The development of information system of IT-Based scientific works to improve the quality of the students’ final project publication

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Abstract. The long-term goal of this research is the development of Information System of Scientific Works at Universitas Negeri Makassar that can be accessed by various parties related to the publication of the final assignment of students anytime and anywhere without any time and location limitation so that the final assignment of students can be published and protected from plagiarism. Specific targets achieved from the development of this system is the creation of information system of scientific work that will be useful for tracking the final assignment of students and the publication of the final task of students so that plagiarism can be minimized and or prevented. This is in accordance with the Directorate General of Higher Education DIKTI No. 152/E/T/2012 on January 27th, 2012 about the Publication of Scientific Works. To achieve these objectives, the information system mining process will use the Plomp Development Model (1997) consisting of a preliminary investigation phase; design phase; realization/construction phase; test phase, evaluation and revision; and implementation phase. The development of this information system uses PHP programming language based on CodeIgniter Framework with MySQL database.

Keywords: Information System, PHP, CodeIgniter, Scientific Works, Universitas Negeri Makassar.

1. Introduction
Rapid development and progress in the field of information and communication technology requires one to follow those development and advancement. This development has been widely used by many parties. These developments and advancements also provide great opportunities for the efficient and accurate management and utilization of information. Well-implemented technology will reduce the paths of the process stages of the work process, which was originally done manually, will be replaced by the system. The use of such technology is the basis for the implementation of information system.

The reporting process of a scientific work that was originally based on hardcopy is replaced by softcopy-based reporting. Hardcopy-based reporting is intended to avoid and detect any plagiarism about reporting and the existence of softcopy-based archives. This softcopy collection will be very useful for future users, so it is necessary to get the softcopy collected to be properly documented.

Such reporting is usually done for students' final assignment. One of the requirements for a student in graduation or obtaining an academic degree is to complete the final project in this case a Thesis for S1 degree. Final Assignment is a means to determine the ability of a student whether he/she has mastered the knowledge given and feasible to serve in the community in accordance with the
competencies taught by the campus. Final Assignment or often abbreviated as TA is the first step to be able to learn in the world of work that will be faced with their final project, students can prepare to complete projects in their later working life [1].

In addition to functioning as student academic reporting, it is also used for honorarium reporting of the exam committee. In a thesis, it is recorded a committee to an exam. At the State University of Makassar, the committee of an exam is a team assigned by the Decree of the Dean at the suggestion of the Chairman of the Department in order to test student thesis consisting of: (a) Chairman of the tester is the Dean or Vice Dean, (b) the Secretary of the committee is the department chairman or secretary (d) Examiners I and II are lecturers of the department who have been proposed by the head of department to the Faculty Leaders [2]. Fourth committee of an exam is needed to do the recapitulation of how many lecturers who become the chairman of the exam, exam secretary, supervisor and examiner. Additionally, this data can also be used as a benchmark for lecturers in order handling academic rank promotion (kum part of teaching) or honorarium payment process of exam committee. The process of data collection like this at the State University of Makassar is still done manually, so that if required data about the test data takes a long time because the data is still listed in the papers. In addition to data collection of the final assignment, the most important is also the data publication of the final assignment. This publication is in accordance with the Director General of Higher Education No. 152/E/T/2012 on January 27, 2012 on the Publication of Scientific Works. This publication also aims to avoid plagiarism or plagiarism free.

Sometimes a final assignment is not done by the global publication process for example through journals or online publications. Such final assignments are sometimes misused by some parties to be duplicated by only changing the subject of the study alone. If this final duplicate is first published in an online publication, then the final duplicated assignment will be indicated as plagiarism. Whereas what should be indicated plagiarism is a duplicate of the final assignment. With the rapid development of technology today it is possible to do so.

To overcome the problems and challenges outlined above, it is necessary to design a study of the development of information system IT-based scientific work to improve the quantity and quality of students' final assignment publications in Universitas Negeri Makassar.

2. Method
The model used in this study is a Research and Development (R & D) model approach. According to Sugiyono [3], R & D research method is a research method used to obtain a particular product and for the product that can be used properly it is necessary to test the effectiveness of the product. The development of this information system follows the development phases developed by Plomp (1997) or known as the Plomp model. This research was conducted on Faculty of Mathematics and Natural Sciences in the University of Makassar at Parangtambung UNM Campus, Jalan Daeng Tata Raya, Makassar. This information system is developed by using PHP website programming (CodeIgniter framework) and MySQL database.

3. Result and Discussion
This section will discuss about the development of information system.

3.1. Context Diagram
Context diagram is a depiction of an outline of the scientific work of information system to be designed and shows the relationship between users who are directly involved with the system. The following is the design of diagram context of this study.
3.2. Use Case System

In the use case part, students have four access rights in the information system: (1) propose the thesis data, (2) look at the details of thesis publications, (3) edit the publication if the publication has not been approved by the operator of the study program, and (4) print out the approved publication results. The result of the publication by the students is then processed by the operator of the study program. Program operators have access rights to: (1) look at the publication data proposal and detail of...
publications, (2) approve submissions publication, (3) print the recapitulation of student publications. As with the operators of the study program, Faculty operators also have access rights to view the publication upload data by the students and see the publication in detail, and can see the recapitulation of student publications of each course.

**Figure 3** Flow Chart of Information System of Scientific Works

3.3. The Display of the Information System

**Figure 4** Initial View of Publication Information System of Final Assignment
Figure 5 The display of SIsTA Log in Page

Figure 6 The Display after Logging in
Figure 7 The Display of Biography Menu

Figure 8 The Display of Final Assignment Data Form
3.4. Design of Database

a. Table of t_mst_user_login

| t_mst_user_login | PK  | C_USERNAME | PASSWORD | C_KODE_JENIS_USER | STATUS_USER |
|------------------|-----|------------|----------|-------------------|-------------|
| PK               | C_USERNAME | PASSWORD | C_KODE_JENIS_USER | STATUS_USER |

Figure 11 Table of t_mst_user_login

b. Table of msmhs

| msmhs | PK | nimhs | nmh | smhsmh | smhsmh | nmhsmhsmh | smhsmhsmh |
|-------|----|-------|-----|--------|--------|------------|------------|
| PK    | nimhs | nmh   | smh | smhsmh | smhsmh | nmhsmhsmh | smhsmhsmh |

Figure 12 Table of msmhs
c. Table of mspst

![Figure 13 Table of mspst](image)

d. Table of data_awal

![Figure 14 Table of data_awal](image)

e. Table of data_skripsi

![Figure 15 Table of data_skripsi](image)
4. Conclusion

The conclusion that can be drawn from the system to be built in this research is that this system will provide information to the public about the data of the final assignment of students in the University of Makassar in general and the Faculty of Mathematics and Natural Science in particular. In addition, with this system then Plagiarism can be minimized.

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