

Implementation of Sharing Knowledge Management in Internship Program using Web-based Information System

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Abstract. Knowledge management and especially knowledge sharing are popular topics in the management literature. Sharing and accessing knowledge wherever it is located and whenever it is required is crucial to organisations operating in a business environment characterised by globalisation. We argue that computer supported collaborative work will enhance and facilitate knowledge sharing. However, we also acknowledge that successful knowledge sharing is not primarily dependent on collaborative technologies. Internship opportunities encourage an authentic learning experience by offering opportunities to integrate course knowledge with practical experience in specific context. With the advent of modern technology, the use of content management systems provides the opportunity to help students document their own learning process from internship experiences. This research aims to produce information systems in industry practices to implement sharing of knowledge management. These systems are made using an interactive website technology based between the four main components, namely students, teachers supervising as well as supervising the industry. Web PI System contains features news internship, schedules, registration, daily journal, portfolio report, final report and guidance system via online chat. PHP, CodeIgniter, CSS, HTML, JavaScript, MySQL Database and the Apache Web Server is the technology used to develop the internship System. In this research include systems analysis, literature review, system design, system implementation and testing of the system. The results showed that the resulting the system can be used as a medium of communication for all parties involved in internship. This system can help the student and supervisor in the process internship program activities.

1. Introduction

In the new era, knowledge is regarded as a factor of production together with land, labour, and capital. Knowledge is recognised as the most important resource in the organisation [1,2]. From the point-of-view of an organisation, performance can be improved by providing useful and relevant knowledge to employees [3,4]. It is considered as the primary source of competitive advantage [5] and critical to the long-term sustainability and success of the organisation [6].

Vocational education institutions serve as a reservoir of knowledge and are no longer just providing knowledge to students. Information practices and learning strategies known as knowledge management are gaining acceptance in the field of education [7]. These institutions manage, blend, and share knowledge among the members themselves. Thus, knowledge sharing is inevitably



challenging and an important concept in vocational education institutions. This is evident by the fact that several vocational institutions, particularly in the developed world have been receiving grants to implement knowledge management practices.

Vocational and technical education plays an active role as a man-power training tool in determining the society's welfare level. The targets that make vocational and technical education economically compulsory can be listed as follows: Meeting the needs of the labour market, increasing the efficiency in production and quality, reducing unemployment, producing cheaper and qualtier goods and services, increasing the competitiveness in both domestic and international markets, using the resources according to the principles of efficiency and rationality, monitoring and interpretation of modern technology and it's reflection on the production of the goods and services, materializing fast-stable and healthy economic growth.

Internship applications that enable students to communicate with businesses, and with the references gained after graduation, it helps them to have their services hired in a rapidly changing and globalizing business world, has a great importance in vocational education. Internship experience can be seen as a factor that makes individuals different from others during their career periods.

During the internship period, which is also called job training students having to known what career they would like to pursuit, make better plans the future by determining the topics and chapters they are interested. Whilst academic information's turns into observation based practical applications in work environment they become permanent information. Throughout this education they gain new talents, practical knowledge and vision in order to solve problems they may have to encounter during working life, in most appropriate manner and as soon as possible within the framework of logic and information. Meantime they understand the importance of team-work and their optimum time using and responsibility skills would develop hence they grow in confidence in themselves and their courage would increase.

From the results of field observations, activities guidance internship in SMK is still less than optimal. This is based on the less than optimal teacher role during internship implementation. The teacher as advisor does not know the regular achievements of the students and the advisor does not visit the student in the industry [8]. Furthermore, with daily journals that use paper as is often done, there are often undesirable things that are reports that are damaged or lost when collected as a condition to attend an industry practice seminar. Another issue concerning daily journals is the lack of coordination with advisor so that daily journals are usually made abruptly at the end of internship activities when a final report is made.

With the latest technology, the use of web technologies provides a system to help students document and report their own internship program experiences. This information system of industrial practice is created using the PHP programming language (PHP: Hypertext Preprocessor) as the System Backend. Then use the HTML, CSS and JavaScript languages on the Frontend system section. In the design, the Backend system was created using the Code Igniter PHP Framework. The goal is to allow developers to develop projects faster while writing code from scratch. By providing a set of libraries for commonly needed tasks, as well as a simple interface and logical structure to access the library. On the database side of this system using MySQL is a database application that applies the concept of relational. It is necessary to create data storage such as student data, teachers, mentors, journal contents and portfolio contents.

