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Digital Skills of Blind College Students in the Educational Process during a Pandemic

Muh. Said, Wahyudi Hn, Siti Azizah, Darmawan Darmawan, Citra Rosalyn Anwar

Universitas Negeri Makassar, Makassar, Indonesia
*E-mail: muhsaid797@gmail.com

Abstract: This article discusses the digital skills of blind students in the educational process during the pandemic. The COVID-19 pandemic forced most students to adapt to a new habit which is WFH (Working from Home). Meanwhile, blind students take longer to learn online which they barely knew about. During this pandemic, students are required to develop digital competencies even though they are studying from home. The purpose of this study is to identify and understand blind students' needs when they are studying from home during the pandemic. The research method used by the researcher in this research is descriptive qualitative, in which the data collection process is carried out online. The results of the analysis found that 7 aspects of blind students' ability in digital space were quite good. Those 7 aspects are basic knowledge of screen reader applications, basic knowledge of digital landscapes, basic knowledge of finding information, basic knowledge of tracing lecture references, basic knowledge of conversational applications and social media, basic knowledge of digital media skills, and ethics in using digital media. Although they are able in accessing or browsing in digital spaces, they are still lacking at some points regarding safety in digital spaces.

Keywords: Digital Skill, Blind, Pandemic

INTRODUCTION

The COVID-19 pandemic has forced most workers, communities, and students to adapt to new habit, which is keep doing their activities by implementing health protocols, including for people with visual impairments and also implementing WFH (Work from Home) which was initially carried out face to face, then everything went online from home. Studying and working from home requires good digital skills and digital literacy competencies, in order to take full advantage of information technology. This also applies to students with visual impairments. This competency is important because information technology provides unlimited space that needs to be understood, sorted, and utilized.

Based on a research by Widiyawati (2019), blind people are not only intended for those who are blind, but also include those who are able to see but are very limited and cannot be used for everyday life, especially in learning. Afrianty et al (2020) also stated that blind students need time to adapt first to new online learning applications. Especially in the accessibility of digital platforms for blind students in universities which still need to be developed (Wilkens et al., 2021). This is reinforced by the number of blind people in Indonesia as many as 3,750,000 (1.5%) of the Indonesian population based on the estimated data of the Ministry of Health in 2017 (Pertuni, 2017). In line with that, the General Chairperson of Pertuni, Aria Indrawati explained that in 2015 as many as 250 blind people were able to study. "The latest data which obtained last year, figure has increased by 30 percent to around 400 people" (Republika, 2017).

Students' online activities during this pandemic are required to develop digital competence as well as blind students who must have digital competence even when studying at home during the pandemic. Research that has been conducted by (Rizaldi et al., 2020) mentions that in the current and future eras, it requires everyone to have expertise in using

technology. These are basic skills in improving 21st-century skills. The success or failure of student survival in the future can be seen from how much ability a person has in using technology.

To minimize the spread of the Covid-19 virus, the government has made a policy which is physical distancing, that includes special policies for students starting from early childhood education to college learning online from home. Likewise, educators/teachers, lecturers, students, college students, and parents interact through technology (Argaheni, 2020). Herliandry et al (2020) added that online learning can be a solution to continue the rest of the semester, during the COVID-19 pandemic. Based on research by Yulia (2020), she stated that the COVID-19 pandemic greatly affected the education system in Indonesia. Conventional classes that are used to be used in the teaching and learning process are starting to be abandoned. Online learning that uses internet access is becoming popular because it supports learning from home. With online learning, educators can help the government to minimize the spread of COVID-19.

Indonesia is carrying out a national digital literacy movement launched by President Jokowi on May 20th, 2021 simultaneously on 16 TV stations and 34 provinces. It targets mainly those in the 3T area, vulnerable groups, and friends with disabilities. Digital literacy competence is also an important target of competencies that must be possessed by 21st-century students, this was conveyed by Prof. Aris Junaidi, the Director of BELMAWA in the implementation of "Tular Nalar" curriculum activities which were carried out nationally on January 19th, 2021. Digital literacy competencies for the visually impaired, as proposed by the Tular Nalar (t,t) curriculum initiated by MAFINDO, Maarif Institute, Love Frankie as a curriculum to help prepare learning during the pandemic. Blind people are given a special room on the theme of the internet for others in the forum https://tularnalar.id/lessons/08-internet-merangkul-sesama/ Digital literacy competencies that need to be owned and reached by blind students following information technology's needs which are the basic competencies needed to be much needed right now. Research on digital literacy competencies has been widely carried out as well as the target for college students, but digital literacy competencies for visually impaired students are still very difficult to find, which is why this research is very important to do.

