

DESIGN AND DEVELOPMENT OF BOOK SEARCH APPLICATIONS IN THE LIBRARY OF THE UNIVERSITY OF PGRI SEMARANG ONLINE BASED ON 3D MOBILE SCANNER

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Abstract-Reading is a window to the world where we often read we will be more knowledgeable. The library is one of the windows of the world where we will get a lot of knowledge. For that, in education in Indonesia there are many libraries, even at every level of education both in Elementary School (SD), Middle School (Middle School), High School (SMA) and also in Higher Education. At the University of PGRI Semarang there is a facilitating library where students can borrow books but in the borrowing of books are only given a limit of two books for students given assignments by lecturers and five books for students working on thesis. The borrowing of books is sometimes a constraint for students because there is a limitation of book interest, sometimes students are already in the library, but the books that students are looking for have been borrowed by other students. By utilizing the technological sophistication, especially the Android smartphone, researchers built a book search application at the PGRI University Library, Semarang, Online Based on Mobile Scanner 3D. This application will help students to facilitate time efficiency in borrowing books, in this application there will be a list of newly borrowed books and available e-books with pdf format which can be downloaded via smartphone. This research uses prototype method, programming language with android studio and MYSQL database. Based on the validation that has been done this application is feasible to use with several language improvements, material details, and application content for application enhancements.

Keywords- libraries, books, smartphones, android

I. INTRODUCTION

The library is a place in which there is a collection of books about science, fiction to scientific works and so on. The library is an institution that manages collections of printed works, and or records work professionally with a standard system to meet educational needs, research, preservation, information and recreation of visitors. Along with the development of time and technology, books are increasingly being replaced. The ease of searching information through the internet is one of the factors that shifts people's habits in finding information, references or references. Google is one of the media used to find information in the modern era. Currently more and more digital files or e-books make books less desirable [1].

This lack of interest in reading books compared to digital files or e-books is due to various factors, namely e-books are easier to carry than conventional books. E-books or digital books are publications consisting of text, images, videos and sounds and are published in digital form that can be read on computers or other electronic devices [2]. Words contained in the e-book can also be easily searched via the search button. E-books are also cheaper and easier to obtain compared to conventional books [3]. Saving resources such as paper is also one of the reasons why conventional books are increasingly being abandoned. However, at present conventional books are still needed. One is to support scientific references such as theses, final assignments, proposals, theses and so on.

Books are one of the important items for a researcher or developer of scientific work. This is because many things related to science come from books. The author or someone who is conducting scientific

research is usually looking for reference sources through books in the library [4]. Scientific writing is the writing of R & D results or reviews, reviews or reviews, studies and systematic thinking as outlined by individuals or groups that meet scientific rules.

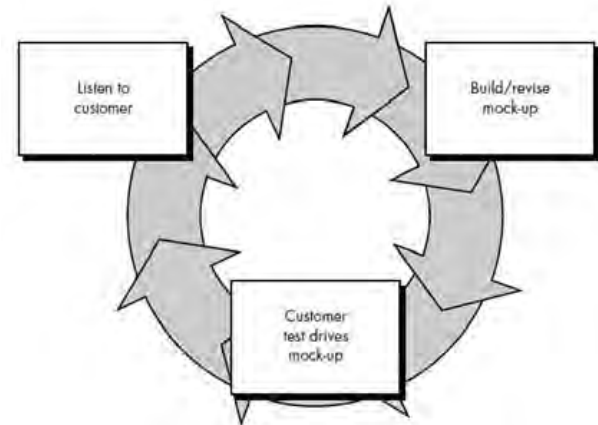
The University of PGRI Semarang (UPGRIS) has a large and complete library. Books about the source of knowledge are very easy to find in UPGRIS library. At the Final Assignment season the UPGRIS library was used as a means to compete with each other for information and learning resources. to find references regarding assignments given by the lecturer or seek references to complete the Final Project. However, the number of books is not comparable to the number of students, so some people must be willing to wait and visit the library many times in order to obtain the required reference books.

The limitation of borrowing the number of books and the grace period for borrowing books is also a problem that must be considered by students in making loans. Libraries in this modern era must be able to keep up with technological developments, so that online library systems or digital libraries can be applied to help manage and facilitate the needs of library user reference sources [5].

Library access application helps customers to access information and questions needed without a computer or librarian but through their android device which saves their time and energy, so that android can be used as one of the media for the implementation of digital library systems [6]. Because of that, the author wants to design an information system entitled "Designing Book Search Applications in the PGRI University Library Semarang Online Based on 3D Mobile Scanner"

II. METHODS

In this method the resulting prototype / prototyping software is then presented and given the opportunity to provide input and criticism, so that the software / software produced is according to the needs and desires of the user [7]. Software changes can be made repeatedly until the opportunity for the form of software to be developed is achieved, the stages are as follows:



III. RESULTS AND DISCUSSION

3.1. Analysis and Definition of Requirements

At this stage the author will have complete needs and then analyzed to build a new system, often software engineers have difficulty in determining what should be done by the system. This analysis of needs is needed so that the system can achieve the expected goals. The needs are designed by the author, namely:

1) Functional requirements

Functional requirements are functions that must be provided by the system. This is a type of software that is being developed, users, and the type of system that will be used. The functional requirements of this application are:

- a) Able to assist students in finding information about books in the library to be borrowed.
- b) Able to help students who will borrow books in the UPGRIS library.

