



Analysis and Design of Online Management Information Systems of Training to Support Policy the Independent Learning on the Independent Campus

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Abstract - The Independent Learning Policy - Independent Campus (called MBKM) launched by the Minister of Education and Culture is a framework to prepare students to become strong scholars, relevant to the needs of the times. Minister of Education and Culture Regulation No. 3 of 2020 gives students the right to study 3 semesters outside their study program. Through this program, there are wide opportunities for students to increase their knowledge and competence in the real world, not only in classrooms and laboratories, but also in industry, community service centers, research centers, and the general public.

The Independent Learning Policy - Independent Campus is basically in line with the implementation of vocational education, namely the existence of a training / Field Work Practice period in the industrial world during their education period. The difference lies in the length of the training period, which previously only lasted 1 semester, now it is 3 semesters. This has also led to the expansion of positions and training materials. On the other hand, the industrial world also actually needs the help of Field Work Practice in daily operations at the company, especially during busy times. So far, information about the existence of training, both in the industrial world and in educational institutions, is very limited, resulting in a gap in information between the needs of Field Work Practice by industry and their availability in educational institutions.

A web-based information system for field work management for facilitating independent learning policies for independent campuses is designed and built to bridge the information gap between the needs of Field Work Practice between industry and educational institutions.

This research is in the form of designing a system that produces certain software. In this study using the Waterfall method, which is a sequential and systematic software development method consisting of : analysis, design, coding, and testing.

Keywords: Analysis and design, Field Work Practices Information System, MBKM

I. INTRODUCTION

The rapid development of science and technology today has brought very rapid changes in various aspects of life. Jobs and the way we work are changing, many jobs are being lost, while new types of jobs are emerging. Economic, social, and cultural changes also occur at a high rate. In this very dynamic time, universities must respond quickly and appropriately. Learning transformation is needed to be able to equip and prepare higher education graduates to become a superior generation. generation that is responsive and ready to face the challenges of the times. Currently, creativity and innovation are important keywords to ensure Indonesia's sustainable development. Students who are currently studying in universities must be prepared to become real learners who are skilled, flexible and tenacious (agile learners).

The Independent Learning Policy – Independent Campus launched by the Minister of Education and Culture is a framework to prepare students to become strong scholars, relevant to the needs of the times, and ready to become leaders with a high national spirit. Minister of Education and Culture Regulation No. 3 of 2020 gives students the right to study 3 semesters outside their study program. Through this program, there are wide opportunities for students to enrich and improve their insights and competencies in the real world in accordance with their passions and ideals. We believe that learning can happen anywhere, the universe of learning is limitless, not only in classrooms, libraries and laboratories, but also in villages, industries, workplaces, places of service, research centers, and in the community. Through close interaction between universities and the world of work, with the real world, universities will be present as a spring for the progress and development of the nation, directly contributing to the coloring of the nation's culture and civilization [1].

Law on the National Education System No. 20 of 2003, Chapter VI Fourth Part on Higher Education, Article 20 states that universities can take the form of an Academy, Polytechnic, College, Institute, or University.[2]

Furthermore, in the Law on Higher Education No. 12 of 2012, Part Three, Paragraph 2, article 16 states that Vocational Education is a higher education diploma program

that prepares students for jobs with certain applied skills up to an applied undergraduate program. [3]

Polytechnic is one of the universities that primarily provides vocational education to prepare students for jobs with certain applied skills in accordance with the needs of the industrial world.

The The Independent Learning Policy - Independent Campus is basically in line with the implementation of vocational education, namely the existence of a training / internship / Field Work Practice period in the industrial world during their education period. The difference lies in the length of the training period, which previously only lasted 1 semester, now it is 3 semesters. This difference also led to the expansion of positions and training materials. On the other hand, the industrial world actually really needs the help of Field Work Practice in daily operations at the company, especially during high or peak seasons. So far, due to the lack of information about the existence of training between the industrial world and educational institutions, there is often an information gap between the need for Field Work Practice by industry and their availability in educational institutions. This limited information can be an obstacle for students, because students find it difficult to get a training place. Meanwhile, the industrial world also has difficulty getting Field Work Practice because of the lack of information on the availability of Field Work Practice from educational institutions. Difficulties will be more complex, because in MBKM policy students need internship courses, not just internships, namely internships and practical lectures for certain subjects that must be followed in industry.

Today the progress of information and communication technology is growing very rapidly, especially internet-based technology because with this technology almost all information can be obtained very easily because it can be accessed at any time and from any point in the world [4]. Technological advances can be a solution to the information gap between the need for training places for students and the need for industry to get Field Work Practice.

