Web-Based Online Library Design to Improve Student Literacy

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ABSTRAK

Kendala yang dihadapi saat ini yaitu kesadaran untuk membaca buku semakin menurun seiring dengan berkembangnya dunia daring, khususnya di dunia pendidikan minat baca semakin menurun secara langsung dengan mendatangi perpustakaan. Oleh karena itu, penelitian ini mengembangkan perpustakaan virtual dalam bentuk web yang dapat diakses kapan saja dan dimana saja. Tujuan dari penelitian ini merupakan penelitian pengembangan yang dimulai dari analisis kebutuhan dan identifikasi kebutuhan, mendesain dan mengembangkan perpustakaan online berbasis web, uji kevalidan dan kepraktisan serta efektifitas melalui uji coba implentasi dan evaluasi produk. Tahapan ini mengacu pada model pengembangan ADDIE (Analisis, Design, Developemt, Implementation dan Evaluation) untuk penelitian ini sampai pada tahapan development. Subjek dalam penelitian ini adalah dua orang ahli materi dan dua orang ahli media. Subjek uji coba yaitu mahasiswa Fakultas Keguruan dan Ilmu Pendidikan. Teknik pengumpulan data menggunakan angket, dokumentasi, wawancara. Penelitian ini menggunakan instrumen pengumpulan data berupa kuesioner. Teknik analisis data menggunakan analisis deskriptif kualitatif dan analisis deskriptif kuantitatif. Hasil penelitian yaitu validasi Ahli Media menunjukkan kriteria sangat layak. Berdasarkan respon pengguna dapat disimpulkan bahwa respon berada pada kategori sangat praktis. Disimpulkan bahwa respon pengguna sangat setuju dengan penggunaan perpustakaan online dalam meningkatkan literasi. Implikasi penelitian yaitu hasil penelitian dapat digunakan sebagai dasar untuk membuat kebijakan dan strategi pengembangan layanan perpustakaan di masa depan. Ini termasuk menentukan fokus pengembangan teknologi dan layanan yang paling relevan dengan kebutuhan pengguna

ABSTRACT

The current obstacles are that awareness of reading books is decreasing along with the development of the online world, especially in the world of education, and interest in reading is decreasing directly by visiting the library. Therefore, this study develops a virtual library as a web that can be accessed anytime and anywhere. The purpose of this study is development research that starts from needs analysis and needs identification, designing and developing a web-based online library, validity and practicality tests, and effectiveness through product implementation and evaluation trials. This stage refers to the ADDIE development model (Analysis, Design, Development, Implementation, and Evaluation) for this study to the development stage. The subjects in this study were two material experts and two media experts. The trial subjects were students of the Faculty of Teacher Training and Education. Data collection techniques used questionnaires, documentation, and interviews. This study used a data collection instrument in the form of a questionnaire. Data analysis techniques used qualitative descriptive analysis and quantitative descriptive analysis. The study's results, namely the validation of Media Experts, showed very feasible criteria. Based on user responses, the responses are in the very practical category. It was concluded that user responses strongly agreed with the use of online libraries in improving literacy. The research implies that the results can be used as a basis for developing future policies and strategies for library services. This includes determining the technology and service development focus most relevant to user needs.

1. INTRODUCTION

Digital development requires schools to keep up with developments to improve service quality. As a form of education, distance learning is currently showing great promise and the role of online libraries in providing off-campus information services is increasing (Inesh et al., 2022; Pratama, 2023; Sindiani et al., 2020; Zhou, 2022). To that end, libraries have also responded to the challenging needs of the education system (Asid, 2022; Perez, 2021). Libraries are an integral part of any academic institution as they provide information, resources, and services to users to assist them in their studies and research (Al-Baridi, 2021; Asid, 2022; Perez, 2021; Zhou, 2022). Libraries as literacy media have a strategic role in educating the community. As a literacy medium, the library is not only a source of information and knowledge for every learner but also a lifelong learning medium that supports the improvement of the quality of education. The application of information literacy in higher education has long

been carried out and is more integrated in educational programs. The implementation of information literacy activities has a good impact on library users (Sumantri et al., 2023; Sutamrin et al., 2022).