2. Methods

The methodology used in this research is Design Science Research Method (DSRM). The design science research methodology (DSRM) presented here incorporates principles, practices, and procedures required to carry out such research and meets three objectives: it is consistent with prior literature, it provides a nominal process model for doing design science research, and it provides a mental model for presenting and evaluating design science research in information system. The design science process includes six steps: problem identification and motivation, definition of the objectives for a solution, design and development, demonstration, evaluation, and communication. We

demonstrate and evaluate the methodology by presenting four case studies in terms of the DSRM, including cases that present the design of a database to support health assessment methods, a software reuse measure, an Internet video telephony application, and an information system planning method. The designed methodology effectively satisfies the three objectives and has the potential to help aid the acceptance of design science.

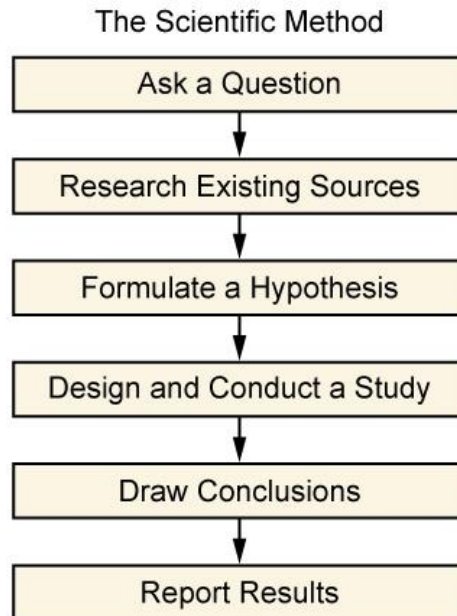


Figure 1. DSRM flowchart

Figure 1 describes how the method of designing information systems developed. In the early stages of research i.e. start with the study of literature. Stages of the study the literature done by collecting various theories and concepts from various sources relating to the activities of internship at SMK.

The second stage in the research is identifying the problem and motivation. Identification of problems occurred (which became a case study research). On this research can be written that became the identification of problems of internship in SMK are as follows:

1. SMK does not provide a list of companies that accept internship and no cooperation between departments with related companies for the internship program.
2. The role of teacher less well during the implementation of internship program. Teachers are not aware of student achievements made during internships and teachers do not visit student internships regularly
3. Communication between the teacher with mentors from industry and between teachers with student is not good.
4. Job description students during implementation of internship is already quite clear and understandable
5. The availability of time for teachers as mentors and students is very limited due to limited distance of the place of internship.
6. Daily Internship journal still using paper.
7. Evidence of photographic documentation of activities, events, videos and documentation tools when internship is still not good structured.
8. A lot off cause of journal daily report daily if using paper, the cases is missing or damaged when collected.

The third stage in the research based on the methodology of DSRM is the determination of the purpose of the research. Then in the fourth stage is the design and development of systems. After finished designing then do step demo to see the results of the design of the system. If the results are still not appropriate then repaired back to the stage of design

The next step is testing the system. Testing system using test black box with Testing Equivalence Partitioning method (EPT). The EPT is black box testing methods that break down or divide the input domain from the program into data classes.

2.1. Database analysis

Relationships modelling or relationships between objects or entities and their attributes, use the tools that is Entity Relationship Diagram (ERD). ERD diagram illustrates the linkages between the table and the fields in it on a database system (I. P. A. E. Pratama, 2014). As for the relationship between entities that exist on the system depicted in Figure 2.

