Chatbot Application for the Dissemination of Election Information

Irfan Dwiguna Sumitra[1*], M Naufal[2*], D A Pamungkas[3], G Widiarto[4]
[1]Departemen Magister Sistem Informasi, Universitas Komputer Indonesia, Indonesia

[2,3]Departemen Sistem Informasi, Universitas Komputer Indonesia, Indonesia

[4]Departemen Ilmu Komunikasi, Universitas Komputer Indonesia, Indonesia

Email: *muhammad.naufal@mahasiswa.unikom.ac.id

Abstract. The lack of media for election socialization that provides more accessibility for the deaf makes it difficult for them to obtain information given verbally, either by the KPU (The General Elections Commission) or the success team of candidate pairs who will compete. This condition could affect them to unvote. This research aims to design an application with an easy-to-use interface and help deaf people get accurate and accessible news and information. The method used to fulfill application development needs was a descriptive analysis method with a qualitative approach. This study used the Goal-Directed Design method to build an easy-to-use interface for deaf people. According to these applications, the deaf could easily understand election news information because videos are equipped with sign language and subtitles. These applications help the deaf quickly access and obtain the information about the election socialization that will hold and determine whom the candidates will compete in the election such as news feature, ask KPU, listen to reading, etc. The chatbot technology is expected to make the information search process more personal so that deaf people feel more comfortable using the application.

Keywords: *election information, chatbot application*

1. Introduction

Deafness and hearing loss is the state of being unable to hear anything in whole or in part. 360 million people worldwide (over 5 percent of the world's population) have been affected by hearing loss, according to the World Health Organization (WHO) [1]. These people, however, are frequently exempt from political life [2].

In Indonesia, the amendment to the 1945 Constitution had a significant effect on politics and power. One of them is the development of the democracy theory, where power is no longer entirely in parliament's possession, but the people's tenacity decides all power. The presence of elections is one form of Indonesian democracy [3]. In 2019, there were 249,546 deaf people registered in the KPU [4]. Moreover, without accurate information about the campaign,

people with disabilities will likely not vote. It leads to people with disabilities being "absent citizens," people who are "missing" from public interaction, political participation, and the theory and practice of civil rights because of the lack of inclusivity [5]. Furthermore, one of the most common problems for disabled people when they want to vote is finding or getting to the polling place [6]. Disabled people also face prejudice and unfair treatment [7].

The former research focused on sounds to help people with disabilities. This research tries to give a better experience for deaf people with just visual interaction without sounds. The chatbot can help the deaf overcome some of their problems when participating in the election process. The chatbot is a chat agent that communicates with users with natural language sentences in a specific domain or on a particular subject [8]. The chatbot will help the deaf to get a better communication experience and accurate data about the election. The method used to fulfill application development needs was a descriptive analysis method with a qualitative approach. This study used the Goal-Directed Design [9-11] way to build an easy-to-use interface for the deaf. With this application, the deaf can easily understand election news information because videos are equipped with sign language and subtitles. A study shows that online video captioning makes the Internet more available to deaf people [12]. This research emphasizes improving the awareness of deaf people to be involved in the election using the application.

