Developing Digital Library "Komulit" Application Using Kodular for Enriching Students' Reading References

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Abstract

In the current massive digital development, we have to face the fact that our students are more engaged with their smartphones rather than books. However, some schools have no facilities to provide digital reading sources and they also lack of book collections. This study aims to develop a library application to provide students with various reading resources and enrich library's book collections. This study employed RnD method which is Analyze, Design, and Develop. It involves 12 schools and 40 junior high school students and uses a questionnaire to analyze the needs. For the design and development phase, it uses an online platform called Kodular to create the digital library. The result of this study is the product of an Android application called Digilib Komulit that can unite and access various reading source websites through one application and can be used in schools' library as multimedia collection.

Keywords: Android Application; Digital Library; Students' Reading References

Introduction

In the current modern era, it cannot be denied the wave and the growth of technology influence all aspects of our lives. Technology makes people get easier to mobilize, communicate, exchange information, connect with other people, etc. It also influences the economy, politics, society, and even education. The pandemic could be canonical, especially in the education field, as students and teachers have to be familiar with the use of the Internet and online classes. Even though online education was already adopted and used before the pandemic, the growth become significant since the pandemic era (Xie et al., 2020). Besides online classes, technology also influences the literacy field. As we know the massive use of smartphones and the internet requires the ability that is called digital literacy. According to Gilster, digital literacy is the ability to understand and use information in multiple formats (Johnston, 2020). This kind of ability is needed as we know that digital technology involves many forms such as video, pictures, fonts, and other particular media that need such an ability to transmit the given information. Therefore, people are required to be familiar with technology and have this kind of ability as most of the information in this era is using digital media. Another distinctive movement that is caused by technology is the digital library. Dawns and Friedman stated that Digital libraries containing representations of original works provide opportunities for students and scholars to conduct research from personal computers and workstations located in their homes, offices, and laboratories. Facilitating remote research from private and public locations offers learners unconstrained opportunities either by the limited resources found in particular physical libraries or by their schedules of operation (Sheeja, 2010). The digital library allows the user to access the books from the library without bothering themselves to go to the library.

Besides the digital libraries that are provided by particular institutions, currently, there are a lot of websites that provide free access and downloadable books. This movement also helps many people who can't afford to buy books or people who have no

time to visit libraries. The research about the use of the digital library that involves undergraduate students shows that they are more engaged in using the digital library because it is easy to access, most of them prefer to use digital formats, and easy to download (Sheeja, 2010). This research indicates that the young generation is more familiar with digital rather than printed books. The indications of the positive sides of digital libraries brought the researchers to the idea of developing a digital library that can enrich students' reading references. The basis of this research depends upon preliminary research that involves 12 school libraries in Trenggalek, East Java from the elementary to the high school level. It is also supported by the survey that involves 40 students of junior high school in Trenggalek. The survey of the school libraries shows that 40% of schools lack facilities and 16,7% of schools have limited book collections. Besides, 41,7% of the schools have no multimedia collections, audiobooks, video collections, etc. In fact, according to the national standard, school libraries should have multimedia besides printed collections. The finding in the preliminary research shows that the reading references of the students still need to be improved.

The recent research about the Literacy program in Trenggalek stated that most of the students are not interested in doing the literacy program (Masithoh, 2021). which is reading 15 minutes before the class. This research also indicates that students are less motivated to read. The problem neither relies on the program nor the teachers but it is related to the student's motivation. The thing that should be fixed is to grow students' motivation in reading so that their reading references will be improved as well, which is the concern of the study. This study is trying to solve the problem concerning reading references and lack of book collection that happen in schools by developing an android application called digilib Komulit using free application builder called Kodular.