The use of information literacy materials is not only on the aspect of emerging technological trends but there are things that are important and need to be considered such as the needs of its users or the characteristics of library users as an online literacy media the library can provide online library services (Korat et al., 2021; Udiyana, I. G. ., & Arnyana, 2022; YalÇintaŞ Sezgin & Ulus, 2017). With online information as the main content of its services. Online libraries are the use of online-based information technology to obtain, store, preserve and provide access to information and materials involved in online and onlue-based forms that are onlineized from print, audio visual and other forms (H. et al., 2021; Ibrahim & Alqahtani, 2018; Pratama & Adam, 2024). Online libraries can fulfill good and efficient services to their users. Online library is an information system that can help users in finding information or references about the books needed. Libraries need a system to collect information, manage information, store information and be able to retrieve information and distribute good information (Ayu Megawaty et al., 2021; Fitriani, 2018). Online libraries are economically more profitable than traditional libraries (Arman et al., 2021; Fitriani, 2018). Online libraries offer convenience for users to access electronic information sources with fun tools at limited times and opportunities. Users are no longer physically bound to library service hours where they have to visit the library to get information.

Literacy is the ability to understand and process information through reading and writing (Foti, 2022; Masfingatin & Suprapto, 2020; Oktariani & Ekadiansyah, 2020). It is important to improve students' literacy because literacy plays an important role for students to acquire skills, knowledge and attitudes (Hasanah & Sukri, 2023; Puspita & Purwo, 2019). In this era of globalization, all activities including literacy depend on technology. Technology has contributed to easier access to information, especially in digital form. Technology has successfully influenced and replaced reading habits. By connecting to the internet, students have many media options to access various information (Nisrina et al., 2022; Perez, 2021; Withorn, 2023). However, the current problem is that awareness of reading books is decreasing along with the development of the online world, especially in the world of education, interest in reading is decreasing directly by visiting the library. This is also revealed by previous research findings which reveal that there are still many students who have low interest in reading (Dafit et al., 2020; Hidayat & Rohati, 2020; Solahudin et al., 2022). Other studies also reveal that low interest in reading is caused by students who are not used to reading activities (Kaban. & Karadeniz, 2021; Sumira et al., 2018). However, technological advances can overcome the interest in reading and online-based digital literacy of students at the Indonesian Christian University of Toraja. From these problems can be used as a tool to design a web-based online library. Problem solving in this study refers to the development model that is used as a reference in the design of web-based online libraries. The design in this study is development, implementation and evaluation to determine whether the design developed is appropriate (Suseno & Patrikha, 2019). One of the efforts to improve students' literacy and numeracy skills is to innovate interactive learning media and the right approach (Anurag Borpatra Gohain & Dr. Devanand Mishra, 2023; Aprilia et al., 2023). This information can be used to optimize resource allocation, identify gaps in the collection, and improve library services (Anurag Borpatra Gohain & Dr. Devanand Mishra, 2023).

Library comes from the basic word library. According to the Big Indonesian Dictionary, library means book, and book (Anastasia Baan & Sofyan, 2022; Aprizal & Hasriani, 2019). Apart from books, it also contains other printed materials such as magazines, reports, pamphlets, proceedings, manuscripts or manuscripts, sheet music, and various works of audiovisual media such as films, slides, cassettes, vinyl records, as well as microforms such as microfilm, microfis, and microburam (Falloon, 2020; Siddique et al., 2021). A managed collection of information, with associated services where the information is stored in online formats and accessible over a network. A crucial part of this definition is that the information is managed (Siddique et al., 2021). In developing this web-based information system, the author will prioritize the management of printed books with the following features: a. Display, change, add and delete book data. b. Display, change, add and delete member data. c. Display, change, add and delete library officer data. d. Circulation process of borrowing and returning books. A more detailed circulation process for borrowing and returning books. e. Generating loan reports per period (Aghbashlo et al., 2021; Siddique et al., 2021). .