2. Method

Goal-Directed Design aims to achieve objectives in designing a user interface and describe the chatbot application's user experience. The method is introduced to emphasize the user in the design of an interface because the system is supposed to be easy to use [9]. The whole process of this development can be seen in Figure 1.
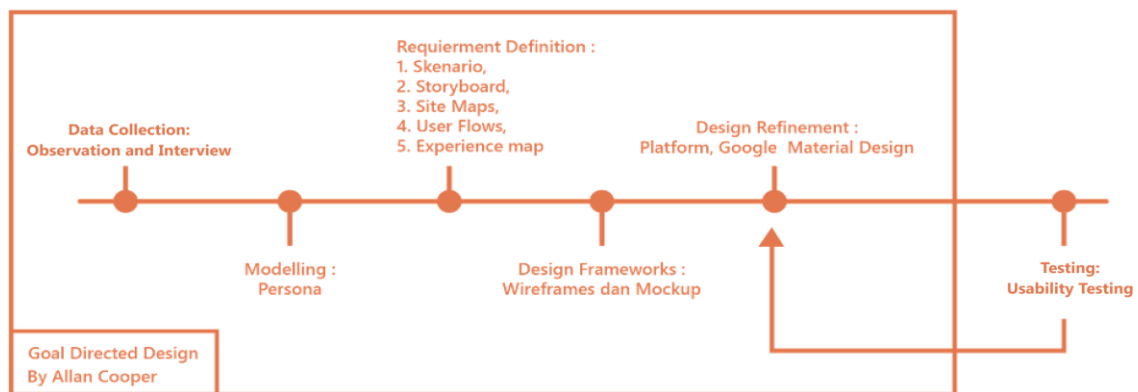

Figure 1. Method of Achieving Objectives

2.1. Goal-Directed Design

By focusing on the goals to be achieved, we can fulfill every purpose to meet user satisfaction. The goal-directed design has several stages, namely:

a. Data Collection
   At this stage, interviews and observations are carried out for data collection. Interviews and observations were carried out on Gerkatin Community members, the results of

which were used as material for developing personas at the target user stage (modeling).

b. Modeling
Based on the data collection stage results, at this stage, a synthesis of the interview results is carried out, which will produce a persona for the application so that the design that will be recommended focuses more on the goals and characteristics of the deaf.

c. Requirement Definition
A scenario and storyboard will be created to describe how the persona will use the application. Designs made in the form of narrative stories for storytelling, narrative stories can be one of the most creative and effective methods of describing the use of the application by users. The scenario that has been made will be the basis for making the storyboard. The storyboard that will be created is an illustration that describes the use of the application. The scenario and storyboard that has been created will describe user activity in using the application with Site Maps, User Flows, and Experience Map.

d. Design Framework
Based on the Requirement Definition stage results, at this stage, a wireframe or interface design mockup will be designed that focuses on the characteristics and needs of the user in using the application.

e. Design Refinement
Details will be given to the display whose design was made in the previous stage, using the Android platform, following the interface development guidelines from Google Material Design, and providing details of other visual elements.

2.2. Testing

One of the most widely used techniques for defining a software product's degree of usability is usability testing [13, 14]. A design test building will be carried out based on the previous stage's design. Testing is carried out using qualitative usability testing methods, which aim to gain knowledge that can improve designs that have been made.

3. Results and Discussion

The results obtained from this study are information media that can meet people with hearing impairment in getting information about the elections. The flow of the work process of this application system can be seen in Figure 2.
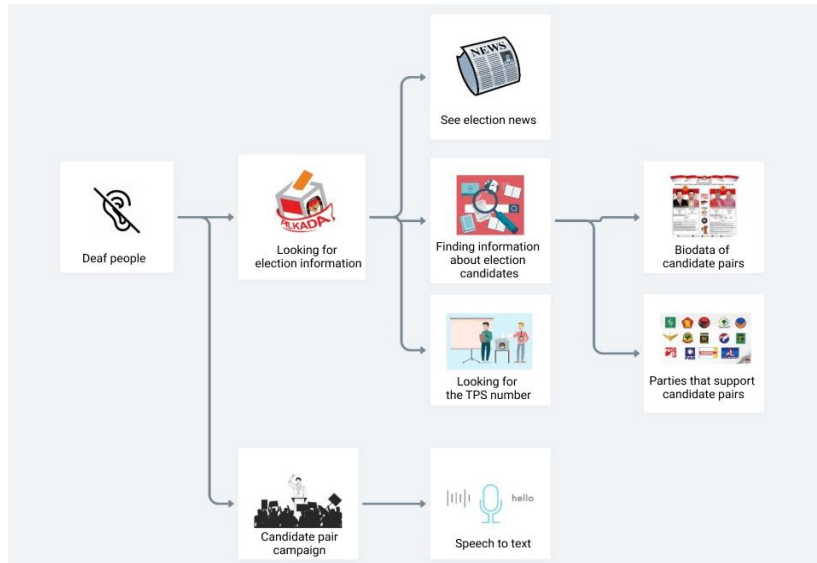
Figure 2. System Workflow