This research is important because it is in accordance with the theme “Internet for everyone” in the digital literacy curriculum program from Tular Nalar which was initiated by MAFINDO, Maarif Institute, Love Frankie and supported by Google.org. This research will also describe the digital skills and digital literacy competencies of blind college students during the pandemic which can be used as a reference to understand blind students' needs for digital competence and equality in obtaining education in Indonesia. In addition, to describe the potential of blind students to develop their competence in the field of technology. Based on this, the researcher conducted research on "Digital Skills of Blind College Students in the Educational Process during a Pandemic".

METHOD

This research uses the descriptive qualitative method. Sugiyono (2014) stated that qualitative research is research where researchers are placed as key instruments, data collection techniques are carried out by combining and inductive data analysis. Similarly, Poerwandari (2005) suggests that qualitative research produces and manages descriptive data. This research is empirical research in which the data collection process is carried out online, namely the search for scientific references online, the interview process is carried out online.

Data collection was carried out through semi-structured interviews and surveys related to the digital skills of blind college students studying in Makassar. The data collection process is

carried out through "Zoom" application as a place for online interviews, "Google forms" are used to conduct surveys, and "WhatsApp" is used to communicate with blind college students before conducting interviews and surveys. Interviews were conducted to explore the digital skills of blind college students while surveys were used to collect further data and the purposes of determining the sample in this study. The results of the research are in the form of relevant questions (guidelines for instruments) with the purpose of research and then categorized based on indicators that have been made to help researchers determine the digital skills of blind students studying Makassar.

RESULT AND DISCUSSION

Result(s)

The results of the study were analyzed by recapitulating the results of the interviews and then providing coding. The following are some aspects that are used as benchmarks for the digital skills of blind college students.

Basic knowledge of screen reader apps

Basic knowledge of screen reader applications is important in operating devices, laptops, or other gadgets by reading the information in text on the screens of smartphones, laptops, and similar devices. As stated by several informants:

> "On android I use vocalizer but on my laptop I use NVDA or I usually use JAWS" **(Informant named ARY, lines 38-39)**.
> "On my cellphone, I use the talkback application with Damayanti's vocalizer. On my laptop, I use NVDA" **(Informant named Biccu, lines 57-59).**
> "On my cellphone, I use a screen reader application. On my laptop, I use NVDA" **(Informant named AS, lines 36-37).**

And when being asked about the knowledge of operating a screen reader application from the installation process, the informants said:

> "Thank god I was able to proceed the installation on my Android, but I still need my friend's help for the installation on my laptop" **(Informant named ARY, lines 239-241).**

However, one of the informant does not use a screen reader application on a smartphone which is generally used as stated by the following informant:

> "I don't have a screen reader application on my phone but there is a "click to speak" setting. For example, if I want to read, I just click the button and then it is read aloud" **(Informant named N, lines 44-47).**

Some of the answers given by the informants can be seen that the average blind students use the same screen reader application and able to operate the screen reader application themselves on an Android-based smartphone screen, but for laptop use, they still need help from friends or other people. One of the informants also only uses the smartphone's built-in feature as a screen reader.

Basic knowledge of the digital-internet landscape and cyberspace.

Accessing the digital-internet space and cyberspace needs to be equipped with basic knowledge of hardware and software to access digital platforms. As stated by several informants as follows:

> "Sometimes using Zoom or Google Meet but mostly Zoom" **(Informant named ARY, lines 16-17).**
> "Yes, but for online class I use smartphone" **(Informant named ARY, lines 42).**
> "Yes, I use laptop for doing my assignments" **(Informant named ARY, lines 274).**
> "There's a lot. It could be via smartphone, laptop, and I also use computer" **(Informant named I, lines 21-22).**
> "Since the beginning of online classes, we used Zoom application but these days, a lot of lecturers using Google Meet" **(Informant named N, lines 26-28).**
> "Using Google Meet and the univeristy's website. Also using Moodle and sometimes web-browser" **(Informant named AS, lines 19-20).**
> "I use zoom, google meet, and the university's website" **(Informant named S, lines 14-15).**

One of the informants had network problems in accessing online classes, said:

> "Sometimes we have network problems for online classes. So, we use phone and laptop only for doing assignment" **(Informant named Biccu, lines 15-17).**

It can be concluded that some informants use smartphones, laptops, and computers as devices to access online learning and are being used to do assignments. Some informants also use applications such as zoom, Google meet, Moodle, and campus websites or learning systems in accessing online classes. However, one of the informants encountered problems related to network connections that did not support online classes.