2) Non-functional requirements

Non-functional requirements are not directly related to the specifics provided by the system. These requirements are related to system properties that appear later, such as reliability, response time and media storage placement. The system for input and output devices to be used on the interface. the system is also included in non-functional requirements.

a) Hardware Requirements (Hardware)

Hardware is a major component in the development of an online Augmented Reality based library book search system. The hardware used by using a computer with specifications:

- 1) AMD A10-1570M APU Radeon (tm) HD Graphics 2.50 GHz processor
- 2) Random Access Memory (RAM) 4GB
- 3) 1TB hard drive
- 4) 1 monitor

by using the Samsung A8 2018 smartphone with specifications:

- 1) Octa 64-bit Core Processor
- 2) 4GB RAM
- 3) OS Android Version 7.1.1 Nougat
- 4) 4G Internet Network

b) Software Requirements

Software is a device that functions to perform workmanship in processing systems to support the work of computer systems, to do this system, we need some software, namely: XAMPP, Dreamwever and Android Studio.

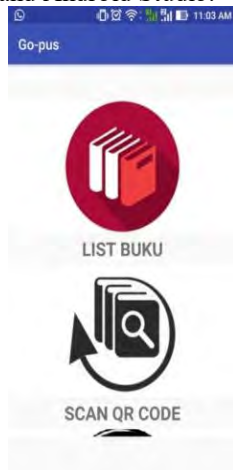


Figure 1. Display of Home



Figure 2. Display List Menu Book



Figure 3. Display Information Book



Figure 4. Display of Book Search



Figure 5. Display Menu List Instructions



Figure 6. Display Menu Instructions Scanner



Figure 7. Display Menu Instructions Download



Figure 8. Display Menu Instructions Tutorial

3.4. System Test

To be understood by the machine, in this case it is a computer, so the author will change the design into a form that can be understood by the machine, namely into a programming language through the coding process. This

stage is an implementation of the design phase which is technically done by the programmer. Unification of program units is then tested as a whole (system testing).

1) Validation Results

Validation results can be seen from the aspect of content eligibility (90%), language aspects get (85%), graphical aspects get (78%), aspects of application usage (90%), and efficiency aspects get (90%), and average from all aspects of getting (86%). All aspects are in the range of 81% -100% so that it can be said to be valid because it has placed the position of criteria very well. Conducted with 2 validation experts.

2) Practicality Results

Practical results can be seen from the aspect of ease of access (86.6%), aspects of the user manual get (100%), aspects of the application guide get (100%), and aspects of efficiency get (90%), and the average of all aspects gets (94%). All aspects are in the range of 81% -100% so that it can be said to be valid because it has placed the position of criteria very well. This test is carried out by 2 practicalists.

3) Effectiveness Results

The results of effectiveness can be seen from the aspect of ease of obtaining (97.7%), the aspect of personalization gaining (95.5%), aspects of speed of access to the application get (94.6%), and aspects of information presentation getting (98.3%), and the average of all aspects (96.5%). All aspects are in the range of 81% -100% so that it can be said to be valid because it has placed the position of criteria very well. Tests carried out 3 respondents.

3.5. Operation and Maintenance

Something that is made must be tested. Likewise with software. All software functions must be tested, so that the software is free of errors, and the results must be truly in accordance with the needs that have been defined before. Maintenance of software is needed, including development, because software that is made is not always just like that. When it is run it may still have a small error that was not found before, or there are additional features that do not exist in the software.

IV. CONCLUSION

The conclusions obtained from the results of the research, the design of book searches in the PGRI Semarang University library online based on 3D mobile scanners have met the validity criteria so that it is feasible to use. Based on the research that has been carried out the following results are obtained:

1. Based on the calculation of the validity test results are as follows, the results of the

assessment of the content feasibility are 90%, the language aspect is 85%, the graphic aspect is 78%, the application aspect is 90% and the efficiency aspect is 90%, from all validation tests the percentage aspects obtained were 86.6%. From the above calculations it can be concluded that the design of the search for books in the library of the University of PGRI Semarang online based on 3D mobile scanners has been classified as very valid and declared very feasible to use.

2. Based on the calculation of practicality test results are as follows, the results of the assessment of facilitation aspects amounted to 86.6%, aspects of user guidance by 100%, aspects of application usage by 100%, and efficiency aspects by 90%, from practicality tests with all percentage aspects obtained namely by 94%. From the above calculations it can be concluded that the design of the search for books in the library of the University of PGRI Semarang online based on 3D mobile scanners is classified as very practical and stated to be very feasible to use.
3. Based on the calculation of effectiveness test results are as follows, the results of the assessment of facilitation aspects are 97.7%, the personalization aspect is 95.5%, the access speed aspect of the application is 94.6%, and the information presentation aspect is 98.3%, from the effectiveness test with all percentage aspects obtained that is equal to 94%. From the above calculations it can be concluded that the design of the search for books in the library of the

University of PGRI Semarang online based on 3D mobile scanners has been classified as very effective and stated to be very feasible to use.

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