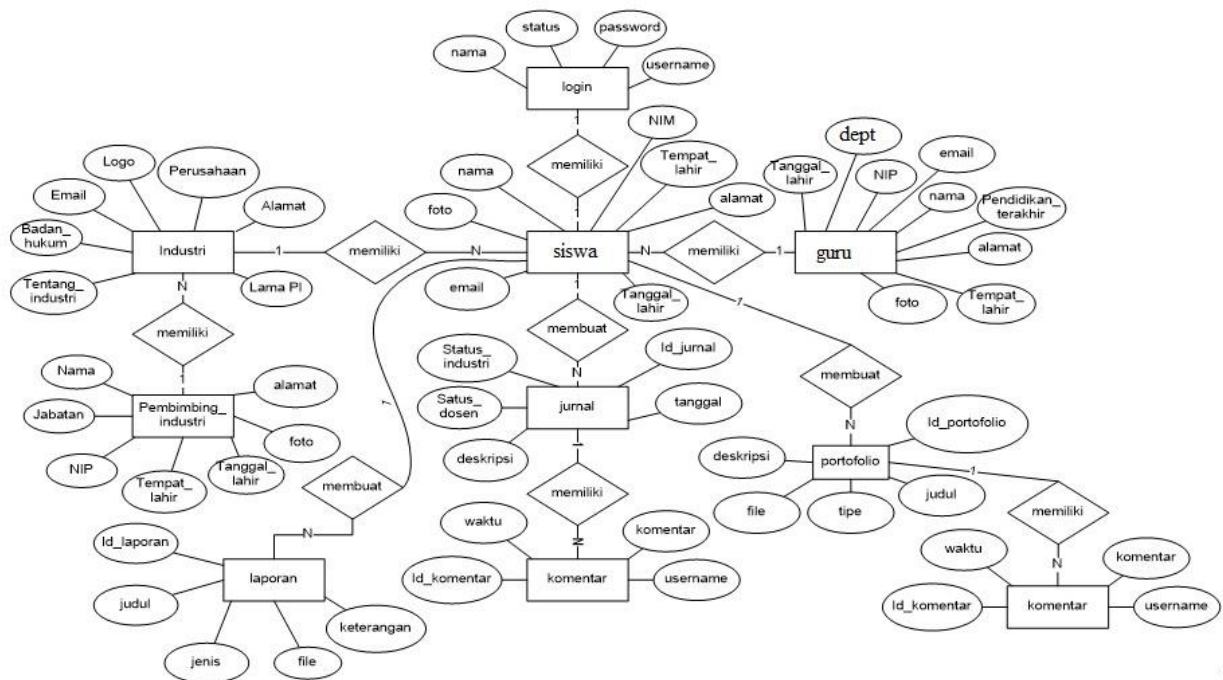


Figure 2. Entity Relationship Diagram (ERD)

Figure 2 illustrates the relationship (relation) between entities system. The administrator manages this system, every system entity has information about incoming journals, incoming portfolios and incoming final reports.

2.1.1. Data Flow Diagram (DFD). Data Flow Diagram (DFD) is an illustrates how the flow of incoming and outgoing data in the system. DFD is created as a tool to understand the flow of data in a system in a structured manner. Here is the level 1 DFD of the System

Flowchart data indicate the division of the existing processes in the system into six main processes namely data login process, register, log in, internship data proses, journal accepted, edit your profile and comments.

On DFD level 1 can be seen from each process will get the insert or the output of an External interactor IE from students, teachers, mentors and Admins. It is this process that would process data that is required by External interactor. Then after the process successfully it will be saved into each data store to data storage processes.

In the data flow diagram Level 2 Process 4 described the processes contained in the processing of PI data. There are four sub-processes that data journal process, data portfolio process and data reporting.

Students as the main actors in this system have extensive access to each process. Starting from access create, edit and delete both journal, portfolio and report. The role of a teacher and industry advisor only looks at and validates data created by the student. In DFD Level 2 Process 4 above has clearly explained the core of the system built. That is the daily reporting process of internship that can be easier for both students and for mentors. Therefore, for DFD level 2 on this system is sufficient on the details in process 4.

2.1.2. Database design. Database design is used to design the connected data and stored in a RDBMS (Relation Data Base Management System). To illustrate it used the relation scheme and table structure. In the relation schema described the relationship between each database table, along with the existing data on each table.

2.1.3. Interface design. The interface is a specification of the display system that will be built. Interface designed in such a way as to facilitate the user in operating the system. Homepage interface depicted in the figure 3.

