IOP Conference Series: Materials Science and Engineering

PAPER • **OPEN ACCESS**

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To cite this article: D Tresnawati *et al* 2021 *IOP Conf. Ser.: Mater. Sci. Eng.* **1098** 032059

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The development of sign language learning media using multimedia systems

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Abstract. Language is a means to communicate. The expressions in the world are diverse, one of which is sign language. There are two types of sign languages in Indonesia, namely BISINDO (Indonesian Sign Language) and SIBI (Indonesian Language System). Besides that, few people know the sign language, and the method used still uses conventional or manual methods so that it feels challenging to communicate with people who are deaf speech. This study aims to develop sign language learning applications using multimedia systems that expected to help people with hearing impairment and hearing impairment, the general public, and teachers in communicating with speech deaf people. In this study, using the Multimedia Development Life Cycle research method, Alpha testing with Black Box testing and beta testing as an application testing method to measure user satisfaction. The results of research using beta testing is an android-based sign language learning application suitable for the general public, and the deaf equipped with evaluation features and delivery of material in the form of video.

1. Introduction

Language is a means of communication to communicate [1-3]. The expressions in the world are diverse, one of which is sign language [4,5]. There are two types of sign language in Indonesia, namely BISINDO (Indonesian Sign Language) and SIBI (Indonesian Sign Language System). Still, according to the study, it is stated that 91% in Indonesia use BISINDO as a medium for hearing and hearing impairment [6] wherein the deaf are deaf or impaired people [7]. Loss of the ability to listen to and speak is someone who has difficulty communicating through voice [8,9].

Besides that, few people know the sign language and teaching methods that users still use conventional or manual methods so that the hearing impaired, teachers, or the general public find it difficult to communicate with people who are deaf speech [10]. Many books learn about sign language, but many also do not understand because it is difficult to understand if only through books [4,11,12].

Previously several studies discussed the learning of sign language that had been made, including the first one entitled "Learning Application for Vocabulary Introductory Learning for Children with Deaf," this application only displays the vocabulary of daily home activities [13]. The second research is "Application of Sign Language Learning for People with Deaf Based on Android with the BISINDO Method," which displays letters and numbers for people with deaf [14]. The third research, entitled "Development of Application of Basic Sign Language Introduction as Android-Based Learning Media." In this study, there are features introduction to family, day, font colour, and numbers [15]. The research conducted is to combine several problems that have been solved by previous studies and will duplicate

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previous research with use multimedia system [16]. It will add to the evaluation feature as a benchmark of success in learning and video-based content of BISINDO sign language for the hearing impaired speech.

2. Methodology

The Multimedia Development Life Cycle (MDLC) method used for the design of this system [17], a multimedia development method with six stages namely Concept, Design, Material Collecting, Assembly, Testing with the testing phase using Alpha and beta testing and finally Distribution. At this last stage, the complete application is then stored on Google Drive storage media and then distributed via social media [18].

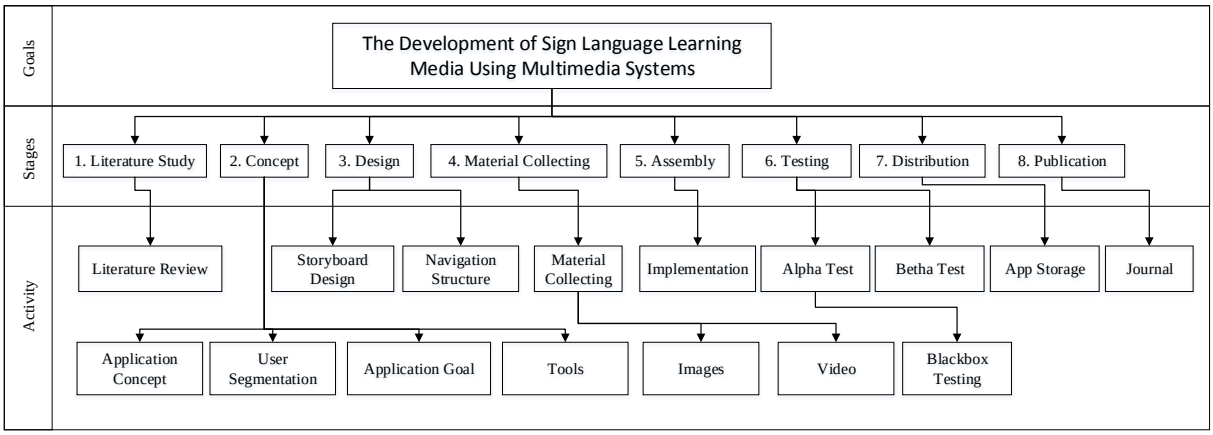

Figure 1. Work breakdown structure development of sign language learning media using multimedia systems.