A web-based information system for field work management for facilitating independent learning policies for independent campuses is designed and built to bridge the information gap between the needs of Field Work Practice between industry and educational institutions. This information system will also provide facilities for prospective Field Work Practice, industrial personnel employees and Field Work Practice administrators to manage data and all needs related to the implementation of Field Work Practice. With the creation of this system, it will greatly assist the smooth implementation of the independent campus learning policy as instructed by the Ministry of Education, Culture, Research and Technology.

II. RESEARCH METHODS

This research is in the form of designing a system that produces certain software. In this study, the Waterfall or

linear sequential method is used, which is a sequential and systematic software development method consisting of [5]:

1. Analysis: the process of gathering software requirements, such as the information domain, performance and required interfaces. This stage will produce software requirements specifications.
2. Design: a multi-step process consisting of data design, architectural design, interface design, and procedural/algorithm details that will be applied to the next step, namely the creation of program codes.
3. Coding: the process of translating designs into program codes that can be read and executed by a computer machine. In this case, coding will be used using the PHP Triad program which consists of the PHP programming language, MySQL database, and Apache server. [6][7][8][9]
4. Testing: when the code is created, then testing begins, which consists of internal logic testing and external functional testing to eliminate errors and ensure the results are as required. In addition, this stage is also intended to get input so that the resulting system can be used easily by users later.

III. RESULTS AND DISCUSSION

A. Systems Analysis and Systems Analysis Models.

Analysis model is a series of models which are technical representations of the results of system analysis. The analysis model is in the form of a diagram that describes the system requirements, so that it can be the basis for software design in accordance with the specified specifications [4]. The analysis model can be seen in Figure 3.1.

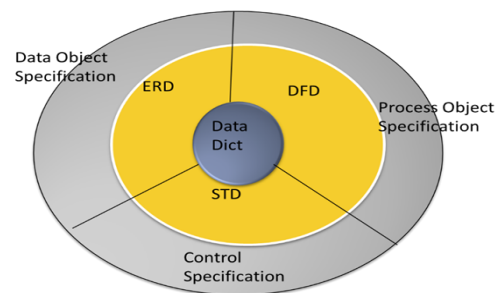


Figure 3.1. Analysis Model

1). Entity Relationship Diagram (ERD)

ERD is a graphical notation of a data model that describes abstractly the data stored in the system.

In this Field Work Practices management system there are entities, namely:

- a). Entities of prospective apprentices, namely the main object which is the main part that will be discussed in this system. This entity carries with it the data contained in it, such as name, address, latest education, origin of

college, email, cellphone number, training position and others.

- b). Entity HRD (Human Resources Department) Officer, which is a member of the industrial world who manages the needs of apprentices. This entity brings with it the data contained in it, such as company name, address, training position, department, period, terms, recipient contact and others.
- c). Field Work Practices Coordinator Entity, which is the manager of all Field Work Practices activities that bridge educational institutions and the industrial world.

The results of the Entity Relationship Diagram analysis can be seen in Figure 3.2.

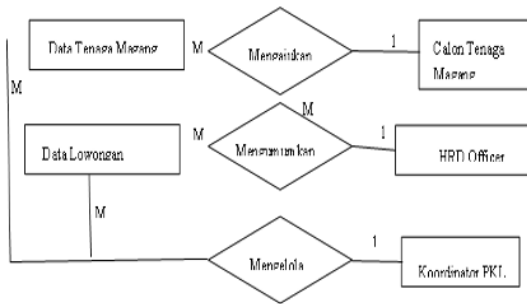


Figure 3.2. ERD of System

2). Data Flow Diagrams (DFD)

DFD describes the flow of information and the transformations that are applied as data moves from input to output. DFD can be partitioned into parts that represent the multilevel flow of information, which can also provide a functional modeling mechanism and information modeling.

DFD level 0 and and DFD level 1 for this system is shown in Figure 3.3. and figure 3.4.