This application is expected to be a media for disseminating information about the election that helps deaf people to get information about the polls and is equipped with the following features:

1. **Listen to Reading**

   The Listen and Read feature can help deaf people get information in the form of voice and convert it into text so that later deaf people can understand the information around them. To use this feature, deaf people will press the ear icon and bring their smartphone closer to the sound source. Then under the ear icon, the test results will appear, as seen in Figure 3.
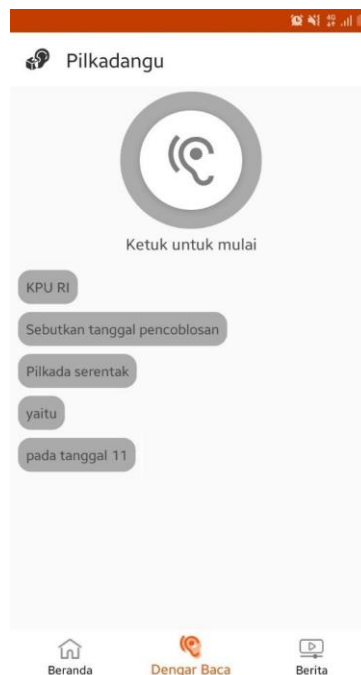

Figure 3. Listening Read Features

2. **Video with Subtitle feature**

   This feature provides campaign videos of candidate pairs running for regional head elections. The videos provided are accompanied by subtitles so that later deaf people can understand the content of the video's information (See Figure 4).

Figure 4. Video Features with Subtitles

3. **Chatbot Features**

   In this feature, deaf people can ask for information about the election. Several topics can be requested at the Chabot, including a List of Candidates for Couples, News about Pilkada, TPS Information, and Contact the KPU. Later the chatbot on this feature will answer deaf people. In an interactive and fun way (See Figure 5).

Figure 5. Chatbot feature

4. **News Feature**

   In this feature, deaf people can get news about pairs of candidates for regional head elections from trusted news website sources, and this feature works in a way that deaf people will be provided with a news list, and deaf people can choose from one of these news lists and can read it immediately (See Figure 6).

Figure 6. News feature

5. **Ask KPU**

Deaf people use this feature to ask for information about the election to the KPU committee; this feature can be used by deaf people using the chat menu that is already available. The chat menu is connected to the KPU committee (See Figure 7). The KPU committee will answer various deaf people through a website like what is seen in Figure 8.
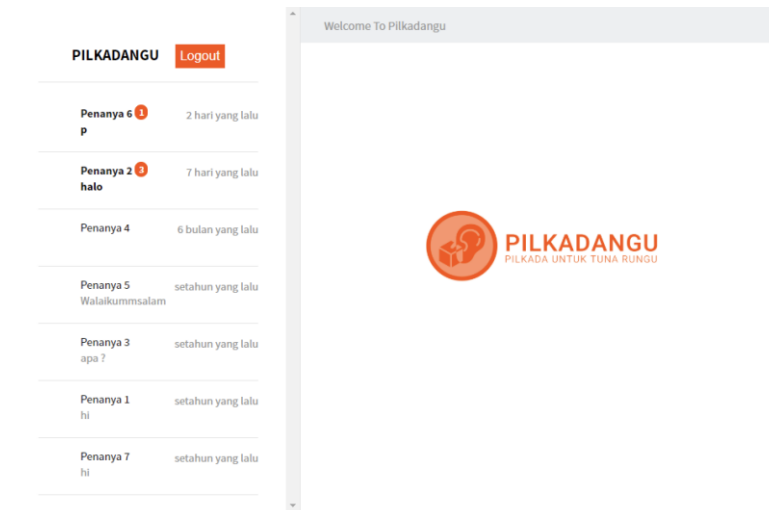

Figure 7. Ask KPU

Figure 8. KPU Committee Web to Answer Questions

4. Conclusion

Hopefully, this application's implementation could provide several benefits, including to deaf people who more easily access and obtain the information about the election's socialization that will be held. The deaf people quickly find out who are the pairs of candidates who will compete in the election. Chatbot technology developed in this application can make it easier to get information about the election faster. The chatbot technology is expected to make the information search process more personal so that deaf people feel more comfortable using the application.

