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The Development of Digital Library Platform in Indonesian School Library

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ABSTRACT

The purposes of this research are to find the needs of Digital Library Application Development, to create the prototype of Digital Library Application Development and to find the validation level, practicality, and effectiveness of Digital Library Application Development. This research method used Research and Development, which uses ADDIE (analysis, Design, Development, Implementation, Evaluation). The subjects of this research were 1 expert, 1 media expert, 1 leader, 4 librarians, 10 teachers, and 35 students. The method of collecting data used in this research were interviews, observation, and questionnaires. Based on the result of this research, it shows that the digital library application development is necessary to improve the learning and teaching process, with the centralized database, it can help the users access the information and help the librarian to manage the school library. The prototype of the library application development of Athirah Islamic School provides some descriptions that the library application is suitable for the users' needs. The testing result by the expert shows that the digital library application of Athirah Islamic School has fulfilled the very valid category through some field-testing steps such as content validation and media validation. The level of practicality of digital library application can be seen from the testing result of the product based on the technical aspect given by the practitioners (libraries, students, and teachers) that fulfills the strongly agree criteria or very practical category. The level of effectiveness of the library application use can be seen from the questionnaire results given to the students, teachers, and librarians. It can be concluded that of 5 indicators such as: system quality, information quality, serving quality, users' satisfaction and the net benefit obtained that the library application is at a very effective qualification level.

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1. INTRODUCTION

The development of information and communication technology brings changes as a means of improving service quality and operations have brought big changes in the world of libraries. The application of information technology has spread rapidly (Unal, E. & Uzun, 2019; Sujarwo et al., 2020; Sujarwo, 2020; Nurhikmah et al., 2020; Nurhikmah et al., 2021; Nurhikmah H; et al., 2021; Sasabone et al., 2022; Imran, et al., 2022; Febriati et al., 2022; Sasabone et al., 2022; Imran, 2022; Imran et al., 2023) in all almost fields including for the benefit of developing management information systems such as fields of libraries, education, and learning. Information and communication technologies (ICTs) are considered as a potential catalyst for socioeconomic development in developing countries (Park et al., 2009; Raju, 2014, Wahyudi, 2018; X. Liu, 2013; Wicaksono, 2012, Parvez, 2011, Valisa, 2013; Lee, 2013; Han & Wolfram, 2014) the ability to make decisions about a technological solution, tool, or service (Pinto & Little, 2014), it is an absolute necessity for our everyday life (Hendawi & Nosair, 2020), . A library is considered as an important and integral component of any high-quality academic institution (Khan, 2012).

A digital library is a development-oriented hardware and software integration platform, through to technical and product integration (Sanchati & Kulkarni, 2011), A digital library is not actually a library in terms of a physical site; instead, it concerns a virtual site with digital information resources and multimedia (Garibay et al., 2010). Digital Libraries (DLs) were envisioned as network-accessible repositories in the 1990s (Oguz et al., 2009). The term "digital library" (DL) is one that is quite prevalent. Terms such as "electronic library" and "digital library" are often used synonymously (Baro, 2010),. A digital library (DL), sometimes referred to as an electronic library or virtual library, is an organization that organizes and maintains an online collection of (born) digital or digitized materials and makes this collection available through the Internet (Lesk, 2005 as cited in Diekema, 2012). The development of digital libraries for library managers can help work in library through library automation functions, so that the library management process is more effective and efficient. The library automation function focuses on controlling the automatic computerized service administration system. The users can help find the desired source of information by using an online catalogue that can be accessed via the internet so that information searches can be done whenever and wherever they are, get information (Shiri, 2011; Mandelbaum, 2014).). In conclusion, everyone can get the sources of information by using an online catalogue in the library.

The school library has become a necessity for every school at the primary, junior high school and high senior school levels. School libraries are required to provide support in the learning process by providing various references both in the teaching and learning process and in the preparation of scientific papers. The role of libraries is very important. Therefore, school libraries must be managed professionally according to the National Library Standards by taking into account the National Education Standards and adapting to the current developments in information and communication technology. In the management of this library, a professional manager who has competency expertise in his field is needed. The ease of access provided by the current development of information technology offers ideas about digital libraries, so it's no wonder that many schools crave the application of digital libraries in their management. Digital libraries are useful platforms for the storage, preservation, access and dissemination of information (Lagzian et al., 2013; Cunningham, 2011; Shiri & Stobbs, 2018). However, it is not as easy as imagined. Because previously done conventionally, the information is not up-to-date, or the amount is insufficient, less professional service; inadequate facilities, and there are many reasons that can be put forward (Saleh, 2013). The role of the library is very important because it is a component that can support the learning process carried out in school.

