

Digital Accessibility for People with Visual Impairments: Challenges, Opportunities, and Inclusive Technology Solutions

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ABSTRACT

This study examines the role of digital accessibility in enhancing information access and digital inclusion among individuals with visual impairments (visually impaired) in the midst of the rapid development of information technology. Although technology has the potential to help everyone, there are still many digital applications that are not easy for a blind person to use. The development of information and communication technology has provided various conveniences in accessing information digitally. However, not all individuals can enjoy such access equally, especially the visually impaired. Digital accessibility is an important aspect in ensuring that technology can be used by everyone without exception. This research aims to analyze the importance of digital literacy and the application of digital accessibility for a blind person in accessing technology-based information and services. This study employed a qualitative descriptive approach based on a systematic literature review of peer-reviewed publications related to digital accessibility and digital literacy from various scientific sources related to digital literacy and technological accessibility. The results of the study show that the application of Web Content Accessibility Guidelines (WCAG) and the use of tools such as screen readers or text-to-speech can help blind users access information on the internet. The application of a design that is easily accessible to everyone is not only a technical matter, but also a form of fulfilling everyone's right to information. Therefore, cooperation between the government, technology developers, and the community is needed to increase inclusive digital accessibility.

I. INTRODUCTION

In the increasingly advanced digital era, the development of digital technology has changed various aspects of human life, including the way we obtain information, communicate, and carry out daily activities. The internet, computer devices, and smartphones allow individuals to access information quickly and efficiently. This phenomenon also encourages the emergence of the concept of digital literacy, which is an important skill in the modern era.

Digital literacy is not only related to the ability to use technological devices, but also includes the ability to understand, evaluate, and utilize information wisely. In the context of modern society, digital literacy is a very important competency for all levels of society.

However, not all individuals have the same opportunity to access digital technology. One group that often faces obstacles is people with disabilities, especially the visually impaired. Individuals with visual impairments often encounter barriers when accessing visually dependent digital content that dominates digital media today.

Most websites, apps, and digital platforms are still designed with a focus on users who have normal visual abilities. This causes a blind person to have difficulty accessing various digital services such as education, employment, public services, and general information.

Therefore, the concept of digital accessibility is very important. Digital accessibility is an effort to ensure that information technology can be used by everyone, including individuals with disabilities. With the implementation of good digital accessibility, a blind person can make optimal use of technology.

In addition, digital literacy also has an important role in improving the ability of blind people to utilize technology. With good digital literacy, they can use various technological tools such as Web Content Accessibility Guidelines (WCAG), screen readers, text-to-speech, and voice-based applications.

However, the implementation of digital accessibility still faces various challenges. The lack of awareness of technology developers on inclusive design, limited digital literacy training, and a lack of policy support are inhibiting factors in realizing inclusive digital access.

Based on this background, this study aims to examine the importance of digital literacy and digital accessibility for a blind person in utilizing information technology.

II. RESEARCH METHODS

This study uses descriptive qualitative methods with a literature review method. A descriptive qualitative design was chosen because this research aims to deeply understand the concepts of digital literacy and digital accessibility for a blind person based on various relevant scientific sources. The literature study method is used to examine theories, concepts, and results of previous research related to research topics.

Data Analysis Techniques

The data analysis in this study was carried out using descriptive qualitative analysis. The data analysis process is carried out through several steps, namely: Data reduction, which is selecting and simplifying information relevant to the research topic.

Data presentation is compiling information that has been obtained systematically so that it is easy to understand.

Concluding, namely, explaining the results of the analysis to gain an understanding of the role of digital accessibility in improving digital literacy for a blind person.

Through the analysis process, researchers can identify various concepts, as well as efforts that can be made to improve digital accessibility for a blind person.

III. RESULTS AND DISCUSSION

Digital literacy is the ability of individuals to use digital technology to search, understand, evaluate, and utilize information effectively. Digital literacy is not only related to technical abilities in using technological devices, but also involves critical thinking skills. According to various experts, digital literacy includes several important aspects, namely:

- Ability to access information digitally.
- Ability to understand and evaluate information.
- The ability to use technology ethically and responsibly.
- Ability to communicate through digital media.

For a blind person, digital literacy has a very important role because it can help them access information that was previously difficult to reach.

Digital Accessibility for the Visually Impaired

Digital accessibility is an effort to ensure that technology can be used by everyone, including a person with a disability. In the context of the visually impaired, digital accessibility usually involves the use of assistive technology. Some of the technologies that support digital accessibility for the visually impaired include:

1. Screen Reader

A screen reader is software that reads text on a computer or smartphone screen and converts it into sound. Widely adopted screen readers include NVDA, JAWS, and VoiceOver, which provide auditory feedback to support navigation of digital interfaces.

2. Text-to-Speech

Text-to-speech technology is a digital device that can convert text into sound so that it can be heard by visually impaired users.

3. Accessible Web Design

DWA is the process of designing and developing a website aimed at ensuring that every user can access, understand, and interact with the content of the website without any barriers. With this technology, a blind person can access various digital services such as online education, social media, and public services. Challenges in Digital Accessibility Although the technology that supports digital accessibility has been growing, in reality, people with visual impairments still face various obstacles when using digital technology. These barriers make it impossible for them to access information and digital services as easily as other users. Some of the main challenges that are often faced include the following.

1. Lack of Developer Awareness

Many developers create websites or applications that focus only on the visual appearance without considering the needs of users with disabilities, including the visually impaired. For example, some websites do not provide alt text for images, so they cannot be read by screen readers used by the visually impaired. In addition, some websites have a navigation structure that is unclear or too complicated, making it difficult for visually impaired users to move from one page to another.

2. Limitations of Digital Literacy Training

Not all blind people have the opportunity to obtain training in the use of digital technology. For the visually impaired, the use of digital technology often requires special skills, such as using a screen reader, understanding voice-based navigation, or utilizing apps specifically designed for accessibility. However, not all blind people have the opportunity to learn to use the technology.

3. Infrastructure Limitations

In some areas, access to technology and internet devices is still limited. Not all blind people have devices that support accessibility technology, such as slow or unstable internet connections.

Efforts to Improve Digital Accessibility

Some of the efforts that can be made to improve digital accessibility include:

- Develop inclusive web design standards.
- Providing digital literacy training for people with disabilities.

- Increase the awareness of technology developers on the principle of accessibility.
- Encourage government policies that support digital inclusion.
- With these efforts, it is hoped that digital technology can be accessed equally by all people.

IV. CONCLUSION

The findings indicate that digital accessibility plays a crucial role in promoting digital inclusion and independent access to information among individuals with visual impairments, and that digital literacy has a very important role in helping a blind person utilize information technology. Digital accessibility is a key factor in ensuring that technology can be used by everyone without discrimination.

Technologies such as screen readers, text-to-speech, and accessible web design have helped improve the ability of the blind to access digital information. However, there are still various challenges, such as a lack of awareness of technology developers, limited digital literacy training, and a lack of infrastructure.

Therefore, cooperation between the government, technology developers, educational institutions, and the community is needed to improve digital accessibility. Thus, creating an inclusive digital environment and providing equal opportunities for all individuals.

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