

Integrated Repository to Support Academia at State Polytechnic Of Creative Media, Indonesia

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Abstract. Information Technology can help gain universities from gain advantage in data collection and archiving. One form of use information technology on campus is the repository. Optimization in repository services on campus is essential to support academia. The repository at the Creative Media State Polytechnic, Indonesia is not optimal and passive in serving the members. In addition, it is still not socialized, and many are helpful that the repository is for students only. Limited access due to a lack of knowledge and socialization will hamper the performance of academia. Therefore, implementing the repository is needed. The purpose of this study is to obtain a problem-solving solution to the system running at the Polytechnic in the form of a proposal to create an integrated repository. The system development method used is the ADDIE (Analysis, Design, Development, Implementation, and Evaluation) method. The results of this study are an integrated repository application that lecturers and students can use with positive responses from repository users. In conclusion average responded is in the "Very Good" category, with 85.5%.

Keywords: addie method; digital archive; repository.

1 Introduction

In the era of the Industrial Revolution 4.0, information system development has experienced rapid growth. Almost every industry utilizes the benefits of this information system, including the agricultural, banking, defense, and security industries, as well as the government and education sectors [1], [2]. The repository cannot be separated from the campus to support for university information systems. The challenge of information systems, particularly in a centralized repository, is how to store accurate, secure, and trustworthy information so that university users feel safe storing academic data [3], [4].

The State Polytechnic of Creative Media (Polimedia) is a vocational higher education in the creative industry sector. As a university, lecturers at Polimedia also carry out the duties of the Tri Dharma of Higher Education. As an institution to evaluate research and community service proposal grants, campus research institutions still have problems collecting data on the tridharma of university lecturers [5][6]. Under the auspices of the Creative Media State Polytechnic, there are still limited human resources in managing the data of each lecturer, so most of the data on the Tridharma of Higher Education Height is still manually managed. Cloud storage is one of the best choices because of various advantages in terms of data storage, data

security and accessibility [7]. Cloud storage will make it easier for users to access the data needed and will be useful in disaster mitigation as a form of data backup [8].

3 Research Method

This study need method to solve the main problem of the research, including how to build and how the users response about the repository. Mostly of the information system using waterfall method including information system that implemented in school or university[9]. In this study researcher use the ADDIE method (Analysis, Design, Development, Implementation, and Evaluation)[10], [11]. The researchers chose this method because of its simplicity. Characteristics of this method are that every implementation step was structured and sequenced. The details of ADDIE Framework can be shown as **Fig. 1** below:

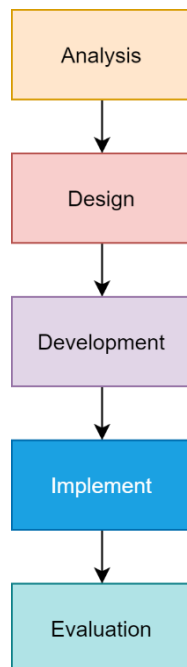


Fig. 1. ADDIE Framework

Furthermore, method can be explained in organization matters as follow:

1. Analysis

At this stage, all the requirements for the system are to be built, including software requirements analysis, hardware analysis, and system requirements analysis.

2. Design

At this stage, things analyzed in the first stage will be made into a framework with UML (unified modelling language), especially the design of the system to be built.

3. Development

At this stage, all the components that have been designed in the previous stage are implemented into a system. so that at this stage, the server and application are ready to be combined into a single system.

4. Application

In this stage, everything implemented is applied to lecturers who will become users of this system or field trials.

5. Evaluation

At this last stage, a thorough evaluation is executed to see how users' response with the new system

This research's phases start with the identification of existing/ongoing issues [12]. After identifying issues with the operating system or process, the next step is a literature review of previously conducted research [13], [14]. Additionally, system users are observed throughout the data collection phase. Then, Functional and non-functional analysis were run, thus the result of analysis can be shown as **Table 1** below:

Table 1. Functional Requirements

No.	Activity	Functional Requirement
1	Managing deposit data	The system that is built must be able to display, change and add deposit data
2	Managing user in repository	The system built must be able to add, change and delete user
3	Reviewing data	The system built must be able to approve and reject data from user.
4	Managing Upload Data	The system built must be able to upload specifically as users assigned.

To support functionality of the system, non-functional requirements should be available to run the functionality as shown in **Table 1** Required hardware and software for this study can be shown as **Table 2** below:

Table 2. Non-Functional Requirements

No	Hardware Requirements	Software Requirements
1	CPU with Core i3 minimum	VPS with 1 CPU Core minimum
2	RAM 4GB minimum	Perl Package
3	Diskspace 40GB minimum	Ubuntu 10.4
		Putty/SSH
		LAMP Stack
		Network 1Gbps

In design phase system will be translated into UML (Unified Modelling Language) which can describe and explained whole system based on specific users. Use Case Diagram will show as **Fig. 2** below:

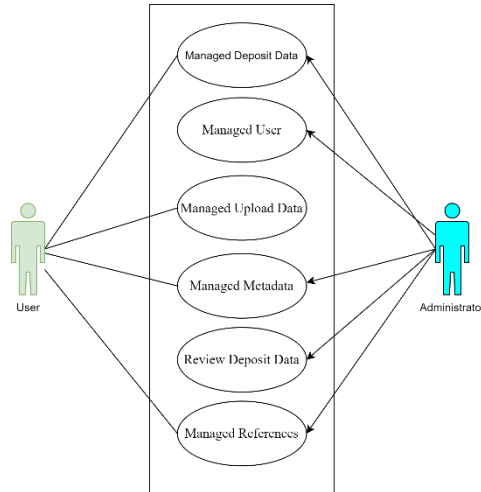


Fig. 2. Use Case Repository

After the Use Case Diagram is finished, the design repository needs to be translated into an activity diagram to map the activity in the use case diagram. The first activity is log in. The activity started with users inputting usernames and password that were designated before, and then the system verifies the users. If users are verified, they can use the system, and if it is wrong, then the system will reject the users and notify them to input the correct username and password combination. The detail of activity diagram for login menu can be shown as **Fig. 3** below:

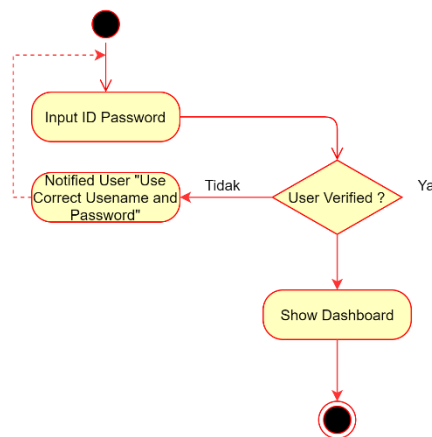


Fig. 3. Activity Diagram for Login Menu

Once user into the system, next phase is administrator managed deposit, in deposit menu, users can be able to upload certain type of file to be indexing in repository, mostly will be research paper or research report, also unpublished book or published book. If users upload with

repository guidelines, then administrator either accept it or notice the user to upload a revision version or just delete the current file that uploaded by user. Activity diagram of administrator can be shown as **Fig. 4** below:

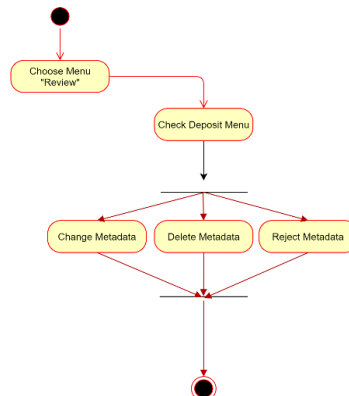


Fig. 4. Activity Diagram for Administrator

4 Result and Discussion

In this phase, development and implementation began, and all analysis and requirements from the previous phase, including server setup, will be implemented. The only difference between development and implementation is that development is when the server is setup and coded, whereas implementation is when the repository can be tested by the user. The result of the development phase can be demonstrated as follows:

Result From use case especially in managed account will implemented as login and logout form, so the functionality of managed users can be achieved.

In this form, user or administrator can login with specific username and password, if verified user have the ability to upload new file to be indexing in repository and administrator have ability to review and approve the file. The details of login form implementation can be shown as Fig. 5 below:

Fig. 5 Login Form

In this form, user can upload new file to repository or edit/change the current file, also in this form user can added or edit metadata for the current file. The detail of user dashboard can be shown as Fig. 6 below:

Fig. 6 User Dashboard Form

After all the form was built and ready to apply to user, next step is evaluation phase. In the evaluation phase, system will be run by black box testing to ensure all the functionality run well as requirement before and can be demonstrate how all the process work to get the requirement result. The result of black box testing can be shown as Table 3 below

Table 3. Blackbox Testing

Process	Testing Detail	Purpose	Result
User and administrator login	Input username and password and click login button	Main system can be accessed if username and password is correct with verified roles	Correct
User and administrator managed files	Insert depositing file and click managed button and click upload, change or delete	System will add, change, or delete the designated files that managed by verified roles	Correct
Administrators validate files	Click menu “review” and click accept or delete files in review	System will accept to be published or delete files from user	Correct

The last step for evaluation is obtain result from usability testing, this can be harvest from users to test several criteria including Learnability, Operability, Understandability, and Attractiveness. Form of this testing is questionnaire based to lecturer and student in The State

Polytechnic of Creative Media (Polimedia). Range table was used to range of the users answer which can be shown as 4 below:

Table 4 Range Percentage

Score	Qualification	Result
85%-100%	Very Good	Success
65% - 84%	Good	Success
55%-64%	Moderate	Not Success
0-54%	Under Average	Not Success

After usability testing then system can value based on users experience. Based on the analysis the result can be shown as **Fig. 7** below:

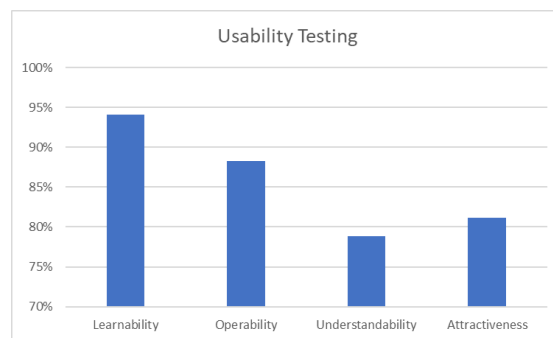


Fig. 7 Usability Testing Result

From the questionnaire result based on eighty-five (85) responses in usability testing learnability aspect gain 94%, operability gains 88%, understandability 79% and attractiveness gain 81%. As average score of usability testing is 85.5% which in “Very Good” category. This result also captures the result from Kwame Kodua (2021), he stated university repository should have high accessibility, availability, and high visibility to achieve open-access university repository[15].

5 Conclusion

The library has been built using the ADDIE method, which consists of analysis, design, development, implementation, and evaluation. At the analysis stage, the existing data is taken from observations and interviews. At the design stage, the system's structure is built, and the development stage is entered into the server. So that at the implementation stage, the user can already use it. At the end of the stage, a questionnaire was drawn to gain result of usability testing. As for the questionnaire results, users' responses on average were 85.5%, with a very good category.

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