There are some results of the research support this research such as Miller & Khera stated that digital library support persons, administrators, and coordinators should consider the active promotion of digital libraries in terms of their relevance and direct applicability to their user base: researchers, instructors, and students (Miller & Khera, 2010), then Baro argues that library and information studies need to focus evenmore on an interdisciplinary focus, because of the wealth of competencies such as improved technology and social interaction skills that this approach provides (Baro, 2010). Recently, information service and interoperability of DL have been paid more attention. Therefore, the whole research of DL in

China should integrate resources (as basis), and technology (as support) (G. Y. Liu et al., 2012). This research is supported by Barifah et al that the study indicate that considering the UX when evaluating the Digital Library provides useful insights of different aspects of the user interactions, perceptions and affective variables. The need to improve the DL system and simplify its interface still persists. Revisiting interfaces by implementing visualizing techniques is a possible solution (Barifah et al., 2020).

Thus, the researchers are interested in conducting this research in one of the schools in Makassar, namely Athirah Islamic School, which has 4 libraries, each consisting of 1 library for the SIA Bukit Baruga area with 2 librarians, 1 library for the SIA bone area with 2 librarians. People, and 2 libraries for the SIA Kajaolaliddo area with 3 librarians. Administrative management begins to use technological devices by using library applications, where each library has its own server using the application SLiMS (Senayan Library Managemen Sistem) is developed by SDC (Senayan Development Community). SLiMS used for inventory, storing digital collections and also for recording borrowing / returning books by students.

Based on the results of preliminary interviews with librarians at Athirah Islamic School, namely 2 librarians from the Baruga Hill area and 2 librarians in the Kajaolaliddo area which were conducted on Wednesday, June 5, 2019, it can be seen that the Athirah Islamic School library has implemented library management well. This can be proven from a computer-based administrative management system using the SLiMS application where book collections are inputted using a computer, membership, and also the process of borrowing and returning books, but there are still obstacles faced, including, namely, the application used cannot be accessed online. so they have to go to the library to find information, the collection of electronic books is still limited so students are less interested in visiting the library, the database is not centralized, membership cards are printed manually, the collection of books at each level is still limited by space, students come when they want to do assignments, teachers and students less interested in using it as a learning resource because the collection of books is limited, the level of visits to the library is still low, the application used is still in the form of a standalone installed locally so that the library functions during the Covid 19 pandemic cannot run optimally. The implementation of WFH (Work from Home), where the face-to-face learning process is eliminated to a predetermined limit. In this research, we will examine how the development of digital libraries and how the level of practicality and effectiveness of digital library applications.

2. METHODS

This research used Research and Development (R&D) by using the ADDIE model, namely (Analisys, Design, Development, Implementation, Evaluation). ADDIE is first appeared in 1975 (Branson 1975). It was created by the Centre for Educational Technology at Florida State University. The ADDIE model was developed by Dick and Cary in 1978, and Russell Watson revised in 1981, and was considered essential in the development of educational and training programs (Hannum, 2005 as cited in Muruganantham, 2015) ADDIE model Molenda, M as cited in (Reinbold & Reinbold, 2013), these phases systematically lead the designer through the creation of instruction from the initial request to evaluation and revision. (Rooij, 2009) which aimed to develop a new product in the form of a library application, namely the SLiMS (Senayan Library Managemen Sistem) application which is developed by adding content / features of the main book, flipping book, barcode label, and visitor counter which can be accessed online as needed. The research subjects were librarians, teachers, leaders and students consisting of 1 representative of the leadership, 4 librarians, 10 teachers, and 35 students.

To determine the effectiveness value of using digital library application services, the effectiveness analysis formula is used as follows:

$$\text{Percentage} = \sum \text{Score}/(\text{Maximum Score}) \text{ X } 100\%$$

3. FINDINGS AND DISCUSSION

The study's results explained the development process of digital library applications, which was carried out based on the formulation of research problems: (1) The need for digital library application development (2) Design Prototype for the development of digital library applications. (3) The level of

validity, practicality and effectiveness of digital library development at Athirah Islamic School of Makassar, Indonesia. The product development in this research was the SLiMS application which developed with features that accommodate the needs of a complete library, among processing, tracking, and member management and circulation. The application developed will be assessed by media experts, content experts, teachers, and students as users of the library application in order to assist in the teaching and learning process.