Acknowledgement

References

[1] Abdallah, E. E., & Fayyoumi, E. (2016). Assistive technology for deaf people based on android platform. *Procedia Computer Science*, *94*, 295-301.

[2] Atkinson, V., Aaberg, R., & Darnolf, S. (2017). Disability rights and election observation: Increasing access to the political process. *Nordic Journal of Human Rights*, *35*(4), 375-391.

[3] Saidatin, N., Munir, M., Oktaviani, M. V., & Widodo, P. G. T. (2019). Development of General Election Services for Disabilities by using Application SUARAKU In Surabaya. *INTEGER: Journal of Information Technology*, *4*(1).

[4] F Abdalla. 2019, February 14. KPU Sosialisasi Pemilu ke Penyandang Disabilitas. Retrieved February 20, 2021, from : https://www.medcom.id/pemilu/news-pemilu/0Kvqv7Yk-kpu-sosialisasi-pemilu-ke-penyandang-disabilitas

[5] McColl, M. A., Giancarlo, A., Shannon, D. W., & Patola, U. (2015). More than voting booths: Accessibility of electoral campaigns for people with disabilities in Ontario. *Canadian Journal of Disability Studies*, *4*(1), 89-110.

[6] Schur, L., Adya, M., & Ameri, M. (2015). Accessible democracy: Reducing voting obstacles for people with disabilities. *Election Law Journal*, *14*(1), 60-65.

[7] Mattila, M., & Papageorgiou, A. (2017). Disability, perceived discrimination and political participation. *International Political Science Review*, *38*(5), 505-519.

[8] Abdul-Kader, S. A., & Woods, J. C. (2015). Survey on chatbot design techniques in speech conversation systems. *International Journal of Advanced Computer Science and Applications*, *6*(7).

[9] Yumarlin, M. Z., & Jemmy, E. B. (2019, March). Implementation Of Goal-Directed Design Method Multimedia English Learning For Early Childhood. In *Journal of Physics: Conference Series* (Vol. 1175, No. 1, p. 012075). IOP Publishing.

[10] Kurniati, P. S., Sholihin, I., Winarta, R., & Insan, M. H. (2021). Information technology policy through the e-government programs in improving public services quality. *International Journal of Computer in Law & Political Science*, *1*, 1-8.

[11] Karniawati, N., Simamora, R., & Zain, B. T. (2021). Information communication and technology for political communication ethics. *International Journal of Computer in Law & Political Science*, *1*, 21-26.

[12] Shiver, B. N., & Wolfe, R. J. (2015, October). Evaluating alternatives for better deaf accessibility to selected web-based multimedia. In *Proceedings of the 17th international ACM SIGACCESS conference on computers & accessibility* (pp. 231-238).

[13] Paz, F., Paz, F. A., Villanueva, D., & Pow-Sang, J. A. (2015, April). Heuristic evaluation as a complement to usability testing: a case study in web domain. In *2015 12th international conference on information technology-new generations* (pp. 546-551). IEEE.

[14] Haristiani, N., & Rifa'i, M. M. (2020). Combining chatbot and social media: Enhancing personal learning environment (PLE) in language learning. *Indonesian Journal of Science and Technology*, *5*(3), 487-506.

[15] Zakia, D. L., Sunardi, S., & Yamtinah, S. (2017). The study of visual media use on deaf children in science learning. *European Journal of Special Education Research*.