Numerous research about the digital library has been done in the past few years. They were researched on several aspects such as reviewing particular digital library from its features, functions, collections (Asencio, 2017; Lopez & Larsgaard, 1998; Rosa, 2019; Walton, 2016) building a digital collection by using Greenstone digital library software (Zhang & Gourley, 2006), students' behavioral intention, perceptions and importance in using a digital library (Arif & Kanwal, 2009; Moorthy et al., 2019; Sheeja, 2010). However, few research intended to develop digital library applications that use Kodular. This research also differs from the previous researchers as the digital library application unified various websites into one application. Therefore, the readers can access many online libraries from the application without bothering to type the websites' address in the search engine.

The theoretical framework of this study is basically from the preliminary survey that involves 12 school libraries in Trenggalek, East Java from the elementary to the high school level. It is also supported by the survey that involves 40 students of junior high school in Trenggalek. As we have discussed in the previous section, firstly the survey shows that 16,7% of libraries lack of book references and 41,7% of libraries have no multimedia collection. This finding depends upon the Indonesian National Library's regulation that states the standard book collection that should have by the schools according to the number of students and that the library should have a multimedia collection besides printed books *(Standar Nasional Perpustakaan Sekolah Dasar/Madrasah Ibtidaiyah,* 2017*; Standar Nasional Perpustakaan Sekolah Menengah Atas/Madrasah Aliyah,* 2017*; Standar Nasional Perpustakaan Sekolah Menengah Pertama/Madrasah Tsanawiyah,* 2017*).*

The second finding in the survey is the opening hours of school libraries. 66,7% of school libraries' opening hours are depending on schools' hours. This is in line with the survey from students, 70,3% of them claim that they have no time to go to the library.

It can be understood that students spend most of their time in the classroom during school hours. Another supporting thing is that school break time is quite short, so most of the students choose to spend break time in the canteen rather than in the library. This can be understood that 'time' is also an issue for students' interest to visit the library and read books. The third finding is that the survey also presents that 82,5% of students are exposed to digital books, and 55% of them find more engagement with digital books rather than printed books. It is not surprising since the young generation has been exposed to technology since they were an infant. They are familiar with the internet and the use of various applications on their smartphone.

Currently, there are a lot of websites that provide free reading sources and references that are downloadable and can be useful for students reading material. However, we cannot deny that few students would bother to memorize those various websites. Those preliminary survey and issues drive the researcher to develop an application that 'unites' various free reading source websites. So that the students could access various websites through one single application. It also hoped to address students' problems with the 'time' issue and school libraries' problem of lack of book sources.

The application is made by using an application builder website namely Kodular. As slightly mentioned above, this application is the unifier of various websites. This is because all the icons that exist in the application will direct the users to different websites. The list of websites that are directed to the users such as Literacy Cloud, faded page, archive, librivox, British council, and open access Google Drive contains books downloaded from the Ministry of Education and Culture websites. In short, this application is hyperlinked to various websites. Objectives of the study are (1) to develop a digital library application as a unifier of various free reading material websites, (2) to develop an application that can enrich the school libraries' book collections. (3) to develop an application that can be accessed by students every time, everywhere.

Method

This research uses the ADDIE method which is analyze, design, develop, implement, and evaluation. Analyze phase is to identify probable causes for a performance gap, design is to verify the desired performances and appropriate testing methods, develop is to generate and validate the learning resources, implement is to prepare the environment, and evaluate is to assess the quality of the products (Branch, 2010). These phases, however, sometimes can be overlapped and can be interrelated, as they provide dynamic, flexible, guidelines for developing efficient and effective instruction. The analysis phase uses a survey that involved 12 school libraries and 40 students to figure out the need analysis of the digital library itself. The survey uses a semi-structured questionnaire and close-ended questions. After the need analysis is obtained, the researcher uses a free application builder namely Kodular to design and develop the intended digital library. The content of the digital library is adjusting the reading materials for junior high school students. Then the application is tested and validated by the expert from the media and materials aspects. The expert validation uses a rubric and close-ended questions.