3.1 The need for developing digital library applications at the Athirah Islamic School

The need for the development of digital library applications can be identified through analyzes that had been carried out in the form of observations, interviews, and questionnaires. Based on the results of observations, interviews, and questionnaires obtained from librarians, teachers and students, known that the Athirah Islamic School library was still not used optimally as a reference by students and teachers in learning activities and a source of information for visitors. The existing library was not digital yet, so it cannot be accessed freely anywhere and anytime without time and space limits. The needs analysis is carried out in several stages, namely:

3.1.1 Students Need Analysis

The results of the interview to analyze the students' needs, namely: libraries that cannot be accessed anywhere and anytime, motivation to borrow collections was low because they had to bring books in physical form, visit time was very limited, information was not available, the availability of information on collections and librarian services was not optimal.

3.1.2 Analysis of the Needs of Teachers and Leaders

The findings from the examination of teachers' and leaders' demands, conducted through interviews and questionnaires, revealed the development of a digital library application. This application was designed to be accessible online, enabling users to access it without constraints of physical location and time. The implementation of a centralised database facilitates the acquisition of information pertaining to the library, hence enabling students to access diverse collections across various regions.

3.1.3 Librarians Need Analysis

The results of interviews with library staff found several problems, namely: administrative management was still adequate, services were limited by time, the level of visits was still low, collections were incomplete, difficulties in making reports, lists of frequently used collections were not available, and database was not centralized. To solve the problems faced, a library application is needed that can be used to manage administration in terms of systematic library membership arrangements. Addition of features/content made to the library application, namely: more interactive ebooks, additional master book reports in the form of edition, year, language, physical description of GMD, and Examplar Code, whose initial display is information on title, copy, place of publication, publisher, ISBN / ISSN, a visitor counter commonly called a library visitor counter, this plugin adds several features such as greetings, polls, online lists, statistics on the number of visitors per day / month / year and the 10 most active members, barcode labels such as unified labels, barcode examplars and adding logos. Library, and Examplar Code. As well as a centralized data base that can be accessed online.

3.2 The prototype of the digital library application

Prototype is defined as a version of a potential system that gave developers and potential users an idea of how the system will function until in the end.

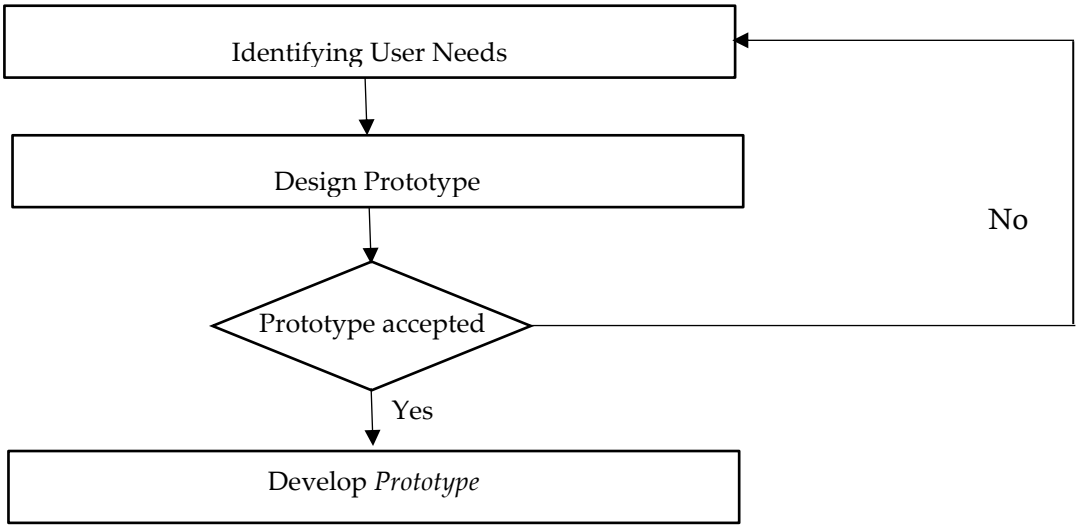

Figure 1. Prototype Phases

Prototype development of the Athirah Islamic School library application refers to the previous needs analysis, so the types of problems are found. The next stage is the design of the library application prototype, focusing on software aspects from the point of view of input, process and output format to meet user needs. If the prototype is rejected, it returns to the analysis and if it is accepted then it continues to the next stage, namely application development.