Online library resources can be a reliable source for finding various references for conducting research or writing papers. With the increasing number of published papers, the use of online library resources is becoming increasingly important for academics, including university students. Online libraries can minimize library materials and can save library materials from damage, online libraries can help users in finding library materials and make it easier for users to read anywhere. Human resources as a supporting system, availability of hardware, software and funds are normative problems faced by libraries in general in organizing digita libraries (Chamidi et al., 2022). The advantages of online libraries compared to conventional libraries include 1. Saving Space Because the online library collection is online documents, the storage will be very efficient. 2. Multiple Access The disadvantage of conventional libraries is that access to the collection is single. Each user can use the same online book collection both to read and to download or transfer to their personal computer (download). 3. Not limited by

space and time Online libraries can be accessed from anywhere and anytime provided there is a computer network (computer internetworking). While conventional libraries can only be accessed if the person comes to the library when the library opens its services. 4. Collections can be in the form of multimedia Online library collections are not only collections that are text only or images only. Even online library collections can store documents that are only moving images and sounds that are impossible to replace with text. 5. Lower cost Relatively speaking, it can be said that the cost of online documents is cheap. However, when looking at the nature of e-books that can be duplicated with an unlimited number and very low cost (Scoulas & De Groote, 2023).

The development of a digital-based library to enhance digital literacy among students at the Faculty of Education of the Indonesian Christian University of Toraja is the condition that motivates this research development. With the development of an online library system (e-library), the website can make it easier for members to find out book information, and can borrow books anytime and anywhere, while the integrated system makes it easier for librarians to manage library data and provide library reports more accurately and quickly. The novelty of this research could lie in the adaptation of online library design that takes into account the cultural context and specific needs of students in Toraja. This includes the integration of local resources, traditional literature, and educational materials relevant to the curriculum and the uniqueness of Torajan culture, which may not be covered in more general online library designs. Therefore, this research develops a virtual library in the form of a web that can be accessed anytime and anywhere.

2. METHOD

The research method to be used in this research is R&D (Research & Development) research and the development model chosen is the ADDIE model. This ADDIE model consists of five stages namely design, development, implementation and evaluation (Mawarni & Hartoto, 2023). This research was conducted at the Faculty of Teacher Training and Education, Universitas Kristen Indonesia Toraja with the target research subjects, namely librarians and students at the Faculty of Teacher Training and Education. Data collection techniques that will be used in this research are data analysis, questionnaires, documentation, interviews. The questionnaire instrument consists of media experts and users (librarians and students). Questionnaires in this study will be given to media experts to determine the feasibility level of web-based online libraries for research. questionnaires will also be given to librarians and students as users to determine user responses (level of practicality) to web-based online libraries. The data analysis technique that will be used is descriptive statistical analysis. The questionnaire scoring scale uses a Likert scale with a range of 1-5 (very inappropriate-very feasible). Explanation of eligibility score criteria. According to Mawarni, it is said to be very inappropriate if ≤ 20%, less feasible (21-40%), quite feasible (41-60%), feasible (61-80%), and very feasible (81-100%) (Azzahra & Ramadhani, 2020; Mawarni & Hartoto, 2023).

The data analysis technique used in this study is a descriptive analysis technique which is used to see the level of validity of the product developed by the researcher so that the data analyzed is the validity of the product developed. The measurement scale used in this study uses a Likert scale 5 categories with scores 5, 4, 3, 2, and 1 with alternative answers, namely very feasible, feasible, quite feasible, less feasible and not feasible. Meanwhile, to determine the practicality of teaching materials obtained from the results of the student response questionnaire. The subjects in this study were two material experts and two media experts. This study used a data collection instrument in the form of a questionnaire. Validation of data from experts will be analyzed using qualitative descriptive analysis and quantitative descriptive analysis. The subjects of this study were students of the Faculty of Teacher Training and Education at Universitas Kristen Indonesia Toraja. The questionnaire instrument consists of questionnaires for media experts, material/content experts and users (lecturers, library operators, and students). Questionnaires were given to media experts and material/content experts to determine the feasibility of the online library. Questionnaires were also given to users (lecturers, library operators, and students) to determine user responses to the library that had been developed. Validity Scoring showed in Table 1.