Result and Discussions
1. Analyze

The researcher analyzes the needs by conducting a preliminary survey that involves 12 school libraries in Trenggalek, East Java, and 40 junior high school students from Trenggalek as well. The survey finds out the reasons that made students rarely go to school libraries. The first one is the limited book collections. 50% of the correspondents

are junior high school, 30% are elementary school, and 20% are high school. The survey shows that only 25% of schools claim their libraries are effective, while the rest are facing several problems such as lack of facilities (50%), students being less motivated to read (41,7%), limited time to visit the library (33,3%), and limited book collections (16,7%).

The lack of facilities problem is proved by the fact that 58,3% of schools have no multimedia or digital collection, whereas according to the national standard, the school library should have a multimedia collection. The number of book collections that the library should have also mentioned in the national regulation. If the school has a limited book collection it is a serious problem. Because of the lack of students' motivation and limited time to visit the library, the researcher did a further survey that involved 40 students of junior high school. The survey shows that students are less motivated because they feel that the school library has limited book collections. They are craving various books from various genres such as picture books, novels, digital books, etc. Thus, it can be seen that the problems are intertwined. The limited time to visit the library problem was surprisingly supported by the students' survey. 72,5% of students claimed that they have no time to go to the library and read books, and another claimed that this is because the school break time is too short so they are unable to go to the library. The survey also shows that 100% of students who participate are excited about the idea of a digital library. From the need analysis above, it can be inferred that the schools need to provide a digital library to add the library facilities, to enrich the book collections. Besides, the digital library can address the problems of less motivated students and limited time to visit the library. It is because the students could access the library every time and everywhere.
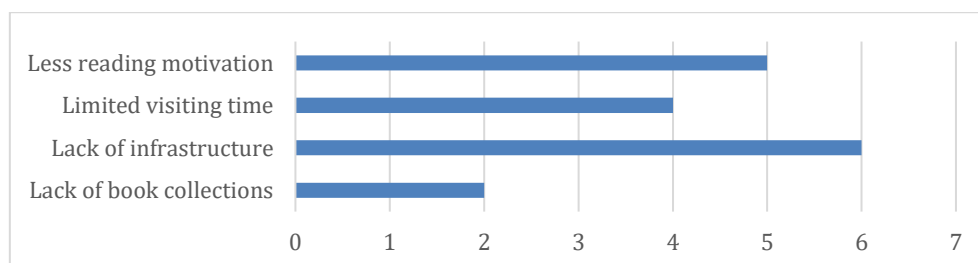
Figur 1. Factors That Make Students Rarely Visit School Libraries According To Libraries Survey
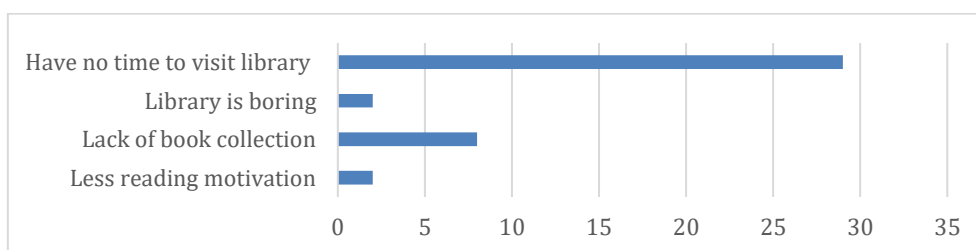
Figur 2. Factors That Make Students Rarely Visit School Libraries According To Libraries' Visitors

2. Design

The design of the application considers several aspects such as the various websites that provide free reading sources. The sources are not limited to books but also audiobooks and short story videos. The books provided are both fiction and non-fiction genres also bilingual (Indonesian and English). Another consideration is copyright matters. The application will make sure that all reading sources are legal. The user will be directed to the intended websites when using the application. The lists of websites that are used in the application are listed below.