The design of the application prototype can be seen in the following diagram:

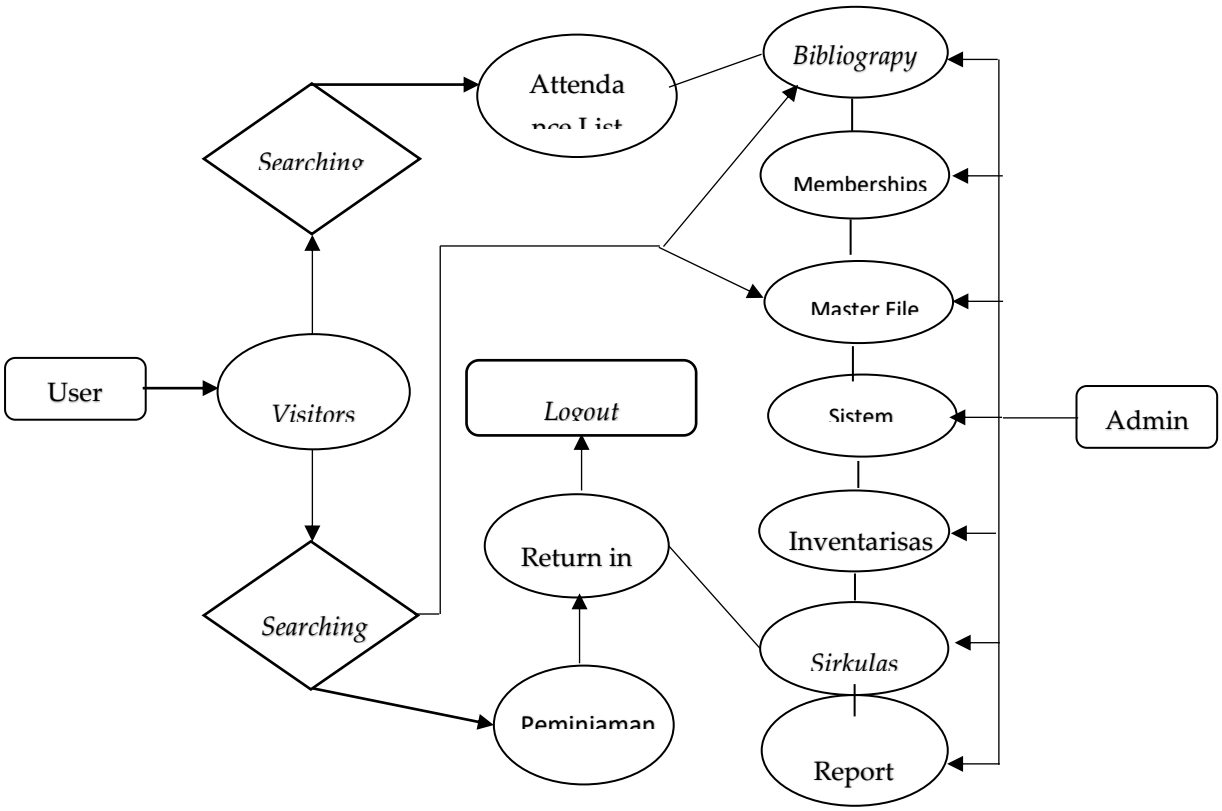

Figure 2. Application Prototype Design

3.2.1 Bibliography

The bibliography menu functions to enter book data (title, author, edition, ISBN / ISSN, publisher, year of publication, place of publication, and calling number), print barcodes and the number of copies of the book.

3.2.2 Circulation

Circulation is a system facility that contains borrowing transactions, returns, collection reservations, flexible borrowing rules, information on delays and fines. Consists of: starting transactions, instant borrowing, borrowing rules, and borrowing history.

3.2.3 Membership

The membership menu or membership is a member data processing which contains input, edit and deletion of members. Consists of: list, members, add members, membership type, member card, export and import data.