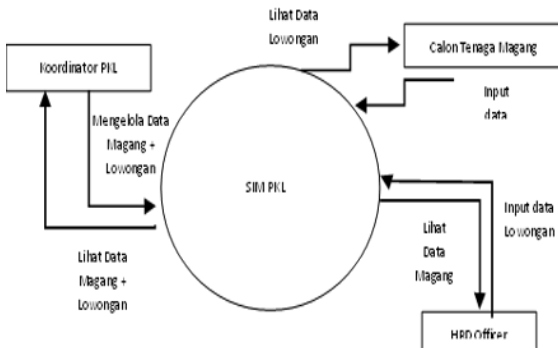


Figure 3.3. DFD Level 0 of System

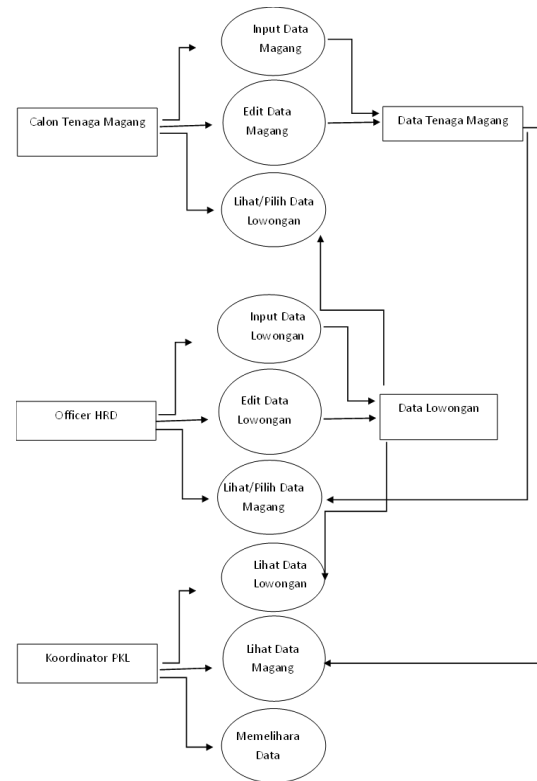


Figure 3.4. DFD Level 1 of System

3). State Transition Diagram (STD)

State Transition Diagram (STD) / State transition diagram represents the behavior of the system by describing its state and events that cause the system to change its state in response to external inputs. The STD of the system can be seen in Figure 3.5.

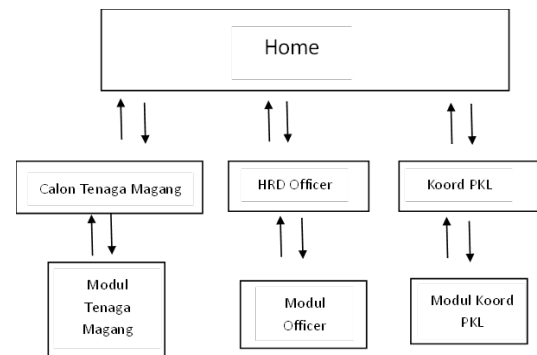


Figure 3.5. STD of System

B. System Design and System Design Model

It is a technique for defining software that enables its physical realization. The design process is a transformation of the analysis model into a design / design model that produces data designs, architectural designs, interface designs, and procedural designs.

The transformation of the analysis model to the design model can be seen in Figure 3.6.

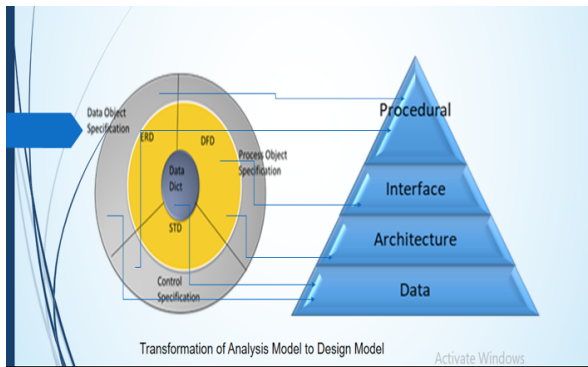


Figure 3.6. Transformation of Analysis Model to Design Model

1). Data Design

Data design is the transformation of ERD into a relational database in the form of data tables. From the ERD in Figure 3.1, two data tables are obtained, namely the Trainee table and the Trainer table.

a). Trainee Table

This table is a collection of data about the identity of prospective apprentices/Field Work Practices inputted by prospective apprentices/Field Work Practices. The structure of the Trainee table can be seen in table 3.1.

Table 3.1 Trainee table structure

| Field | Type | Size |
|----------|---------|------|
| Username | varchar | 20 |
| Password | varchar | 32 |
| Nama | Varchar | 40 |
| Alamat | Varchar | 50 |
| tglhr | date | |
| pend | Varchar | 30 |
| pt | Varchar | 20 |
| jurusan | Varchar | 20 |
| hp | Varchar | 20 |
| email | Varchar | 30 |
| Posisi | Varchar | 20 |
| Dept | Varchar | 20 |
| lainnya | varchar | 30 |

b). Trainer Table

This table is a collection of data on the list of vacancies available for prospective Field Work Practice who are inputted by employees from industrial institutions. The structure of the vacancies table can be seen in table 3.2.