a. Graded Books: directed to https://literacycloud.org/
b. Fiction icon has two choices which are Indonesia and English for Indonesia, the books are downloaded from https://badanbahasa.kemdikbud.go.id/, while for English, the books are downloaded from https://www.fadedpage.com/ and https://archive.org/ then all the books are put into a shared google drive. when clicking the book list, it will be directed to Google Drive.
c. Nonfiction: directed to shared Google Drive and the books downloaded from https://buku.kemdikbud.go.id/
d. Short story video: directed to https://learnenglishkids.britishcouncil.org/ which contains videos of various short story adaptation
e. Audiobooks: https://archive.org/ with the association of http://librivox.org/
f. Intercultural reading: directed to shared Google Drive and the books downloaded from https://archive.org/ specialized for fairy tales and folktales under the title 'tales around the world'

The design of the application is intended to unify those various websites so that users can easily access various websites through the application. This idea is trying to solve the problems of schools' libraries which are (1) lack of book collection including multimedia collection, (2) boost reading motivation as most websites provide interesting and eye-catching books to improve reading motivation, (3) limited time to visit library as digilib Komulit can be accessed anywhere and everywhere.

The application is made using Kodular a free website application builder. Previous researchers have already done research and development using Kodular. However, most of them focused on developing teaching and learning media (Alfani & Puspasari, 2022; Hanum & Sari, 2023; Muyasir & Musfikar, 2022; Nurjanah & Suprihatin, 2023; Prianbogo & Rafida, 2022) and used Kodular for students' training (Kholifah & Imansari, 2022), but no one specifically addressed it for making digital library.

3. Develop

The application development is carried out using two steps which are (1) pre-production, (2) production, (3) expert validation. The pre-production process is concerned with making a flowchart and storyboard to build the concept of the application itself. The flowchart is as follows in navigation button there is "about" button which credit all websites that is used in the application.
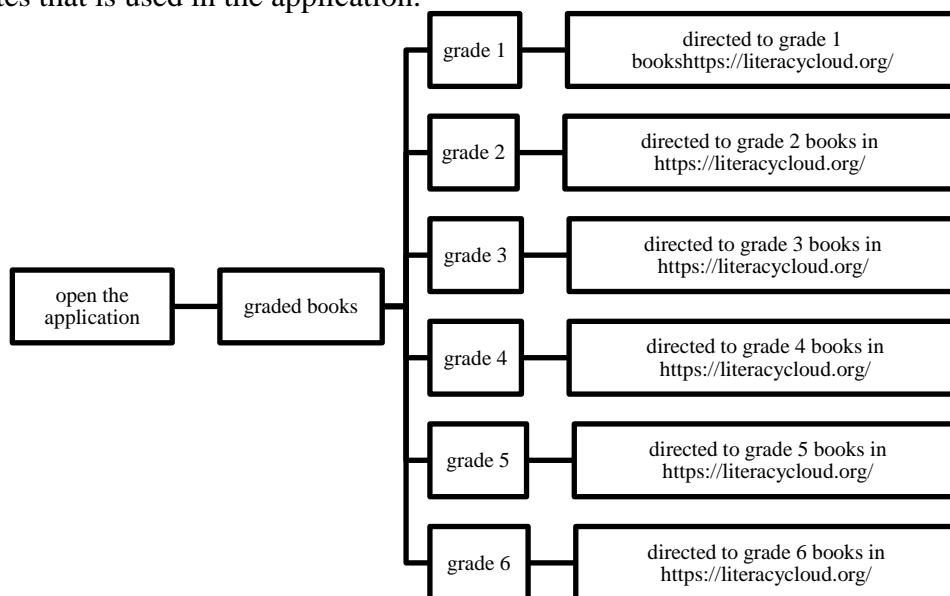


