BISINDO Alphabet Visualization in Interactive Media

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ABSTRACT
Learning technology continues to develop along with the times. In the implementation of daily learning, we often encounter the utilization of technological developments in the world of education, as is often done by teachers or lecturers, namely combining technological tools in learning processes. The development of science and technology has a positive impact with the increasingly open and spread of information and knowledge from and to the whole world penetrating the boundaries of space and time. One of the technological developments in education is interactive media, with the making of this interactive learning media the teaching and learning process becomes effective, interesting and fun for students. The purpose of this research is to produce BISINDO learning media. The benefits of this learning media are to be a solution to the learning process that is effective, interesting and more fun and facilitates the learning process of students.

Keywords: BISINDO; Dale’s Cone Experience; Deaf; Distance Learning Media; Sign Language

INTRODUCTION
The public's view of deaf and hard of hearing people is still very minimal. This is due to the difficulty of communication. Those who can hear and use oral language or clear lips and vocabulary that can be understood. For those who are deaf and hard of hearing, they use sign language to communicate with others. The use of sign language is a step they take in order to continue to interact with the general public [1].

Sign language itself is used in everyday life for deaf and hard of hearing people to communicate. One of the difficulties is how deaf people inform the sign language used and can be understood by people who can hear so that deaf people can communicate, get along, make friends, and occur dialog in everyday life [2].

In this modern era, the use of smartphones is widely used to get to know the surrounding environment, learn, communicate with each other, and many more things that can be done on smartphones. People with disabilities (deaf/tunawicara) are also happy to use the technology. However, because they cannot speak and hear, it will cause problems, especially in learning the structure of words or sentences that are often spoken or written by those who can hear or speak.
Therefore, an interactive learning media was created that can be used by deaf and hard of hearing people. The learning media is mobile-based with several categories so that the media can be used properly. With this application, the deaf, speech impaired and also including people who can speak and hear normally can use it in learning sign language, so they can communicate better.

**METHOD**

The development of Indonesian sign language learning media includes Research and Development (R&D). The design and development of this media uses a 5-stage software model which includes
- Needs Analysis
- Media Design
- Media development
- Testing
- Implementation

**RESULTS AND DISCUSSION**

**A. Learning Media**

Learning media is a form of the word medium. Medium can be interpreted as an intermediary or an introduction to the occurrence of a communication from the sender to the recipient [3]. Learning media is also a tool, method, and technique used in order to further streamline communication in the education and teaching process at school [4]. Based on this definition, it can be said that the learning process is a communication process. The definition of media in this study is limited to educational media used as a tool or support for learning activities.

**B. Use of Learning Media**

Knowledge and skills, changes in attitudes and behavior can occur due to the interaction between new experiences and experiences that have been experienced before. There are three main levels of learning mode, namely direct experience (enactive), pictorial experience (iconic), and abstract experience (symbolic) [5]. One of the most widely used descriptions as a theoretical basis for the use of media in the teaching and learning process is Dale's Cone of Experience (see Figure 1). The influence of media in learning can be seen from the level of learning experience that will be received by students. Dale describes a cone shape, a person's learning outcomes are obtained starting from direct experience (concrete), the reality that exists in a person's life environment then through artificial objects, to verbal symbols (abstract) [6].
The grouping of various types of media when viewed in terms of technological development by Seels & Glasgow in Arsyad (2005) is divided into two broad categories, namely traditional media choices and cutting-edge technology media choices [9].

1. **Traditional Media Choice**
   1.1. Projected still visuals: Opaque projection, overhand projection, Slides, Filmstrips
   1.2. Visuals that are not projected: Pictures, posters, photos, charts, graphs, diagrams, exhibitions, info boards
   1.3. Audio: Recordings on disk and tape cassette, reel, cartridge
   1.4. Printed: Textbooks, modules, programmed texts, workbooks, scientific magazines, loose-leaf sheets (hand outs)
   1.5. Realia: Models, specimens, manipulatives (maps, puppets)

2. **Cutting-edge technology media choices**
   2.1. Telecommunication-based media: Teleconference, Distance learning
   2.2. Microprocessor-based media: Computer-assisted instruction, Computer Game, Interactive Video, Compact Video Disc, Intelligence tutor system.

C. **Interactive Multimedia**

The meaning of interactive media as a process of empowering students to control the learning environment [7, 8, 10, 11]. In this context, the learning environment in question is learning by using a computer. Interactive classification in the scope of learning multimedia does not lie in the hardware system, but refers to the computer monitor. The quality of student interaction with the computer is largely determined by the sophistication of the computer program. There are three levels of interaction based on the quality of interaction (see Table 1).
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Table 1 Quality of Interaction Level

| Degree       | Function    | Transaction                      |
|--------------|-------------|----------------------------------|
| Reactive     | Confirmation| Space Bar/Return Key             |
| Proactive    | Pacing      | Touch Screen Target              |
| Mutual       | Navigation  | Touch Screen Ray Trace           |
|              | Inquiri     | Mouse Click                      |
|              | Elaboration | Mouse Drag                       |

D. BISINDO Alphabet Visualization

In the process of visualizing the Alphabet, the first thing to do is to sketch the hand (see Figure 2) then proceed with digital depiction (see Figure 3) finally applied with a background and added several supporting components such as characters, buttons for navigation, alphabet letters, explanations of how to demonstrate, and so on so that it looks attractive (see Figure 2, 3, and 4).

Figure 2 Hand Sketch

Figure 3 Hand digital depiction
E. Requirements Analysis
This needs analysis begins with identifying the actors involved in the application, describing
the functional needs that will be modeled in the form of use case diagrams and non-
functional needs. This needs analysis aims to describe the needs that must be prepared by
the system to suit user needs.