3.2.4 Master file

This menu has almost the same function as a bibliography, but is equipped with a server catalog, author data, and publisher data. Consists of: content type, media type, carrier type, author, location, reference list, author list, server catalyst, label, time of publication, and document language

3.2.5 System

This menu consists of: system settings, themes, content, modules, user groups, barcode creation, librarians and system users.

3.2.6 Inventory

Inventory functions to physically check collections and adjustments between actual collections (in the library) and the number of collections in the database.

3.2.7 Report

The reporting menu provides access to reports pertaining to various library activities, including processing, administrative, and transactional processes. This menu comprises multiple submenus, each serving distinct roles. One such submenu is the "Collection Statistics," which is designed to generate statistical data and graphs pertaining to the quantity of collections that have been submitted. Loan reports provide a means of presenting data pertaining to the borrowing activities within a library, including details such as the borrowing history of collections, the total number of book titles, the total number of copies available, and the overall number of borrowings conducted. The "Report Members" feature serves the purpose of presenting information regarding library patrons who are either active or have had their memberships expired. The function of recapitulation is to present a summary of collections organised by collection type, language, classification, and GMD (General Material Designation). The list of titles serves the purpose of presenting the quantity of collections categorised by book titles. The following is a compilation of titles of copies, which serves the purpose of presenting the quantity of collections in relation to the number of copies. The utilisation statistics of a collection serve the purpose of presenting facts pertaining to the frequency of borrowing by visitors. The "List of borrowing members" serves the purpose of presenting a comprehensive record of the borrowing history of library patrons. The loan history feature serves the purpose of presenting the borrowing record of the member. The due date warning feature serves the purpose of presenting library patrons with the remaining time they have for their borrowed items. The list of delays serves the purpose of presenting a chronological record of the delays encountered by individuals. The staff activities feature serves the purpose of documenting the historical records of library staff engagement in various service activities, including the number of collections processed and the number of borrowing transactions conducted. The visitor statistics menu serves the purpose of presenting the chronological record of library visitors on an annual basis. The data provided pertains to the daily visitor numbers. The "List

of Visitors" serves the purpose of presenting the count of visits made to the library, together with the corresponding details of the visitor's name and membership type.

3.3 Level of Validity, Practicality and Effectiveness of Digital Library Development at Athirah Islamic School

Before the product was tested, the product was validated involving 2 (two) experts, namely content experts and media experts to measure the level of validation as a basis for revising and improving library application products. At this stage it is useful to find out whether the functionality of the application is as expected by the user. The expert validators involved include: Media expert Dr. FF, S.S., M.Si. lecturer of TP FIP UNM Study Program and content expert Prof. Dr. OJ M.Phil., Ph.D. Head of the UNM Library. The evaluation from the validator includes an assessment of the digital library application product along with the features / content.

3.3.1 Validity test by content expert

The results of the content expert validator's assessment of the application can be seen in the following

Table 1 The results of content expert assessment

No	Rating Items	Score
1	Clarity of input	4
2	The input sequence	4
3	Clarity of title, and author	4
4	Clarity of edition, print, city of publisher,	4
5	Clarity of the number of pages	1
6	Clarity of publisher name, year published and number of pages	2
7	Clear records of circulation	4
8	Availability of membership data import and export facilities	3
9	Availability of collections is adequate	3
10	The available collections are as expected	3
11	Clarity of the language used	3
12	The suitability of the language with the target user	2
13	Ease of operating the menu and application features	4
14	Availability of catalog search facility quickly	4
15	Ease of finding information	4
16	The suitability of the number of visitors	3
17	Collection availability information	4
18	Availability of labels and collection barcodes	4
19	Availability of information about frequently used collections	3
20	Clarity of reporting system	4
	Total	**67**

Based on the results of the content expert's assessment of application development as listed in the table above, the validators' assessment obtained a score of 67 with a percentage of 83.75% (percentage level of 81% - 100%) which indicates that the library application was very good or very valid qualification level, so it can be used. Content analysis was generally stated to be very valid on the condition that the application can be used with a few revisions. It was suggested improvements to the number of pages for each collection, the language used adjusts to the users, the import data menu, and the visitors' information were not yet detailed.

