Book Markir Application Program for Student with Special Needs at Universitas Muhammadiyah Gresik

Author
Afakhrul Ma'ub Bakhtiar (Orcid ID: 0000-0001-5491-7373)
Rini Puji Astuti (Orcid ID: 0000-0003-0788-2153)
Zainal Mustakim (Orcid ID: 0000-0001-8249-6529)
Zamzamy (Orcid ID: 0000-0001-7594-846X)

Correspondence
Universitas Muhammadiyah Gresik, Jawa Timur, Indonesia
afakh@umg.ac.id

Abstract

Education is a right for all citizens regardless of differences in degrees, economic conditions or others, as well as for people in Gresik Regency. Books are an inseparable part of education. Therefore, every university must provide books as a means for the smooth learning process. One way to make it easier for students, especially those with special needs, to access library books is by using the Book Marking Application.

This application is based on Augmented Reality so it requires a marker which will be scanned with an integrated camera with the Vuforia Augmented Reality Plugin. Students can choose books that are available on the library bookshelf without directly coming to the library, then the library will deliver the book according to the scanned marker information.

Introduction

Education is a right for all citizens regardless of differences in degrees, economic conditions or others, as well as for people in Gresik Regency. Gresik Regency, which is known as one of the main industrial areas in East Java, has 16 universities spread over 10 sub-districts. Its area is 1,193.76 km2 with a population of 1,311,215 people (BPS, 2020). The population growth rate in Gresik Regency is always increasing, this also affects the education needs of the community. Books are an inseparable part of education. Therefore, every university must provide books as a means for the smooth learning process. Books are a source of knowledge that is needed for students as a way of transferring knowledge. The service for the availability of books is an obligation for every student, including those who have differences in abilities / disabilities (Sulistyowati & Rachman, 2017).

Opportunities for people with special needs to attend education at the tertiary level are increasingly wide open with the issuance of Law Number 8 of 2016 concerning Persons with Disabilities. Article 10 Paragraph a: Persons with Disabilities have the right to receive quality education in educational units in all types, pathways, and levels of education in an inclusive and special way. Article 18: Every Person with Disabilities has the right to accessibility in Article 40 Paragraph 1: The Government and Local Government are obliged to organize and/or facilitate education for Persons with Disabilities in every path, type, and level of education in accordance with their authority (Supena & Munajah, 2020)

The readiness of Indonesian universities to accept and manage students with special needs has been stated in Regulation of The Minister of Research and Technology and Higher Education Number 46 of 2017 concerning Special Education and Special Services in Higher Education. The regulates, among other things, the rights and obligations of students with special needs, the rights and obligations of higher education institutions as well as the management of academic, administrative and student services for students with special needs in higher education (Maulana et al., 2020).

The existence of learning difficulties for children with special needs in the availability of books in the library became the main focus for the UMG Pensus Team to become a problem solver of these problems. The team has compiled a "Book Marker" application program that uses the Playstore media as a media for scanning books that will be read by students. The making of learning media "Marking Books" was done by using software that is open source. The software is Playstore, which is software that is used to make the display of books or other teaching materials into a digital electronic book that can be scanned. The software can be downloaded for free or for free through internet access. This is very helpful for students who have special needs so they don't have to queue at the library

Methods

The methods and stages in the implementation of this Book Marking program can be described as follows :

1. Needs Analysis

This stage is in the form of an analysis of the needs of students, especially those with special needs in accessing books in the library.

Information related to student data with special needs and a list of books can be obtained from Student Affairs and Library data. From this stage, the level of effectiveness of the Book Marking program will be obtained for services in the library.

2. Assistive Technology Development

This stage consists of the process of developing the Markir Buku program which is an Augmented Reality-based Android application intended for internal students of the Universitas Muhammadiyah Gresik. This application serves to assist students in borrowing books in the library. Based on Augmented Reality, this application requires a marker which will be scanned with an integrated camera with the Vuforia Augmented Reality Plugin. Students can choose books that are available on the library bookshelf without directly coming to the library (Jamil, 2018).

3. Assistive Technology Implementation

This stage is an important stage of the Book Marking Program. This program is expected to make it easier for students to access books in the library and interact directly with library staff (Sugianto et al., 2017). The indicators of success from making assistive technology (assistive technology) are expected to be as follows :

a. The accuracy of application testing in representing reference books

b. The assistance of students with disabilities with this assistive technology.

c. The results of the questionnaire that can describe the responses of the respondents in using this assistive technology.

d. Increasing the quality of library services at Universitas Muhammadiyah Gresik in serving students with special needs according to their characteristics.

Result and Discussion

1. Results of Needs Analysis

The development of learning innovation models is something that must be done especially for a university to support and create a learning process that is right on target, this is quite urgent, especially when faced with students with special needs. Of course there must be special efforts to facilitate and develop friendly learning models for all groups, especially for students with special needs or disabilities. Universitas Muhammadiyah Gresik opens itself to prospective students to continue the learning process, and does not rule out students with special needs. From field study data by the

Bureau of Student Affairs and Alumni, the learning center, not all study programs have available learning tools and learning models that can accommodate all students, in this case students with disabilities at Universitas Muhammadiyah Gresik (UMG).