Basic knowledge of information search engines, how to use and select data.

Based on the interviews' results conducted with 6 informants regarding their knowledge of information search engines, and how to use and select data. The search engines they often use are google chrome, Blogspot, KBBI, and the website of the Ministry of Education and Culture. As stated by several informants, as follows:

> "Only on Google chrome" **(Informant named ARY, lines 126).**
> "I only type what I need to find on Google, on that searching box and then scroll down to find what I look for. I don't know any other search engines that I could use because I'm not really good at using the internet yet" **(Informant named ARY, lines 135-139).**
> "Based on what I need. For example, if I need something regarding language, then I open a website like KBBI" **(Informant named Biccu, lines 31-33).**
> "We were told to open the website of the Ministry of Education and Culture" **(Informant named I, lines 42-43).**

It is known that the average informants use Google Chrome as an information search engine, also search on the KBBI website and the website of the Ministry of Education and Culture to get the information needed.

Basic knowledge of tracing lecture references

Basic knowledge in tracing lecture references is needed in tracing and accessing lecture material information in the available digital space. Like some of the results of interviews with informants.

> "To find lecture references other than on Google, usually in electronic books or books that are converted into files, or usually ask for help from friends if I have trouble finding my own**"(Informant named ARY, lines 296-300).**
> "WhatsApp is usually used when lecturers share lecture material" **(Informant named Biccu, line 29).**
> "Yes, google. But if I want to find an article, I use Google Scholar" **(Informant named N, lines 77-78).**
> "Yes, we use google to do assignments and finding journal" **(Informant named S, lines 139-141).**
> "Something like research journal or modules, there are a lot of journal webstie such as UPI" **(Informant named S, lines 81-83).**
> "I've searched on Blogspot but that was before being reminded by the lecturers. After that, I no longer search on Blogspot. I search for journals on google or ask for help from friends in the e-book world group in the WhatsApp application. After getting the book, I will share it with my friends" **(Informant named AS, lines 81-83).**

Some informants experienced difficulties in finding lecture references, stated that:

> "My obstacle in finding lecture references is that there are many websites that I don't know about and sometimes there are websites that don't have access to screen readers, and I still don't have a lot of e-books or books that screen readers can access."(**Informant named ARY, lines 302-307**).

An informant named Ary had difficulty accessing websites and electronic books that were not accessible by screen readers, so the informant had to ask a friend for help if he had trouble finding lecture references. Unlike some other informants who can get lecture references using other digital platforms.

One of the informants was forced to look for material on an untrusted site even though the lecturer had advised him not to take information from the website, stated that:

> "If I couldn't find any journal, I had to look for it on blogspot because there's nothing I can do about it. I just had to" **(Informant named S, lines 173-176).**
> "Yes, but usually, we have trouble finding material in articles. My friends usually use Blogspot, so it's normal for all of the contents in the bibliography to be Blogspot. But I usually use 2 blogs and 3 articles. Usually, people who are looking for Blogspot are people who have difficulty finding material" **(Informant named N, lines 87-92).**

It can be concluded that some informants' knowledge in tracing lecture references is quite good. Two other informants are still having difficulties due to lack of access to screen reader applications on the website and e-books, which makes 2 informants have to ask friends for help and look for lecture references on Blogspot.

Basic Knowledge of Conversational Apps and Social Media

Basic knowledge of conversational applications and social media is important to know in the digital world. Basic knowledge of social media or conversation can make it easy to

communicate and interact digitally. The results of the interviews conducted, four informants did not know some of the features in WhatsApp such as how to personalize status. Bacca said after being asked about the knowledge of existing features on WhatsApp and Instagram:

> "I know some, I have no idea about the rest" **(Informant named Biccu, line 39).**

When being asked about the knowledge of existing features on Facebook, he stated that:

> "I only know how to update status and read articles on Facebook. There is also free Facebook. Facebook that can't see pictures (Facebook lite) so only writing can be read" **(Informant named Biccu, lines 44-47).**

An informant named Bacca has limitations in using additional features on Facebook because he does not have knowledge of accessing features other than uploading statuses and reading articles. In contrast to several other informants who have more knowledge, for example, an informant named S when asked the same question about the feature of personalizing status, stated:

> "For example, we can choose those who are able to see our status updates on WhatsApp" **(Informant named S, lines 69-71).**

Based on his answer, it is concluded that informant named S is able to use privacy feature on WhatsApp. Other than that, one of the blind students use Tik Tok to listen to information.