Table 3.2. Trainer table structure

| Field | Type | Size |
|----------|---------|------|
| Username | varchar | 20 |
| Password | varchar | 32 |
| Nama | Varchar | 40 |
| persh | varchar | 20 |
| Alamat | Varchar | 50 |
| lokasi | Varchar | 40 |
| Dept | Varchar | 30 |
| Posisi | Varchar | 20 |
| jurusan | Varchar | 20 |
| Periode | Varchar | 20 |
| Syarat | Varchar | 30 |
| kontak | Varchar | |
| hp | Varchar | 20 |
| email | Varchar | 20 |
| lainnya | varchar | 30 |

2). Architectural Design

Architectural design aims to develop a modular program structure so as to form the program structure and the relationship between the data structure and the interface that allows data to flow in the program. The architectural design for the system to be built is shown in Figure 3.7.

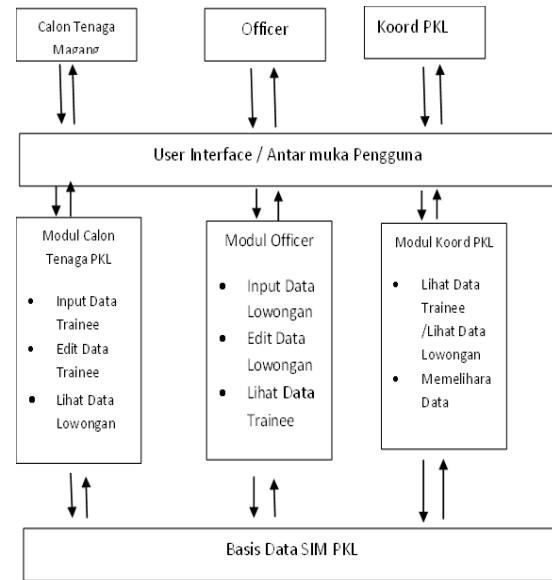


Figure 3.7. Training MIS Architecture Design

3). User Interface Design

The design of the user interface is the design of the interaction between the user and the computer (system). Interaction can take the form of entering data into the system or displaying output to the user or it can be both. DFD is the basis for interface design.

This system uses many forms of user interface, here will be given an example as shown in Figure 3.8.

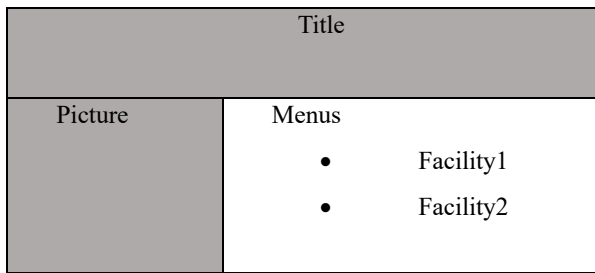
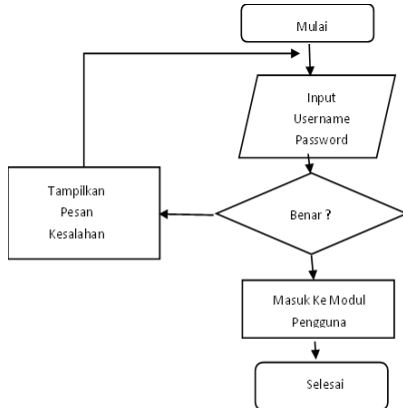


Figure 3.8. User Interface Design

4). Procedural Design

Procedural design transforms the structural elements of the program architecture into a procedural description of the software components. STD is the basis for procedural design.

There are several procedural designs used in the preparation of this information system, one of these designs will be given here, namely the design of a control algorithm for a user's login using flow chart shape (figure 3.9).



Gambar 3.9. Rancangan Prosedural Login Pengguna

Figure 3.9. User Login Procedural Design

IV. CONCLUSIONS AND SUGGESTIONS

A. Conclusion

- 1). The Field Work Practices Management information system is designed and built to bridge the needs between prospective Field Work Practices workers who need a training place and the industry which requires Field Work Practices workers.
- 2). The analysis and design of the Field Work Practices management information system resulted in 3 modules for 3 groups of users, namely: prospective Field Work Practice, officers from the human resources department and Field Work Practice coordinators, each of which has the required facilities. The results of this analysis and design are used for the coding stage.

B. Suggestions

This system has not been able to provide all departmental databases and positions / positions in all institutions, therefore the system needs to be developed with the database, so that it is more complete and users can more easily use this system.

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