3.3.2 Validity test by media experts

The development product submitted to media experts to digital library application. The results of the media expert validator's assessment of the application can be seen in the following

Table 2. Validation Results for Media Experts

No	Rating Items	Score
1	match the background color to the image	4
2	Clear contrast between text and background	4
3	Font size fit	4
4	Clarity of navigation and menus used	4
5	Appropriateness of application use to library services	4
6	Template Fit	4
7	Attractive bakcground slide show	3
8	Matching colors, text, and images	4
9	The layout of each view is balanced	4
10	The program supports the element of interactivity between the program and students / users	4
11	It doesn't take a long time to find the information needed	4
12	Application suitability to library functions and services	4
13	The appearance of the e-book is attractive	4
14	Applications can be accessed online	4
15	Applications can be accessed anytime and anywhere	4
16	Ease of operating the tutorial program	3
17	Applications can be accessed on computers and cellphones	4
18	Ease of collection search	4
19	Easy to access independently	4
20	There are instructions for using the application	4
21	Application makes circulation services faster	4
22	Applications can make it easier for students to find information in the library	4
23	There are several collection categories	4
24	As a source of learning and reference	4
	Total	**94**

Based on the validator's assessment, a score of 94 was obtained with a percentage of 97.91% (percentage level of 81% - 100%) which indicates that the library application is at a very good or very valid qualification level, so it can be used without revision.

3.3.3 Practicality Level

After the validation process is carried out, the next stage is the user trial which consists of 3 testing processes, namely: individual trials, group trials, and teacher and librarian response testing. Participation is needed from respondents to obtain data that can be used as a basis for determining the level of practicality so that the products developed produce digital library applications that are good and in line with expectations.

a. Individual Trial

At the individual trial stage, the researcher got a response from the students by giving a questionnaire of 5 students. The following can be seen in the data summary table obtained from student responses to digital library applications in individual trials.

Table 3. Individual Questionnaire Results

No	Indicator	Respondents				
		1	2	3	4	5
1	The digital library application is easily accessible	4	4	4	4	4
2	Library applications can be accessed together	3	3	4	3	3
3	The digital library application is accessed online	4	4	4	4	4
4	Library applications can be accessed together	3	3	4	3	4
5	Instructions for use are very clear	4	3	4	3	4
6	Users can easily access information independently	4	4	3	4	3
7	Availability of adequate collections	3	3	3	3	3
8	Ease of access to find collections	4	4	4	3	4
9	Clarity of instructions and guidelines for the use of service facilities in the library	4	3	3	3	3
10	Using interactive e-book facilities	4	4	4	4	4
11	User-friendly library facility services	4	3	3	4	3
12	Can be accessed anytime and anywhere	4	4	4	4	4
13	The collection is in accordance with the needs	3	3	3	3	3
14	The collection is in accordance with the needs	3	4	3	4	4
15	Serving the circulation (borrowing) of books	3	4	3	4	3
	Score	54	53	53	53	53
	Average	3.6	3.5	3.5	3.5	3.5

The average percentage through individual trials was found to be 3.54 in the very practical category, so that the Athirah Islamic School digital library application is feasible without being revised so that it can be continued to the next stage.

b. Group Trial

After conducting practicality trials from the results of student responses in individual trials, the next stage is group testing. The feasibility and practicality of library applications can be seen from respondents who involve more students. The researcher divided 3 groups, each group consisting of 7 students. The questionnaire used is the same as the instrument given in individual trials. The following can be seen in the table of the results of the group trial respondents, the summary of the data obtained from students' responses to the digital library application in the group trial.

Table 4. Group trial respondents' results

No	Indicator	Group		
		1	2	3
1	The digital library application is easily accessible	4	4	4
2	Library applications can be accessed together	3.4	3.4	3.2
3	The digital library application is accessed online	4	4	4
4	Library applications can be accessed together	3.4	3.6	3.8
5	Instructions for use are very clear	3.2	3.2	3.4
6	Users can easily access information independently	3.4	3.6	3.6
7	Availability of adequate collections	3	3.2	3.4
8	Ease of access to find collections	3.8	3.4	3.2
9	Clarity of instructions and guidelines for the use of service facilities in the library	3.2	3.4	3.4
10	Using interactive e-book facilities	3.6	3.8	3.6
11	User-friendly library facility services	3.4	3.4	3.2
12	Can be accessed anytime and anywhere	4	3.4	3.6
13	The collection is in accordance with the needs	3.2	3.4	3.4
14	As a source of information	3.2	3.4	3.4
15	Serving the circulation (borrowing) of books	3.4	3.2	3.4
	Score	3.48	3.49	3.50

The average percentage through the group trial was found to be 3.49 in the very practical category, so that the Athirah Islamic School digital library application is feasible without being revised so that it can be continued to the next stage.

c. Test the responses of teachers and leaders

After conducting practicality trials from the results of student responses in individual trials, the next group stage was the test for the responses of teachers, librarians and leaders. At this stage, it involves teachers and leaders in providing responses to digital library application products. The following can be seen in the table of results of teacher respondents and leaders, a summary of the data obtained from the responses of the teacher and leadership responses.