Figur 3. Flowchart of Application 1
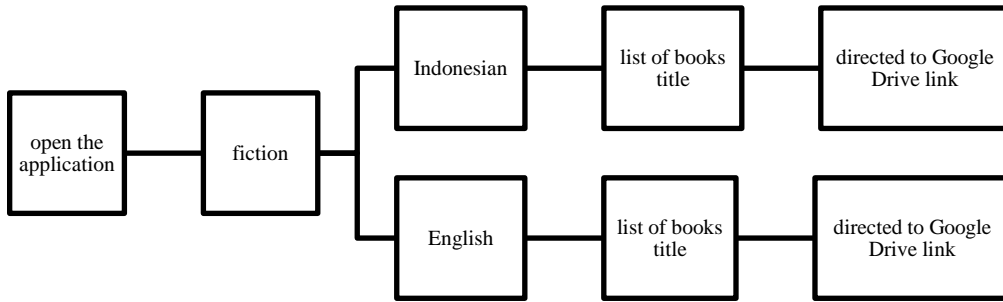
Figur 4. Flowchart of Application 2
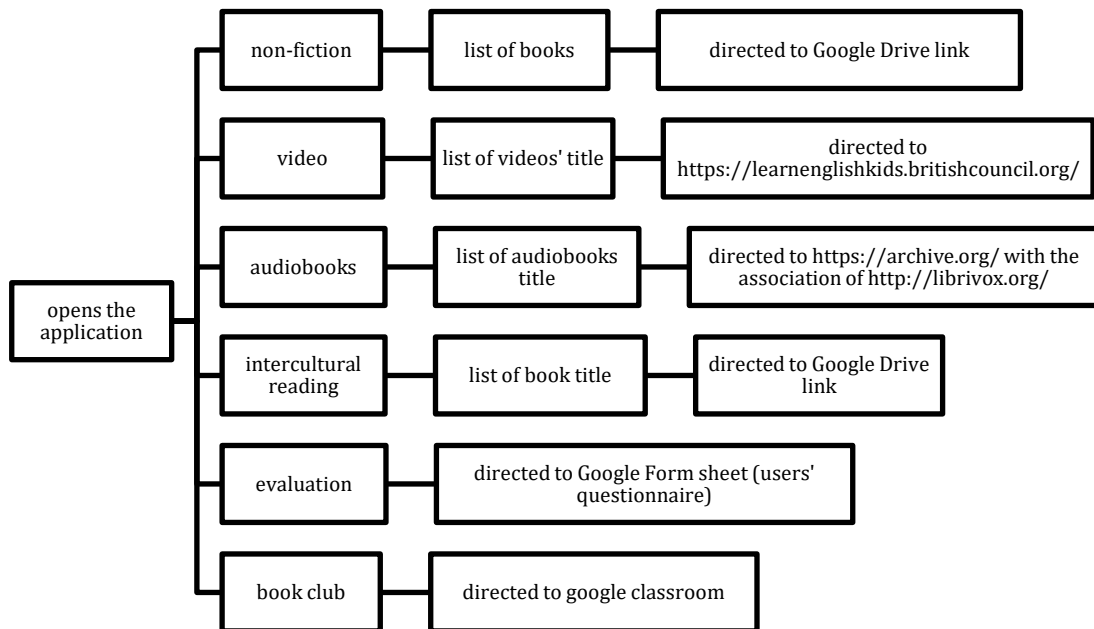
Figur 5. Flowchart of Application 3