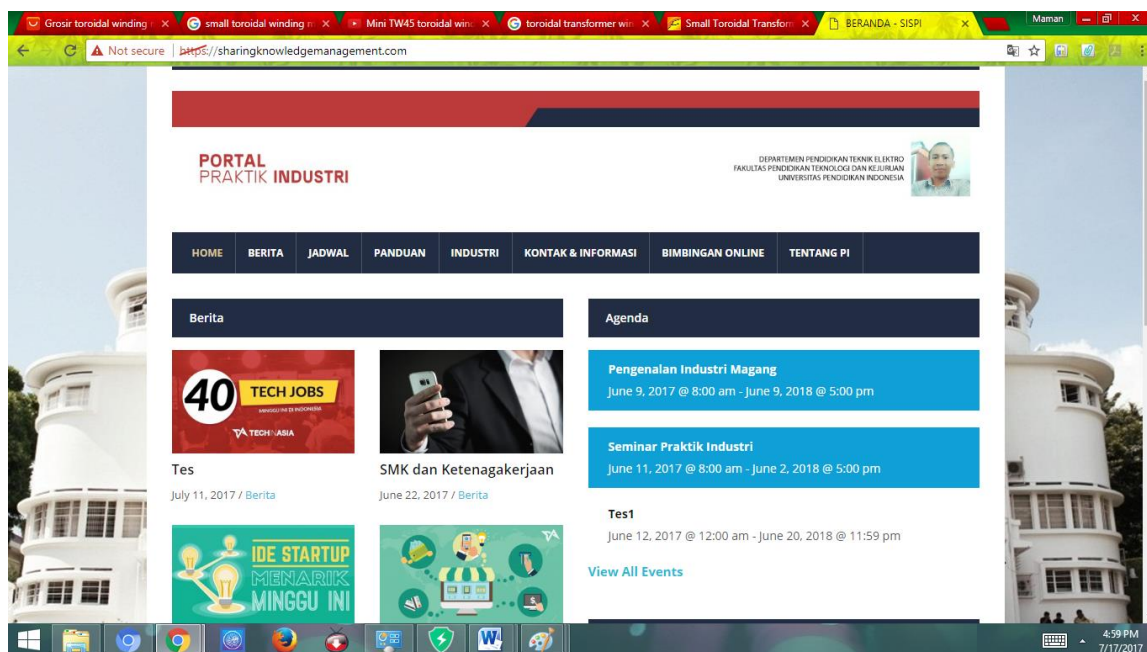


Figure 3. Home Page Interface

Home Page Interface is a preview of first Page of the system that contains highlighted news headlines, current articles, academic calendars, buttons to enter industry practice systems, address information footer row, contacts and article subscription buttons. In addition, there are some menus that will continue to a certain depth, such as: internship guides, list of companies, as well as the latest schedule of activities. The login interface is depicted in Figure 4.