Table 5. Results of teacher and leader respondents

No	**Indicator**	**Score**		
		Leaders	**Teacher 1**	**Teacher 2**
1	The digital library application is easy to use	4	4	4
2	The library application can be accessed online	4	4	4
3	Library applications can be accessed together	4	4	4
4	Instructions for use are very clear	4	4	4
5	Users can easily access information independently	4	4	3
6	The collection is in accordance with the needs	3	3	3
7	User facility services are easy to use	3	4	4
8	The online catalok / OPAC service makes tracking infoemasi easy	4	4	4
9	Ease of access to find collections	3	3	3
10	There is visitor information	3	4	4

11	Can find out frequently used collections	4	4	4
12	The level of data security is maintained	4	3	3
13	Library applications provide faster service	4	4	4
14	Realtime reporting	4	4	4
15	Can be accessed anytime and anywhere	4	4	4
	Average	**3.7**	**3.8**	**3.7**

The percentage level of achievement of digital library applications reaches 3.75, indicating that the application developed meets the criteria for being very practical and feasible to be developed. Based on the results of the responses that have been obtained from students, teachers, librarians and leaders to the developed digital library application that meets the criteria for practicality to be used.

a. Effectiveness level

Effectiveness relates to the problem of how to achieve the goals or results obtained, the use or benefits of the results obtained, the level of function of the elements or components, and the problem of the level of user satisfaction. The effectiveness test was carried out by involving students, teachers and librarians as respondents. The following can be seen in the table of respondents' results of the effectiveness test, the summary of data obtained from the responses of students and teachers to digital library applications based on indicators in the effectiveness trial.

Table 6. The results of the effectiveness test respondents

No	Indicator	Students	Librarians	Teachers
SYSTEM QUALITY				
1	The digital library application is easy to use	4	4	4
2	The menu and features are very complete	4	4	4
3	Menu functions and features are very relevant	4	4	4
4	Using the user name of each user	4	4	4
5	Guaranteed level of data security	3	3	3
INFORMATION QUALITY				
6	Can find out frequently used collections	4	4	4
7	Realtime reporting	4	4	4
8	The online catalok / OPAC service makes retrieval of information easy	4	4	4
9	There is visitor information	3	4	4
SERVICE QUALITY				
10	The collection is in accordance with the needs	3	3	3
11	Library applications provide faster service	4	4	4
12	Users can easily access information independently	4	4	3
13	The language used is easy to understand	3	4	3
USERS SATISFACTION				
14	Instructions for use are available	4	3	3
15	User facility services are easy to use	3	4	4
16	Can be accessed anytime and anywhere	4	4	4

17	Ease of access to find collections	3	3	3
NET BENEFITS				
18	As a learning resource	4	4	4
19	Assist in the learning process	3	3	4
20	Cultivate literacy culture	3	3	3
	Total	**72**	**73**	**73**
	Percentage	**90%**	**91.25%**	**90.25%**

The percentage level of achievement of digital library applications reaches 90.5%, indicating that the application developed meets the criteria for being very effective as a learning resource. The benefits that were felt by students during the Covid 19 pandemic, where since entering new learning on July 13, 2020, students are still taking distance online learning, according to learning quality standards, teachers continue to prioritize numeracy literacy, and character education in a new life order or life. new life order guidelines that can be done in the midst of the Covid-19 pandemic. In order to maintain a culture of literacy in the era of this pandemic, Athirah Islamic School makes a library visit program twice a week by utilizing a library application that has been developed.

The discussion of the research results is a part of presenting the results of the discussion analysis regarding the description of the research results so as to produce research findings. This research resulted in the development of a digital library application that was developed based on a needs analysis carried out at the Athirah Islamic School. The analysis was obtained based on the observations of students, teachers, and leaders and interviews either directly or indirectly through a google form questionnaire. The information obtained after initial observation is that library management has not been effective, the number of digital collections is limited, information on the availability of the collection is not available, cannot be accessed online, the data base is not centralized, the schedule of visits is limited by time, and when a reference is needed, the user must come directly.

