
IMPLEMENTATION OF DIGITAL LIBRARIES AS HIGH SCHOOL WELCOME TO THE ERA OF SOCIETY 5.0

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Abstract

Article Info Received: 30/10/2022 Revised: 12/11/2022 Accepted: 21/11/2022	The school library is the only form of literacy implementation for students. With the development of information technology as it is today. Students cannot access knowledge outside their school by using existing digital libraries. The existence of the covid-19 pandemic has made not only students obstacle to getting direct knowledge from teachers but also teachers as teachers cannot carry out the learning process as usual, especially in a school that not even applying information technology in the field of education in their schools. SMA Negeri 1 Pangururan is one of the high schools in the capital city of Samosir Regency. With easy access in the Regency city, the school should have a capable digital library. Maintaining data for an extended period is one of the advantages obtained when implementing a digital library. The results of the study in the form of the application of a digital library with OPAC (Open Public Access Catalog using the Agile Development system development method) went well and smoothly, it was seen from the test results using black box testing, and the assessment of the application was in the "very feasible" status with a value of 81% so that the digital library is to be implemented in SMA Negeri 1 Pangururan.
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Keywords: agile method, OPAC, digital library

1. INTRODUCTION

A school library is a form of literacy implementation for students. With the development of information technology as it is today. Students can access knowledge outside their school using existing digital libraries. The existence of the covid-19 pandemic has made it difficult for students not only to get knowledge directly from teachers but also teachers as teachers also experience obstacles in carrying out the teaching and learning process because previously, they rarely or even had not implemented information technology in the field of education in their schools[1].

This moment should be addressed positively. Apart from introducing new technology to teachers and students, the school can welcome the Era of Society 5.0 because human resources were the key in that era, no longer relying on the existing environment or infrastructure. SMA Negeri 1 Pangururan, one of the high schools in the capital city of Samosir Regency, with easy access in the Regency city, it is fitting for the school to have a capable digital library[2], [3]. Maintaining data for an extended time is one of the advantages obtained when implementing a digital library. Based on brief observations made during the research, it was also found that laboratory assistants cleaned books more often than students who came into the library[4]. Therefore, researchers are interested in implementing a digital library at SMA Negeri 1 Pangururan. The implementation of digital libraries is made to see how students respond to using and using the digital library to be built. It will conclude whether digital libraries are instrumental in supporting the teaching and learning process at SMA Negeri 1 Pangururan in welcoming the Era of Society 5.0[5].

2. METHOD

Data collection technique. The data collection technique in this study started from observation to find out what had been happening before and for further development of discussions and interviews, in this case, the Principal and Teaching Teacher at SMA Negeri 1 Pangururan[6]. A literature review from primary sources with no more than the last five years will be added to support the study.

System Development Model. In this research process, the method used in implementing the Digital Library is system development using the Agile Development method with the Extreme Programming (XP) approach[7]. The stages of development using the Agile Development method are divided into four parts, namely: 1) Planning, 2) Design, 3) Implementation and 4) Evaluation; these can be described in Figure 2 below:

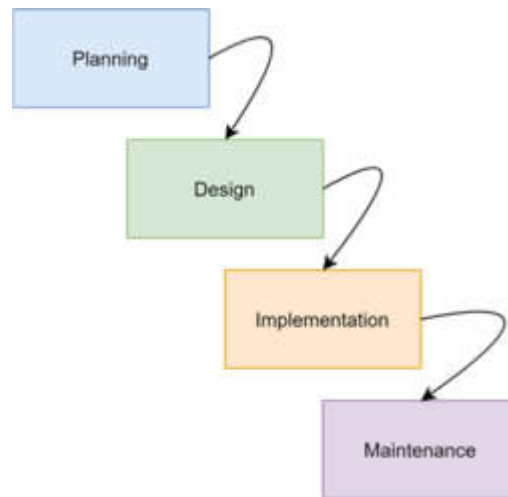


Figure 1 Agile Method[8]

Each stage must always follow and complete the previous stage so that there is no conflict from each stage. Each stage explanation can be described as follows:

1. Planning and Requirements
In the planning stage, starting from a survey to the research location, and collecting data through interviews and observations to understand the problems and literature studies needed to support the system to be developed.
2. Design (design)
At this stage, the results of observations and interviews will be formed into a design that will be developed in the form of UML (Unified Modified Language); also, do not forget from this stage an implementation guide that assembles from the beginning to the end of the library work, thus providing a clear picture of the system to be built.
3. Implementation (coding)
At this stage, the results of the design are implemented using programming coding so that the design results can be used as a Digital Library
4. Maintenance (including testing)
The last stage is testing and maintenance; testing is done with blackbox testing so that every component of the Digital Library that has been built can be tested, especially the main components.