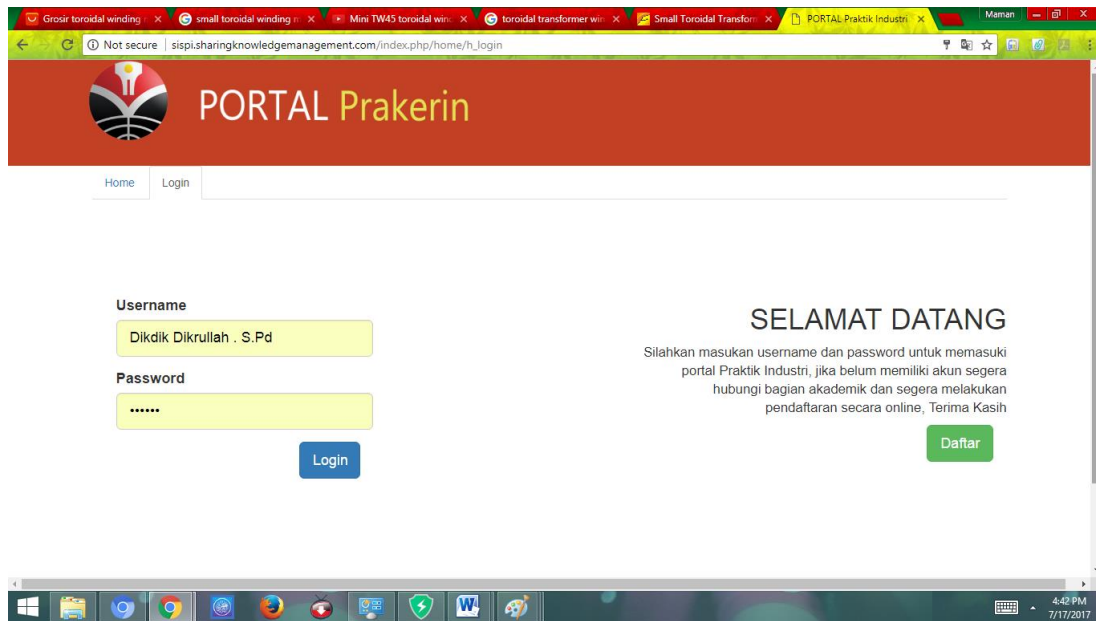


Figure 4. Login Interface

The login page interface contains the username and password for access to the system. Furthermore, each entity can fill and edit the identity itself and the requirements that must be adjusted.

The interface of the journal page is depicted in Figure 5. This interface can be accessed when the student or administrator successfully logs into the system. The use of this page is intended to fill the daily activities of students in industrial practice. This is as students fill in daily journal sheets given by departments when internship done.



Figure 5. The interface of the student journal page

First process is by pressing the add journal button so that will come out add journal page. Then will come out the form to be filled according to the daily report of industry practice. The form is the date of daily journal implementation and details of daily journal activities. In figure 6 can be seen the journals page interface.

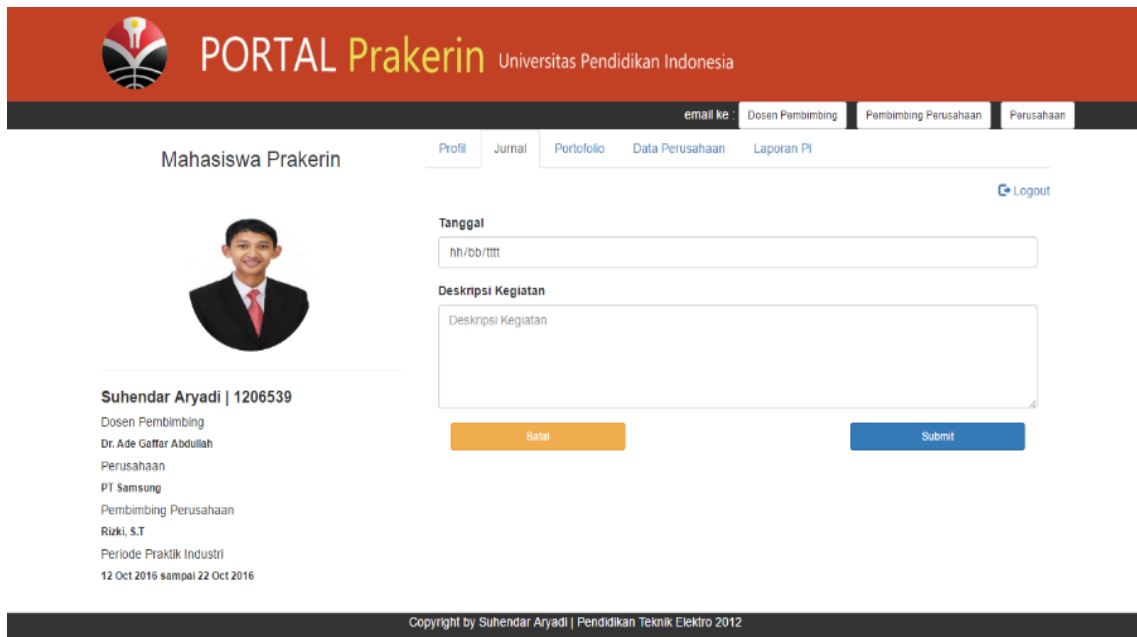


Figure 6. The journals page interface

A filled daily journal will be displayed in table form as shown in figure 7. In this daily journal, there is an accepted status (ACC) or approved by the supervisor of the company's and teachers. This status is the same as the signature required to verify the daily journal report filled out by the student as a report form for internship responsibility. In addition, the accepted system becomes an effective monitoring system for teachers and supervisor of the company's.