Table 1. Validity Scoring

Score	Criteria
4	Strongly Agree
3	Agree
2	Disagree
1	Strongly Disagree

(Riduwan, 2003)

The validator provides advice on the assessment given to the development of the online library based on the assessment items contained in the validity test. If there are still many errors in the development of printed and

non-printed teaching materials, it is necessary to make revisions to make the online library truly valid. Validity testing is carried out by validators who are experts in their fields so that they can measure the level of feasibility of the online library that has been developed. Criteria for assigning validity scores showed in Table 2.

Table 2. Criteria for Assigning Validity Scores

No	Average Score	Criteria
1	$3.0 < M < 4.0$	Very Feasible
2	$2.0 < M < 3.0$	Worth
3	$1.0 < M < 2.0$	Less Feasible
4	$0.0 < M < 1.0$	Not Feasible

(Nurdin, 2007)

User response data was obtained from a response questionnaire to the online library that had been developed. The analysis was conducted to determine the response to the online library used. The results of user response observations were analyzed to determine the frequency of practicality. Category of Practicality showed in Table 3.

Table 3. Category of Practicality

No	Average Score	Category
1	$3.0 < M < 4.0$	Very Practical
2	$2.0 < M < 3.0$	Practical
3	$1.0 < M < 2.0$	Less Practical
4	$0.0 < M < 1.0$	Not Practical

3. RESULT AND DISCUSSION

Result

Problem and Needs Analysis in Learning Based on the results of the literature study conducted by the researcher, data related to literacy and information problems related to learning at the Faculty of Teacher Training and Education, Universitas Kristen Indonesia Toraja were obtained, including limited electronic books (ebooks), limited reading books available in the library, library operating hours cannot be visited at any time, and the lack of information that is a source of learning for students and lecturers. The results of this study indicate that students and lecturers at the faculty of education need an online library that can provide electronic information needs that can be accessed anytime and anywhere. E-Library UKI Toraja showed in Figure 1.
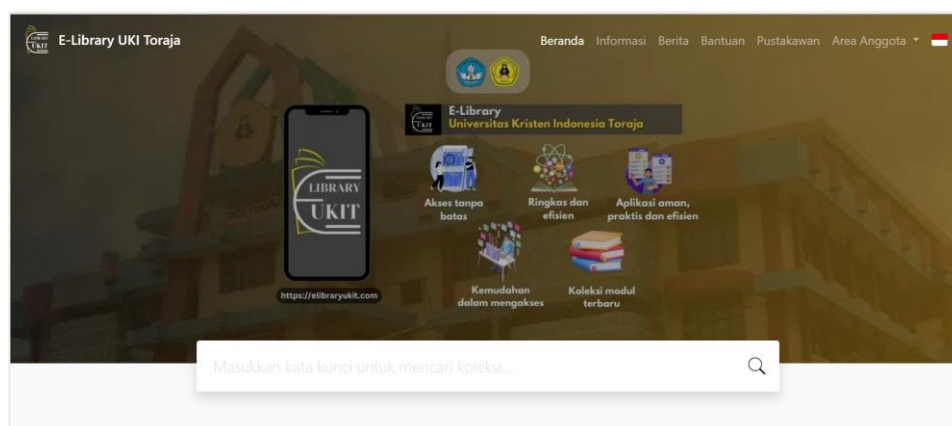

Figure 1. E-Library UKI Toraja

The development of a product in the form of an online library generally goes through systematic stages and also goes through several feasibility tests to produce a product that is useful for users. This model is a very complex and complete model (Branch, 2010). The ADDIE model can be used for various forms of product development in learning activities such as models, learning strategies, learning methods, media and teaching materials. Login Interface showed in Figure 2.
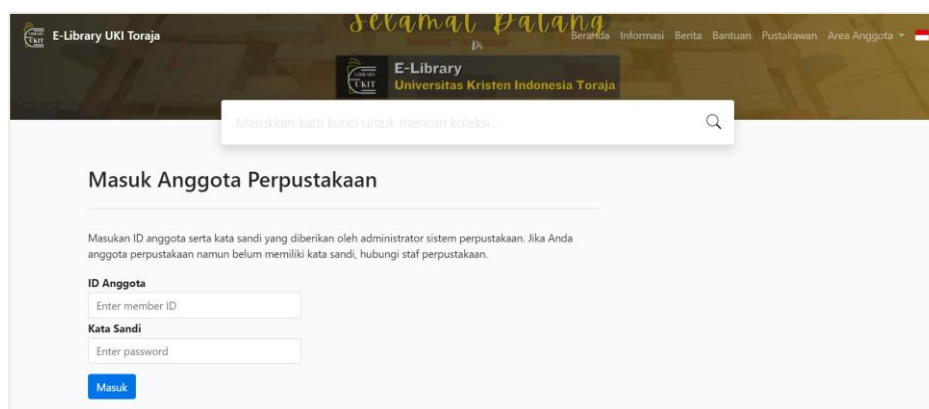
Figure 2. Login Interface