3. Results and discussion

3.1. Result

The following are the results of the study:

- In the first stage, namely the review of literature, at this stage, a search for information in the form of previous research journals and also interviews to obtain information about the application requirements.
- The next stage is Concept; at this stage, formulating concepts in determining goals and identifying users and device requirements in sign language learning applications. This research aims to develop Sign Language Learning Media Using Multimedia Systems. There are basic material features regarding sign language such as numbers, alphabet, colloquial words, colors, day names, and also equipped with evaluation features. Users of sign language learning media applications are deaf sufferers as well as the general public who want to learn sign language.
- The next stage is Design, at the design stage after we get the concept, the next step is to design the storyboard and navigation structure.

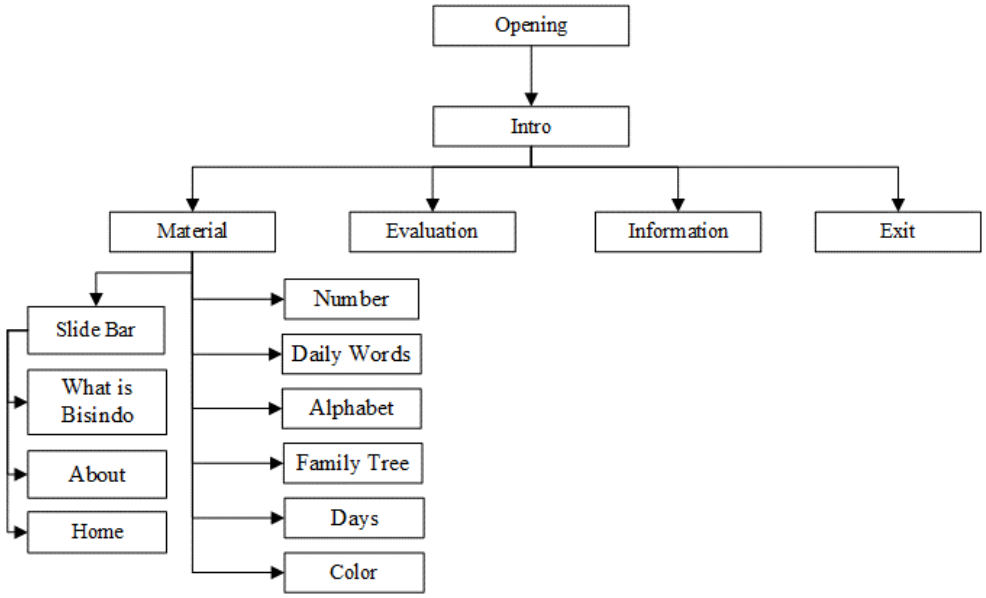

Figure 2. Navigation structure.

- The next stage is Material Collecting. Application support materials in the form of pictures and videos that will use need to be collected first. At this stage, the materials are not always ready-made materials, but some documents have to be made or modified according to the design of the application, so to get the elements according to your needs, you need to go through various processes of material collection. The image content is taken from the internet and through a modification process with image processing software. At the same time, the video itself is created in the video processing software using the format .Png and .MP3.
- The next stage is Assembly, at this stage, to produce the application of results from materials that have collected following the design that has prepared at the design stage.

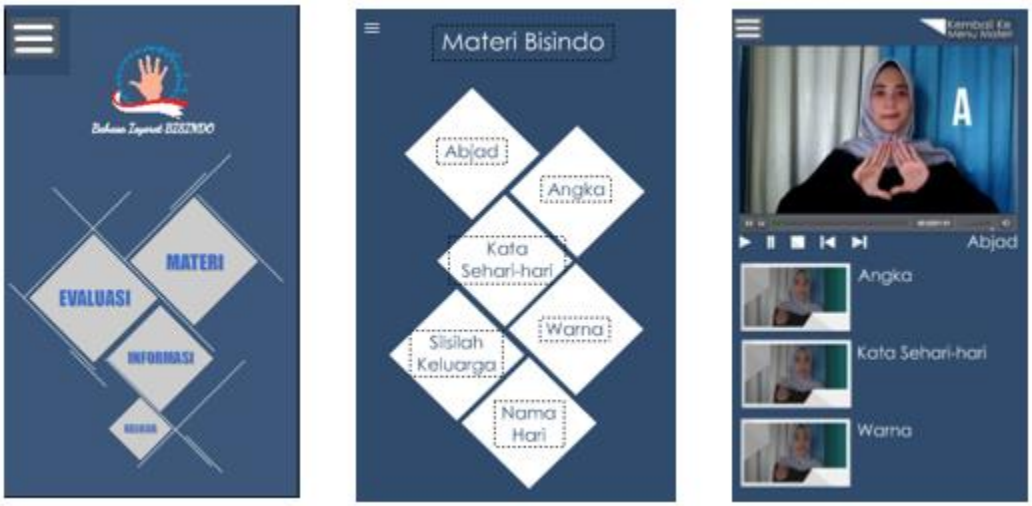

Figure 3. App display.