Figure 7. List of journals

3. Results and discussion

Software testing is an important thing that should not be missed in the software development cycle. Through software testing will be known whether the system built meets the criteria made when the design of the system. In testing the system will be used a software testing approach that is testing black box. Black box testing focuses on the functional requirements of the built system. With this test, it is possible to find functional errors by testing various input conditions into the system.

Table 1. Testing plan

Test Class	Test Cases	Test Method
First Page	<ul style="list-style-type: none"> Showing information about internship 	<i>Black box</i>
Login	<ul style="list-style-type: none"> Searching information Showing login form Fill the data on the form Login authentication 	<i>Black box</i>
Registration	<ul style="list-style-type: none"> Showing registration form Fill the data registration Saving data 	<i>Black box</i>
Student profile editing	<ul style="list-style-type: none"> Showing student profile edit form Fill the student data editing Saving student data edited 	<i>Black box</i>
Company profil editing	<ul style="list-style-type: none"> Showing company edit form Fill the company data editing Saving company data edited 	<i>Black box</i>
Add Journal	<ul style="list-style-type: none"> Showing journal adding form Fill the journal Saving journal 	<i>Black box</i>
Showing journal	<ul style="list-style-type: none"> Showing jurnal Fill out the comment form 	<i>Black box</i>
Add Portofolio	<ul style="list-style-type: none"> Showing add portofolio form Fill out the add portofolio Saving new portofolio 	<i>Black box</i>
showing portofolio	<ul style="list-style-type: none"> Showing all portofolio 	<i>Black box</i>
internship report	<ul style="list-style-type: none"> Showing all report 	<i>Black box</i>
Add report	<ul style="list-style-type: none"> Showing add report form Add report Saving report 	<i>Black box</i>
Showing report content	<ul style="list-style-type: none"> Show report content 	<i>Black box</i>
Company Data	<ul style="list-style-type: none"> Showing company data 	<i>Black box</i>
Company dataEdit	<ul style="list-style-type: none"> showing company edit form fill out company data save data company 	<i>Black box</i>
Teacher Profile	<ul style="list-style-type: none"> showing teacher profil 	<i>Black box</i>
Teacher profile editing	<ul style="list-style-type: none"> showing teacher edit form fill out teacher data saving teacher data 	<i>Black box</i>
industrial instructor profile	<ul style="list-style-type: none"> showing industrial instructor profile 	<i>Black box</i>
industrial instructor profile editing	<ul style="list-style-type: none"> showing industrial instructor profile form fill out industrial instructor profile saving industrial instructor profile 	<i>Black box</i>
Admin	<ul style="list-style-type: none"> showing admin page 	<i>Black box</i>
Login Data	<ul style="list-style-type: none"> showing login data list 	<i>Black box</i>
Student data	<ul style="list-style-type: none"> showing student data 	<i>Black box</i>

Table 1. Cont.

Teacher data	• showing teacher data	<i>Black box</i>
Industrial instructor data	• Showing industrial instructor data	<i>Black box</i>
Company data	• Showing company data	<i>Black box</i>
portofolio data	• showing portofolio data	<i>Black box</i>
Report data	• showing report data	<i>Black box</i>

From the table above describes the testing system that will further split into testing Equivalence Partitioning Testing. Testing Equivalence Partitioning is a method of testing a black box that breaks down or divide the input domain from the program into data classes. This form of testing is done by trying the possibility conditions of valid input in the circumstances or not. The condition of the input can be either a numeric value, range of values, the values of the Boolean condition connected. Following is the result of testing information systems internship on condition of input data is valid. Based on the results of the testing of the system that has been done, functionally the system can already use and produce output as expected.

4. Conclusion

From the results of testing this system can run as planned and meet the procedure as the system information that can be used to streamline the process of sharing knowledge between students with students, or students with tutors.

These systems facilitate students in the activities of internship in the industry. This system will solve some of the problem possibilities when it usually occurs on the daily journal reports students such as: Delay, suspend daily journal reports the documentation of activities, the difficulty of consulting with teachers and counsellors and also lost of the reports.

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