The next step after designing an online library is to conduct a validity test. The validity test is carried out to determine the extent of the feasibility of the media that has been designed. After obtaining a feasibility assessment, the learning media is revised according to the validator's criticisms and suggestions. Media expert validators are people who are experts in their fields, material expert validation is a validator who is a lecturer who has expertise and expertise in accordance with the research that has been raised by researchers in this study. The results of material validation by media expert validator showed in Table 4.

Table 4. Media Expert Validation Results

Aspect	Decription	Score
Physical	The app is easy to operate web	4
	Ease of access each menu web	3
	Easy access to library web	4
	Total	**11**
	Average	**3.67**
Font Usage	Teahde font used is easy	4
	Selection of font size	4
	Not using too many font combinations	3
	Total	**11**
	Average	**3.67**
View	Proper menu placement	4
	Penggunaan gambar yang Proporsional	4
	Tata letak ebook pada web perpustakaan	4
	Proportional front layout (text and image layout)	4
	App design gives a positive impression	4
	Total	**16**
	Average	**4**
Linguistics	Use of language that is very easy for users to understand	3
	Total	**3**
	Total Scor	**14.34**
	Average	**3.58**

Based on the data in Table 4, it can be seen that the quality of the online library based on the assessment by the media expert lecturer shows an average of 3.58 from the maximum average score of 4.00, thus the online library developed shows very feasible criteria. After analyzing the results obtained from the validators, user trials were then carried out to obtain assessment data on the library that had been developed. At this stage, students and lecturers within the Faculty of Teacher Training and Education were involved. Based on Figure 3, it can be concluded that the user response after using interactive media and filling out the assessment questionnaire, an average score of 3.61 was obtained, which means that the user response is in the very practical category. So it can be concluded that the user response strongly agrees with the use of web-based libraries in improving literacy.
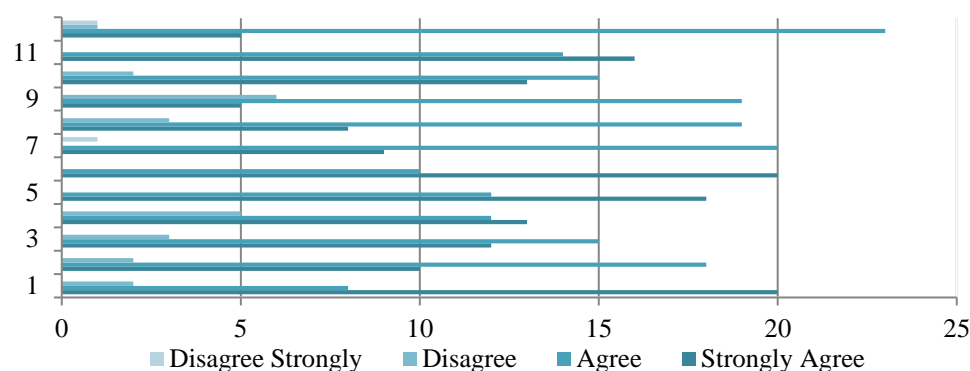
Figure 3. User Response Results

Discussion

The digital era has transformed the way we access and consume information. One of the most significant shifts has been in the realm of libraries, which have evolved from physical spaces filled with books and manuscripts to online platforms offering a vast array of digital resources. Online libraries have become an essential component of the digital landscape, providing users with unprecedented access to information, literature, and academic resources. Historically, libraries have been the guardians of knowledge, offering the public access to books, journals, and various forms of media. However, the advent of the internet and digital technology has expanded the scope of what libraries can offer. The digital learning transformation brings the extension of the traditional libraries to online repositories. Learning object repositories are employed to deliver several functionalities related to the learning object's lifecycle (Behr et al., 2022; Mannheimer et al., 2019). The development of an online library provides the convenience of actionable classroom content with a focus on teaching students information literacy is provided (Falloon, 2020; Siddique et al., 2021; Tang, 2019).