- The next stage is testing, which is to test the results of applications that have been made by involving several respondents. Checking the use of sign language learning is done by alpha testing and beta testing, in beta testing is done by distributing questionnaires to three

classifications of respondents such as the general public, the speech impaired and the teacher/teacher using the Likert scale as a process to find out the results of the test, it show in figure 4.

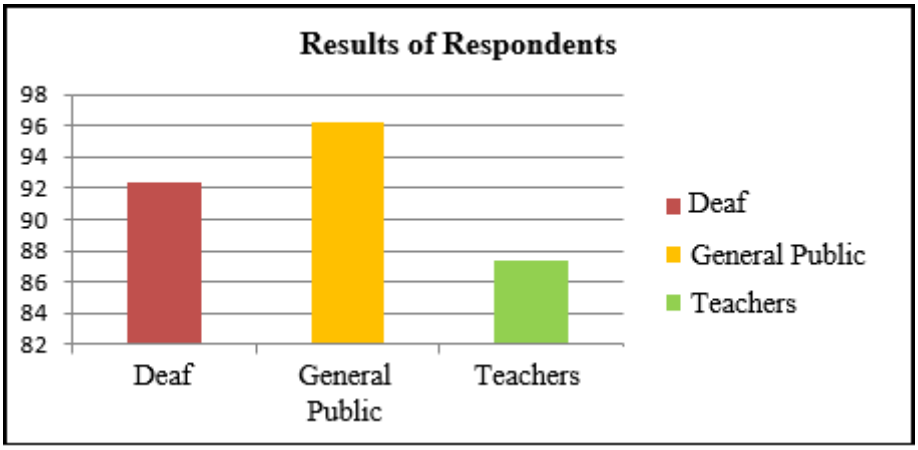

Figure 4. Beta testing results.

3.2. Discussion

This study aims to provide sign language learning for deaf speech teachers/instructors and the general public who want to learn about sign language. After conducting research, this sign language application is not suitable for teachers/instructors from the results in the beta testing conducted by respondents from three classifications, namely:

- The general public, the number of respondents ten people with 96.2% results, while the background is that the general public to communicate with hearing-impaired speech mostly using the BISINDO sign language so that the BISINDO sign language can be better understood.
- Deaf speech, the number of respondents ten people with 92.4% results, because the hearing impaired speech communicates outside the school or within the school environment using BISINDO.
- Teachers/teachers, the number of respondents, is ten people as many as 87.4% because in their particular schools in SLB do not use BISINDO as the delivery of material to students but instead use SIBI.
- Respondents overall, 30 people with a value of 83.7% Overall applications made get excellent ratings and can be accepted as a medium for learning sign language.

Based on the results of beta testing, it can conclude that the application of sign language learning is less suitable for teachers/instructors. Still, this learning media is more suitable for the general public as a learning medium for communicating with people who are deaf to speech because in the general public environment the deaf themselves use BISINDO as communication media, with the existence of this application is hoped that it can help to communicate with persons with hearing-impaired speech [19].

This application provides sign language learning applications with the necessary materials of sign language, such as Alphabets, Numbers, Colours, Family Genealogy, and everyday words, in the form of videos to be more interactive. Then the availability of evaluation features in the form of a quiz of the results in an application that made packed with animation, video, and images. Benefits for users of sign language learning introduction applications to help people with hearing impaired speech or the general public who want to learn about sign language.

4. Conclusion

Based on the results of research this sign language learning application has functioned well according to the purpose of making a sign language learning video content for deaf and speech and making an evaluation feature for sign language learning outcomes. Based on the results of the study 82.7% of users of sign language applications can be helped to learn to communicate with people who are deaf especially the general public who want to know or who want to learn sign language, while based on the classification of three groups of respondents namely the general public with a value of 96.2%, the deaf speech with an amount of 92.4% and for teachers/instructors valued at 87.4%, it can conclude that this application is more suitable for the general public and the hearing impaired speech, so that this application cannot be used as a medium of teaching and learning because it is not following SLB curriculum that has set.

Acknowledgments

Thanks to Sekolah Tinggi Teknologi Garut which inspiringly support the publication of this article.

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