Based on this case, the developers developed a digital library application that can be accessed anytime and anywhere with an interactive collection so that it can stimulate students' reading interest. In addition, the application development managed library administration digitally. It was supported by research result of Rohmah et al states that in an effort to improve the performance of library services, the use of library applications is an alternative or the right solution. The reasons for using an information system in the form of a library application include comprehensive, integrated, integrated data and information management, producing fast and accurate information, reducing costs, and better security (Rohmah et al., 2019) and using digital library technologies (Aytac, 2014).

Research on the development of digital library applications uses a type of research and development (R&D) development using the ADDIE development model in order to produce valid, practical, and effective digital library applications. The stages of development carried out are analysis, design, development, implementation, and evaluation. At the analysis stage, the main activity at this stage is to analyze the need for application development by communicating with prospective users and librarians by means of a survey at the Athirah Islamic School. The survey was conducted with offline and online interview and questionnaire techniques, in order to find out the problems faced so that the resulting product is more practical and effective. In the early stages of observations made on students to determine the extent to which the role of the library in supporting learning, and library services to visitors, then observations of teachers were made to determine the library visit program for students, and the number of types of collections that could be used as a reference by students and teachers. Observations on librarians to determine library administration management, types of library collections, forms of service and circulation. The design stage is the application design stage that refers to the results of the needs analysis that has been carried out in the previous stage. The design of the system aims to find out prototypes such as the data structure of the Athirah Islamic School library in the form of member data, book data, borrower data, return data and required information.

At the development stage, the researcher develops by paying attention to the planning that has been made at the design stage. Implementation stage (implmentation), the application that had been developed is then tested for validation by experts who are competent in their fields. At the evaluation stage, the results of the development design were tested by students, teachers and leaders. If there is a food mismatch, it will be repaired again for improvement. Design testing is carried out by simulating the use of applications, product testing is carried out to determine the level of practicality and effectiveness.

3.3.4 Practicality Test

The practicality of the library application being developed can be seen from the validity requirements and the level of its utilization. In this connection, in development research, Akker (1999) stated that Practically refers to the extent that user (or other experts) consider the intervention as appealing and usable in normal conditions.

3.3.5 Effectiveness Test

The digital library application was said to be effective if it meets 5 indicators, namely:

1) System Quality
   Indicators used in system quality include: The digital library application made it easy to manage administration, menus, and features were very complete, menu functions and features were very relevant, used the user name of each user, the level of data security was guaranteed ((Pinto & Little, 2014); (Hartono, 2017); Sukri Adrianto, 2019; Rohmah et al., 2019).
2) Quality of Information
   The indicators used to measure the quality of information include: being able to find out frequently used collections, real-time reporting, online catalog/OPAC services making information search easy, there is visitor information.
3) Quality of Service
   Several indicators determined the level of service include: collections were in accordance with needs, library applications provided faster service, users can easily access information independently, and the language used was easy to understand.
4) User Satisfaction
   The indicators used to measure the level of user satisfaction are: user manuals available, user service facilities, easy to use, can be accessed anytime and anywhere, easy access to find collections
5) Net Benefits

The net benefits felt by users after using digital library applications can be known based on indicators: as a learning resource, helping in the learning process to foster a culture of literacy.

4. CONCLUSION

The need of digital library application development carried out at Athirah Islamic School is obtained from the results of an analysis of the problems faced by users. The problem faced is that finding learning resources is very limited because visits to the library are limited by working hours, incomplete collection of books in the library, information on the availability of collections is not available, it is still difficult to find reference books, and administrative management is still manual. The prototype of the Islamic School library application provides an overview of the library application that will be developed consisting of admin access rights including: bibliography, membership, inventory, circulation, and reporting. User access rights, namely logging in and selecting the visitor menu. After the collection is found, then fill in the attendance. For the circulation process, the user borrows books/collections by entering the user id in the circulation menu which is then approved by the admin.

The results of validation testing by experts show that the Islamic School digital library application meets the very valid category through several stages of field trials, namely content validation and media validation. The level of practicality of digital library applications can be seen from the results of field trial assessments of products based on technical aspects provided by practitioners (librarians, students, and teachers). The level of effectiveness in using library applications can be measured from the results of questionnaires given to students, teachers, and librarians.

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