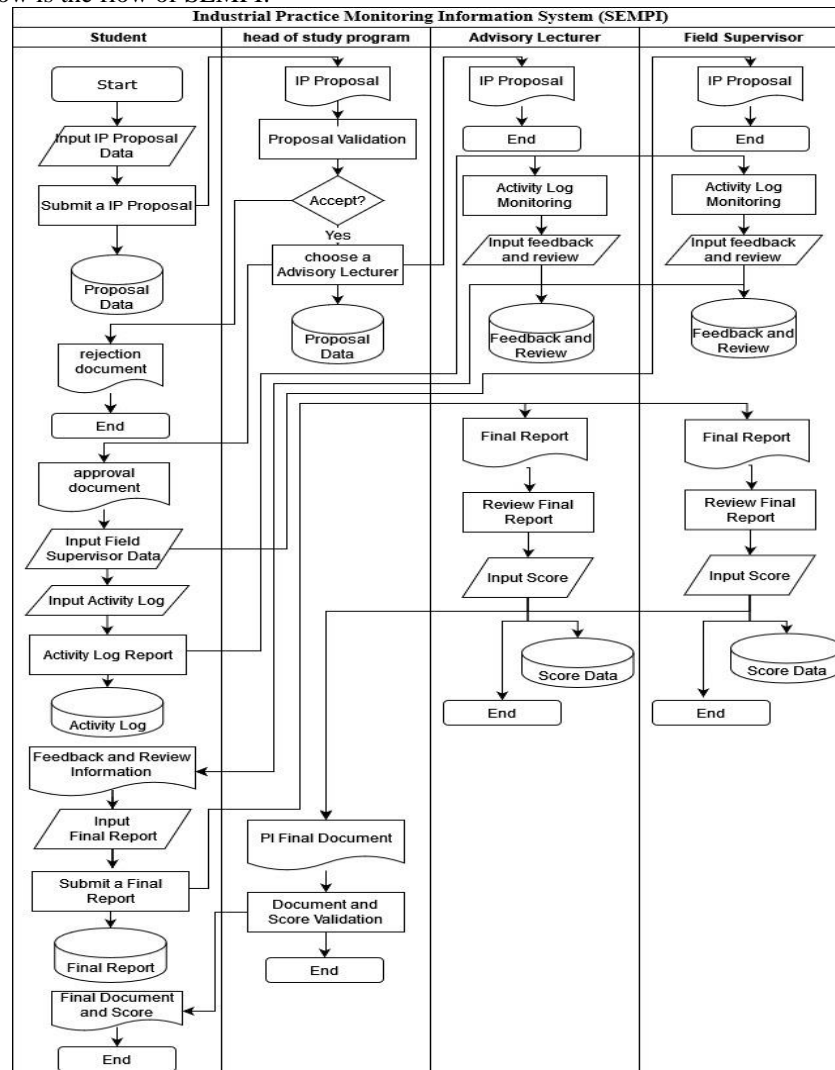
Below is the flow of SEMPI:

Figure 3. Flow SEMPI

On the context diagram Picture 3 above, explain that there are 4 users who are involved in the system, such as:

1. Advisory Lecture

At this Advisory Lecture, user can do activity log monitoring, review final report abd input score.

2. Head of Department

This Head of Department in user can do proposal validation and choose a Advisory Lecture

3. Field Supervisor

At this Field Supervisor, user can do activity log monitoring, review final report and input score

4. Student

At this Student, user can do submit proposal, input field supervisor data, input activity log, input final report.

Here is the initial view of the SEMPI application

Figure 4. SEMPI *app start view*

Based on picture 4 above, there are options for home menu, PI management, Announcements, master and options to log in or log out
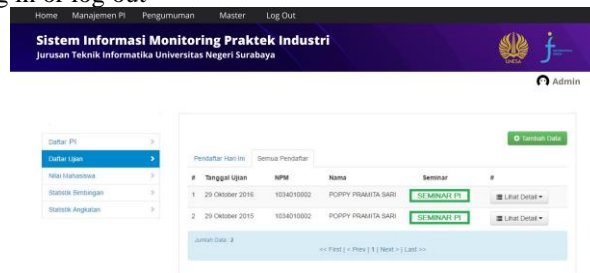

Figure 5. SEMPI application management and monitoring page

Based on figure 5 above, it appears that the SEMPI management and monitoring admin page display, there is a menu option for the PI list, exam list, student scores and guidance statistics.

V.   Conclusion

The conclusion that can be drawn in this study is the production of an Industrial Practice Information System that can help the process of Industrial Work Practices in the Department of Informatics Engineering, State University of Surabaya run smoothly. In addition, with this information system, it is hoped that it can assist the work of the department in carrying out the administration of industrial practice activities.

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