After pre-production, the production is carried out by selecting background of the application, appropriate icon, navigation button, fonts, etc. This stage also including insert the prompt for the application or program, so that when the user tap the intended icon, the pages of the application is change to the intended pages. The last stages in developing is expert validation which involves two expertise validation which are media expert and material expert. It uses open ended questionnaire according to the expert validator the application is feasible to be tested and implemented.
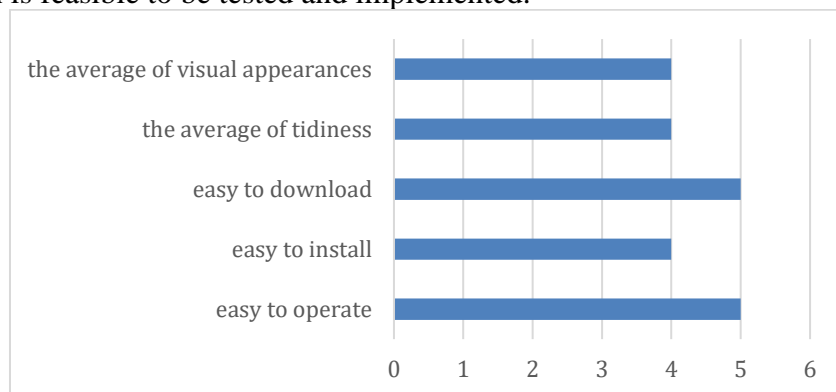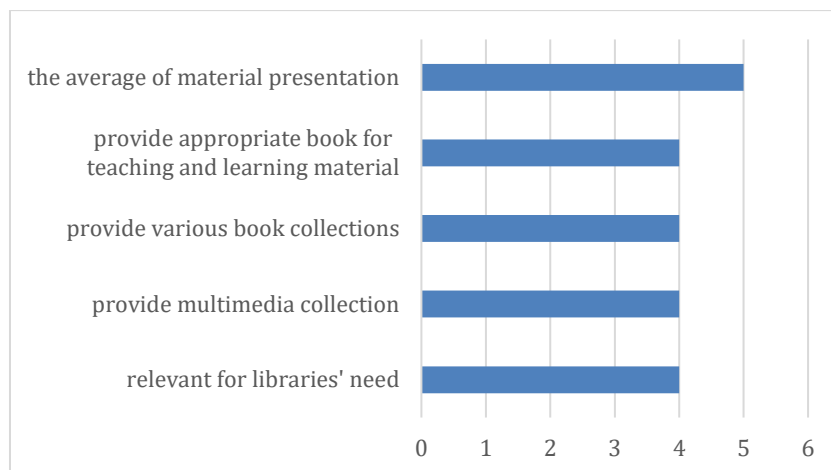

Figur 6. Media Validation

Fig 7. Material Validation

4. Implement

According to the need analysis that is done in 12 school libraries from all levels, it can be seen that in Trenggalek, the school that needs the digital library application the most is junior high school A. The first condition is that the school has a lot of students and classes but has the most limited collection compared with other schools that have the same condition. The second condition is that this school has no multimedia collection as according to PERKA PERPUSNAS that is mandatory for schools' libraries to have multimedia collections besides printed collections. Therefore, the developed digital library is implemented in junior high school A involving 14 students that intensively use the application. The implementation is done in three months. The researcher is helped by the school's librarian to share and explain about the application to the students.

5. Evaluation

The evaluation is done after three months of application trial use. The evaluation uses a semi-structured questionnaire and open-ended questions for the best recommendation and evaluation from the application users. The evaluation result can be seen as follow:
a. Why DigiLib KOMULIT is interesting?
1) have a lot of interesting features
2) have a lot of interesting book collections
3) I love digital books
4) It could make me more interested to read
5) I can read books whenever and wherever
6) The books are free to download

b. What aspects that you dislike about this application?
1) Application still needs to be more attractive
2) I need the offline version
3) Please add more books

The survey result shows that most of the students are interested and engaged in using the application. They feel that the application could motivate them to read and could enrich their reading reference, since in the survey they said that they need more books. This is because the books and other multimedia that is used in the application contain interesting illustrations and pictures. However, according to the survey, regardless of the interesting content, the application still needs to be improved concerning the appearance of the application itself to be more attractive. It is because the users who are junior high

school students are more engaged with visual matters. Also, they suggested that the application will be provided in an offline version. Apparently, this suggestion will be a challenge for future researchers who are interested in developing the same kind of digital library as for this study the researchers design the application to unify the various free websites into one tap. This also could be problematic as the offline library application will have limited book collections and require big storage data rather than online books.

Conclusions

After doing a need analysis and then designing also developing the digital library application, it can be concluded that the application could increase students' motivation in reading books and it also enriching students' reading references. However, the study is only limited to the online application which makes the researcher suggest future research to develop an offline digital library for those who have a lack of internet connection.