This digital transformation has led to the creation of online libraries, which allow users to access a wide range of digital materials, including ebooks, academic papers, audio books, and videos, from anywhere and at any time. As technology continues to evolve, so too will the capabilities and offerings of online libraries. In the digital era, the landscape of literacy and learning is undergoing a transformative shift, thanks in large part to the advent of online libraries (Lee et al., 2021; Purnamayanti et al., 2022). These digital repositories are not just changing the way we access books and information; they are also playing a pivotal role in enhancing literacy among people of all ages (Bamgbose et al., 2024; George Macgregor, 2023). As we navigate through the vast sea of information available online, online libraries stand as beacons of organized, reliable, and accessible knowledge, crucial for fostering literacy in the 21st century (Chigbundu & Bako, 2022; Perez, 2021). Therefore, educational initiatives aimed at improving digital literacy are crucial for ensuring that all users can take full advantage of these resources. Furthermore, ensuring equitable access to the necessary technology and internet connectivity remains a barrier that needs to be addressed to fully realize the potential of online libraries in enhancing literacy.

Online libraries in the digital era are powerful tools for enhancing literacy. They provide unprecedented access to information and learning resources, support diverse learning needs, and encourage the development of critical thinking and research skills. As we continue to advance technologically, the role of online libraries in promoting literacy and lifelong learning will only grow in importance (Deeke & Binnie, 2023; Joo & Choi, 2015). By addressing the challenges of digital access and literacy, we can unlock the full potential of online libraries to create a more informed, educated, and literate society. Therefore, libraries must adapt so they are able to provide quality digital information resources that support the learning process (Asid, 2022; Ortoll et al., 2020; Zhou, 2022). In these conditions, libraries should reconsider the services, thinking to develop and propose new tools for supporting users and improving their skills in the own attempts

Based on the data of Media Expert Validation, it can be seen that the quality of the online library based on the assessment by the media expert lecturer shows the online library developed shows very feasible criteria. The user response strongly agrees with the use of web-based libraries in improving literacy. Research on online library design can be very useful for improving the accessibility and effectiveness of library services in the digital age. However, as with any research, there are some limitations that may be encountered. One of the challenges faced is that technology changes rapidly, and designs that may have been relevant at the time of the study can quickly become obsolete. This limitation demands a flexible and adaptive design, which can be constantly updated according to the latest technological developments (Asid, 2022; Unda & Agcito, 2024).

Design research implications Online libraries support self-directed learning and provide essential resources for students who may not be physically present on campus, such as in pandemic situations or for those who live far from campus. Specific to the Toraja context, online libraries can be a tool to preserve and integrate

cultural materials in learning resources, enriching students' educational experience with locally relevant content. The availability of information and resources provided by online libraries helps students develop critical information literacy skills, such as the ability to locate, assess and use information effectively. On the other hand, the results of this study also support Independent and Distance Learning. Online libraries support independent learning and provide essential resources for students who may not be physically present on campus, such as in a pandemic situation or for those who live far from campus. Libraries may experience limitations in accessing diverse and up-to-date reading resources due to cost, availability, or agreements with publishers. this condition is expected to be one of the references for further research.

4. CONCLUSION

Based on Media Expert Validation data, it can be seen that the quality of online libraries based on assessments by media expert lecturers shows that the eligibility criteria are close to the maximum number, thus the online library developed shows very feasible criteria. Based on user responses, it can be concluded that user responses after using interactive media and filling out the assessment questionnaire obtained a score that was in the very practical category. So it can be concluded that user responses strongly agree with the use of web-based libraries in improving literacy.

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