This is one of the urgencies, the need to develop a learning model is very important to do. Institutionally, UMG has been used as a reference for private campuses around (Tuban, Lamongan, Madura, Mojokerto, Sidoarjo, and Jombang) to share experiences in serving students with special needs (ABK) and service units with special needs. Regionally, Gresik has quite a lot of ABK data, some of which are not actually revealed, but with the existence of a special ABK unit at UMG, the data has been excavated, even approaching the number of 200 ABK. On this basis, the need and urgency of innovative learning models for students with special needs or disabilities at the University of Muhammadiyah Gresik is very much needed.

2. Results of Assistive Technology Development

The resulting assistive technology is the creation of an Android-based application by prioritizing Augmented Reality. Augmented Reality is a 3D-based technology using the help of a camera and "Marker" as a medium to run it. In its development, this Book Marking Application contains information about the books in the library. Besides providing information, this application has other features in the form of ordering selected books via Whatsapp. Marker features can be

seen in Figure 1.

Figure 1. Marker Features

3. Results of Assistive Technology Implementation

The result of the implementation of this assistive technology is that the program runs according to the plan, namely the appearance of books presented in the form of an android application. To find out the success of the application, indicators are needed which can show the usefulness of this android application in helping make it easier for students, especially those with disabilities, to get services from borrowing books. The Android application program on the Playstore can be seen in Figure 2.
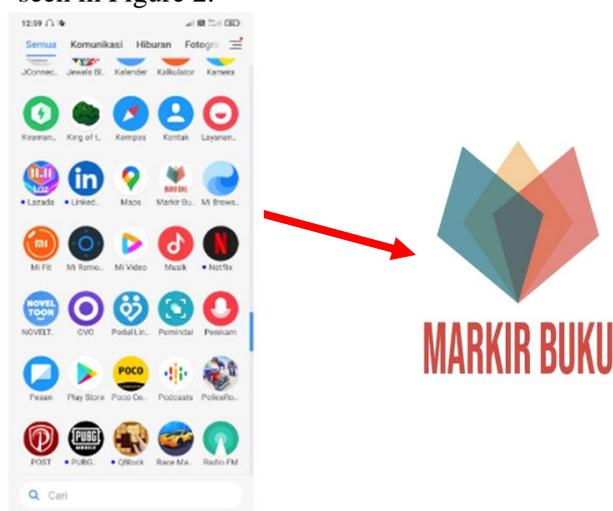

Figure 2. Android Application Program

The books in the library can be displayed in this application. This application is connected to the Whatsapp feature in ordering books that are connected to the library contact number. This feature is still in the development and experimental stage because to develop it it is mandatory to include the Application Programming Interface (API) of Whatsapp itself. The results of the implementation of the Book Marking program can be seen in Figure 3.

Figure 3. Book Marking Implementation

Conclusion

Book Marking program is one way to help students, especially those with special needs, to easily access books in the library. This application is based on Augmented Reality so it requires a marker which will be scanned with an integrated camera with the Vuforia Augmented Reality Plugin. Students can choose books that are available on the library bookshelf without directly coming to the library, then the library will deliver the books according to the scanned marker information. For program sustainability, program development is needed so that it can be integrated with the existing system in the library.

References

BPS. (2020). Kabupaten Gresik Dalam Angka 2021. *Badan Pusat Statistik Kabupaten Gresik*, 1–414.

Jamil, M. (2018). Pemanfaatan Teknologi Virtual Reality (VR) di Perpustakaan. *Buletin Perpustakaan Universitas Islam Indonesia*, *1*(1), 99–113. https://journal.uii.ac.id/Buletin-Perpustakaan/article/download/11503/8674

Maulana, A., Rosalina, V., & Safaah, E. (2020). Implementasi Teknologi Virtual Tour Perpustakaan Menggunakan Metode Pengembangan Multimedia Development Life Cycle (Mdlc). *JSiI (Jurnal Sistem Informasi)*, *7*(1), 1. https://doi.org/10.30656/jsii.v7i1.1875

Sugianto, D., Abdullah, A. G., Elvyanti, S., & Muladi, Y. (2017). Modul Virtual: Multimedia Flipbook Dasar Teknik Digital. *Innovation of Vocational Technology Education*, *9*(2), 101–116. https://doi.org/10.17509/invotec.v9i2.4860

Sulistyowati, S., & Rachman, A. (2017). Pemanfaatan Teknologi 3D Virtual Reality pada Pembelajaran Matematika Tingkat Sekolah Dasar. *Jurnal Ilmiah NERO*, *3*(1), 37–44. http://nero.trunojoyo.ac.id/index.php/nero/article/download/71/77

Supena, A., & Munajah, R. (2020). Analisis Kesulitan Belajar Membaca Anak Berkebutuhan Khusus di Sekolah Dasar. *Jurnal Basicedu*, *5*(1), 10–18. https://doi.org/10.31004/basicedu.v5i1.558