References

Alfani, N. R., & Puspasari, D. (2022). Development of Kodular Based Interactive Teaching Materials in Meeting Organizing Materials in SMK Negeri 2 Buduran. *Dinamika Pendidikan*, *17*(2), 133–145.

Arif, M., & Kanwal, S. (2009). Acceptance of Digital Library Among Female Students and Effects of Limited Access of Digital Library on Their Performance in Research Work: A case of International Islamic University. *International Information and Library Review*, *41*(3), 122–128.

Asencio, M. (2017). Collaborating for Success: The Digital Library of the Caribbean. *Journal of Library Administration*, *57*(7), 818–825.

Branch, R. M. (2010). Instructional design: The ADDIE approach. In *Instructional Design: The ADDIE Approach*. Springer US.

Hanum, A., & Sari, P. M. (2023). Pengembanagn Media Pembelajaran KODULAR Berbasis Literasi Sains Pada Pembelajaran IPA Bagi Kelas 4 SD. *AoEJ: Academy of Education Journal*, *14*.

Johnston, N. (2020). The Shift towards Digital Literacy in Australian University Libraries: Developing a Digital Literacy Framework. *Journal of the Australian Library and Information Association*, *69*(1), 93–101.

Kholifah, U., & Imansari, N. (2022). Pelatihan Membangun Aplikasi Mobile Menggunakan KODULAR Untuk Siswa SMPN 1 Selorejo. *ABDIMAS GALUH*, *4*(1), 549–553.

Lopez, X. R., & Larsgaard, M. (1998). Towards a California Geospatial Digital Library: A Strategy for Networked Knowledge. *Cartography and Geographic Information Science*, *25*(3), 133–141.

Masithoh, D. (2021). Peran Guru Bahasa Indonesia MTsN di Kabupaten Trenggalek Dalam Gerakan Literasi. *Jurnal Pembelajaran Bahasa dan Sastra Indonesia*, 01.

Moorthy, K., Chun T'ing, L., Ming, K. S., Ping, C. C., Ping, L. Y., Joe, L. Q., & Jie, W. Y. (2019). Behavioral Intention to Adopt Digital Library by the Undergraduates. *International Information and Library Review*, *51*(2), 128–144.

Muyasir, & Musfikar, R. (2022). Perancangan Aplikasi Media Pembelajaran Dasar Desain Grafis Berbasis Android Menggunakan Web KODULAR. *JINTECH: Journal of Information Technology*, *3*(1), 22–28.

Nurjanah, F., & Suprihatin, S. E. Y. (2023). The Development of Android-Based Learning Media Using Kodular in Making Suit Patterns Subject. *Jurnal Pendidikan Vokasi*, *13*(3), 232–245.

Prianbogo, A. A., & Rafida, V. (2022). Pengembangan Modul Elektronik Berbasis Android Dengan Aplikasi KODULAR Pada Mobile Learning Mata Pelajaran Penataan Produk Kelas XI BDP SMK. *Jurnal Pendidikan Tata Niaga (JPTN)*, *10*(1), 1669–1678.

Rosa, I. (2019). Digital library Polona: Digitization, technology, cooperation. In *Slavic and East European Information Resources* (Vol. 20, Issues 1–2, pp. 23–30). Routledge.

Sheeja, N. K. (2010). Undergraduate Students' Perceptions of Digital Library: A Case Study. *International Information and Library Review*, *42*(3), 149–153.

Walton, D. J. (2016). R2 Digital Library Review. *Journal of Electronic Resources in Medical Libraries*, *13*(2), 56–68.

Xie, X., Siau, K., & Nah, F. F. H. (2020). COVID-19 Pandemic–Online Education in the New Normal and the Next Normal. *Journal of Information Technology Case and Application Research*, *22*(3), 175–187.

Zhang, A. B., & Gourley, D. (2006). Building Digital Collections Using Greenstone Digital Library Software. *Internet Reference Services Quarterly, 11*(2), 71–89).