3. RESULTS AND DISCUSSION

3.1 System Requirements

System requirements, both functional and non-functional, must be met following the requirements at the planning and design stages. Furthermore, the functional requirements obtained at the time of observation at the planning stage can be seen in the table below:

Table 1 Functional System Requirements

No.	Activity	Functional Requirement
1	Managing library member data	The system that is built must be able to display, change and add library data
2	Managing borrower data	The system built must be able to display book borrower data
3	Managing book stock	The system must be able to display the number of books in the library
4	Managing Borrowed Books	The system must be able to display books in borrowed status
5	Managing returned Books	The system must be able to display books in return status

From the analysis of these needs, it can be concluded that the non-functional system requirements needed for the digital library system can be drawn. Non-functional requirements can be further divided into two (2) parts: hardware and software requirements. The hardware requirements needed to build a digital library with OPAC (Open Public Access Catalog) can be seen in the table below.:

Table 2 Non-Functional System Requirements

No.	Item
1	VPS with 4GB RAM
2	Storage with at least 20GB SSD
3	Gigabit Ethernet
4	Processor CPU 2 Core

3.2 Use-Case Diagram Analysis

Use Case Diagrams are made to see how the system limits detailing user tasks and functions both from the admin side and the library users themselves. The use case diagram for the digital library that was built is shown in the image below:

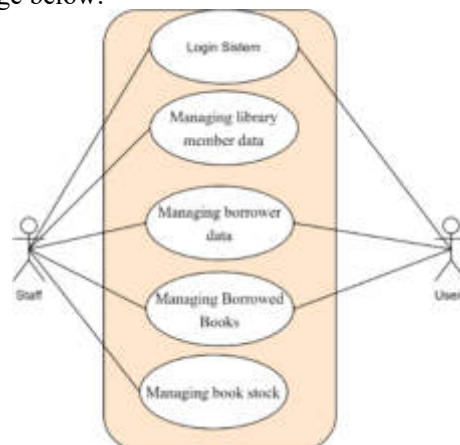


Figure 2 Use Case Diagram

3.3 Implementation

At this stage, the previously designed system is implemented on the server so library users can use it. Implementation of the login form can be seen in the image below:

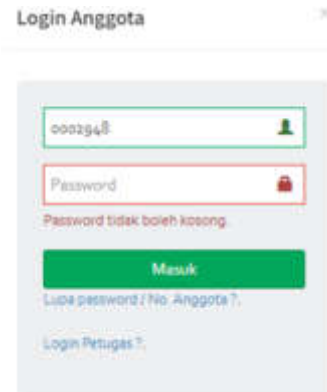


Figure 3 Form Login

After logging in from the admin side, library staff can add members to make them active members, and this form is also accompanied by automatic numbering and also automatic member card printing, making it easier for library members to able to order books both offline (outside the network) or online (in the network). The membership form can be seen in the image below:



Figure 4 Membership Form

Members who have logged in can borrow a list of books in the OPAC (Open Public Access Catalog); with this feature, books in the form of digital collections or physical books can be borrowed if they are already members of the system built[9]. The detail page of the book can be seen in the image below:



Figure 5 Book Detail

Testing and Users Feedback

System testing is a vital thing to do so that users and schools at SMA Negeri 1 Pangururan can use the system that has been built so that it can run well. Maintenance and improvements will continue to be carried out to achieve optimal application usage[10], [11].The testing is carried out functionally involving users of digital libraries. The results of testing with black-box testing can be seen in the table below:

Table 3 Black-Box Testing

<i>No.</i>	<i>Services</i>	<i>Test</i>	<i>Result</i>
1	Member Registration	Menu Input the member registration data carried out by the user, a member registration form will be displayed.	Successfully performed
2	Library Member Data Management	Manage library member data by admin can be manipulated via system backend	Successfully performed
3	Borrower Data Management	Manage book borrower member data that can be manipulated via system backend	Successfully performed
4	Books Stock Management	Manage book data and can be manipulated via system backend	Successfully performed

At this stage, testing tests were collected from students and teachers with 30 validators at SMA Negeri 1 Pangururan. The calculation scale is made using a Likert scale with an average value of 78%, which is "very feasible." Calculations as shown in the image below:

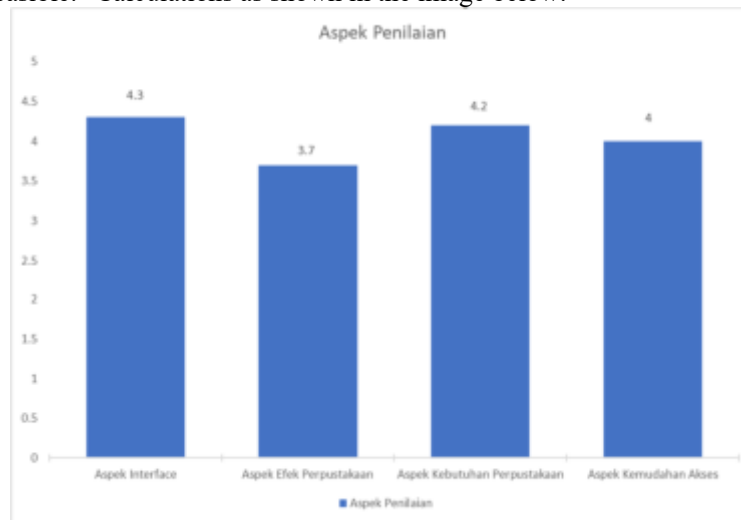


Figure 6 Aspek Penilaian Pengguna

The picture above shows that the average aspect is 4.05. Hence, the digital library application that has been built is already on a "very feasible" scale or with a percentage of 81%.

4. CONCLUSION

The digital library system has been successfully built and implemented at SMA Negeri 1 Pangururan with the OPAC (Open Public Access Catalog) feature using the Agile Development method. Digital Libraries were also tested using black-box testing. It was found that all the features in the system run according to the conclusions in each testing process, and on the aspect of user assessment, it was found that the digital library application was "very feasible" to be implemented at SMA Negeri 1 Pangururan with the percentage of 81% taken from library users, both teachers and students. With this digital library, library users, teachers, and students can search for relevant books to increase knowledge to welcome Era Society 5.0.

4. ACKNOWLEDGEMENT

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