F. Actor Identification
It is a stage to identify the actors who will interact with the application. In this application
the user can play a role in displaying table-based cue learning.

| Actor | Description |
|-------|-------------|
| User  | Users whether deaf or not with an age range of 6-30 years can use this application. |

G. Functional Requirements Analysis
Consists of functional and non-functional requirements. The list of requirements will specify
the functional requirements of users which are indicated by numbering using SRS (Software
Requirement Specification) and described using use case diagrams.
The purpose of the non-functional requirements analysis stage is to analyze the needs of
users.

| Code   | Requirement                                                                 | Use Case                                                                 |
|--------|-----------------------------------------------------------------------------|--------------------------------------------------------------------------|
| SRS_001| Users can open an explanation of the use of the alphabet in sign language using the Ayo Belajar Bisindo application. | opens an explanation of the use of the alphabet in sign language          |
| SRS_002| Users can open an explanation of the use of numbers in sign language using the Ayo Belajar Bisindo application. | opens an explanation of the use of numbers in sign language               |
| SRS_003| Users can open an explanation of the use of greeting words in sign language using the Ayo Belajar Bisindo application. | opens an explanation of the use of greeting words in sign language        |
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| Code    | Parameter     | Description                                           |
|---------|---------------|-------------------------------------------------------|
| SRS_004 |               | Users can open an explanation of the use of sentences in sign language using the Ayo Belajar Bisindo application. |
| SRS_005 |               | Users can open an explanation of the use of nouns in sign language using the Ayo Belajar Bisindo application. |
| SRS_006 |               | Users can open an explanation of the use of family calls in sign language using the Ayo Belajar Bisindo application. |

H. Functional Test Analysis

The analysis process aims to get the results and conclusions of the application testing that has been done.

| Test Case           | Expected Results                                           | Result                        | Status |
|---------------------|------------------------------------------------------------|-------------------------------|--------|
| View Menu           | The application can display the main menu (Learning and Quiz) | Displaying the main menu     | Valid  |
| Selecting a Quiz    | The application display the Quiz                           | Displaying the Quiz           | Valid  |
| Choose to Study     | The application display learning menu                      | Displaying the learning menu  | Valid  |
| Selecting the Alphabet | Display alphabet from A to Z                  | Displaying alphabet from A to Z | Valid  |
| Selecting a Number  | Display numeric                                            | Displaying the numeric        | Valid  |
| Choose a Family     | The application display family menu                       | Displaying the family menu    | Valid  |
| Choosing the Greeting Word | The application display greeting menu                  | Displaying the greeting menu  | Valid  |
| Choosing the Question Word | The application display question word menu               | Displaying the question word menu | Valid |
| Selecting a Noun    | The application display noun menu                        | Displaying the noun menu      | Valid  |

CONCLUSION

Based on the analysis of design and implementation, it can be concluded that the interactive learning media application Ayo Belajar Bisindo can run well on Android devices.
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REFERENCE

[1] Prasetyo, A. B. 2014. Aplikasi Pembelajaran KosaKata Bahasa Isyarat Menggunakan Phonegap Berbasis Android. Yogyakarta: Akakom Yogyakarta.
[2] Yuni, N. (2014). Studi Komparatif Ketrampilan Komunikasi Interpersonal Antara Pengguna Bahasa Isyarat SIBI dengan BISINDO. Universitas Muhammadiyah Malang, Malang.
[3] Sadiman, Arief S. (2012). Media Pendidikan, Pengertian, Pengembangan, dan Pemanfaatannya. Jakarta: Raja Grafindo Persada
[4] Hamalik, Oemar. (1989). Metodologi pengajaran ilmu pendidikan. Jakarta: Mandar Maju
[5] Sofia, S. (2012). Peranan Media Pengajaran dalam Pembelajaran Bahasa. Jurnal al-Hikmah, 13(1), 49-58.
[6] Arsyad, Azhar. 2014. Media Pembelajaran. Jakarta : PT. Raja Grafindo Persada
[7] Nugroho, S. 2008. “Pengembangan Media Pembelajaran Interaktif Mata Diklat Dasar Listrik dan Elektronika di SMK”. Laporan Proyek Akhir, Jurusan Pendidikan Teknik Elektro FT UNY.
[8] Ali, M., & Sukisno, T. (2007). Pengembangan Media Pembelajaran Berbasis Multimedia untuk Memfasilitasi Belajar Mandiri pada Mata Kuliah Medan Elektromagnetik di Jurusan Pendidikan Teknik Elektro FT UNY. Laporan Penelitian Dosen Muda Lembaga Penelitian UNY.
[9] Arsyad, A. (2005). Media Pendidikan. Jakarta:Pustekkom Dinas & PT.Raja Grafindo
[10] Ali, M. (2009). Pengembangan media pembelajaran interaktif mata kuliah medan elektromagnetik. Jurnal edukasi elektro, 5(1).
[11] Siregar, S. R. S., & Sundari, P. (2016). Rancangan Sistem Informasi Pengelolaan Data Kependudukan Desa ( Studi Kasus di Kantor Desa Sangiang Kecamatan Sepatan Timur ). Sisfotek Global, 6(1), 76–82.
[12] Ridwaninstitute.co.id (2019, 19 November). Designing a Course with Accountability and Dale’s Cone of Experience. Diakses pada 28 May 2021, dari https://www.facultyfocus.com/articles/course-design-ideas/designing-a-course-with-accountability-and-dales-cone-of-experience/