> "Tik Tok to watch some videos" **(Informant named S, line 46).**
> "Not exactly to watch, but to listen" **(Informant named S, lines 56-57).**

It can be concluded that the basic knowledge of blind students about conversational applications and social media is only two informants who know and able use some additional features of social media applications, the other four still cannot use the features. In addition, blind students have started using Tik Tok to find information.

Digital Media Skills

The results of interviews conducted with blind students regarding how social media skills show that the applications that are often used are WhatsApp, Facebook, Instagram, and Google applications to find various references and articles. Obstacles that blind students sometimes find in finding references or articles in completing college assignments are articles that cannot be accessed by screen readers as stated by an informant named S:

> "Some things cannot be accessed by blind students, one of them is that not all pictures have writing along with them" **(Informant named S, lines 153-155)**.

It is known that blind students cannot access documents in images form including scanned PDF documents. Documents like these present barriers for blind students because they are not accessible.

Step being used so that they do not act wrongly when using digital media is looking for references on google according to what they need, as stated by several informants:

> "If there's something I couldn't understand entirely, I usually look it up on google, sometimes it's every day or depends on the time when I need it" **(Informant named ARY, lines 197-199).**
> "If I get curious about something, I tend to look it up on google. Either about some books or some news" **(Informant named AS, liness 190-192).**

When being asked about digital records, it is known that 5 out of 6 informants interviewed still do not know digital records when using digital media, as follows:

> "Oh, not yet" **(Informant named ARY, line 152).**
> "Nope" **(Informant named Biccu, line 98).**

Those who know about digital records, as follows:

> "Digital records, isn't it?" **(Informant named AS, line 152).**

The digital media skills of blind students sometimes have obstacles in accessing scientific articles to get more references and improve their abilities. Some students also still use untrusted websites such as Blogspot. This happens because it relates to the obstacles experienced in accessing scientific articles.

Digital Ethics

One thing that must be considered in digital media is digital ethics. Based on the interview's results conducted with six informants, some of them sometimes give warnings to their friends about the need to sort out information before it is distributed to prevent the spread of hoax as stated by several informants:

> "I just give warning to those who are close friends with me. If they're not too close with me, sometimes I just let them be" **(Informant named ARY, lines 210-212).**
> "First of all, I tend to ask them "are you sure this news isn't a hoax?" If they answer "I have no idea" I would explain to them to be careful and the government's websites usually ended with "go". Sometimes, people keep sharing news that is not from the government's website such as a free 200 GB voucher, etc. Most people got that kind of message spam, right" **(Informant named S, lines 215-223).**

However, in terms of information management, there are still blind students who sometimes continue and believe in the hoax news that is spreading as stated by the following informants:

> "Not too often but there are times when I easily believe in hoax but most of the time, I just ignore them if it seems too unstrustable" **(Informant named N, lines 193-195).**
> "Yes, once there was a news and I forwarded it because I thought it was true, after trying to find either the news was wrong or right, I couldn't find it" (Informant named AS, lines 155-156).

In addition to admonishing friends in managing digital media, some informants use social media as a place of education by distributing video lectures, writing, and sharing information about lectures as stated by several informants:

> "Sometimes I write information from campus or juts write whatever comes to my mind" **(Informant named I, lines 108-109).**
> "I usually spread lecture videos about Islam on my status updates" **(Informant named S, liness 247-248).**

From the answers given by the informants, it can be seen that some blind students are still lacking in choosing correct information, some of them use social media as an educational media, and others are able to provide instructions to be careful in using digital media to other students.

Discussion(s)

This study identifies and understands the potential for digital skills of blind students in the educational process during the current pandemic. Hafiar et al (2019) in his research stated that a greater effort is needed from technology developers to be willing to develop information technology products that provide equal opportunities for blind people to use the internet to explore digital spaces. Digital Skill is a person's ability to know, understand, and use ICT hardware or software and digital-based operating systems (Monggilo et al., 2021: 8). Digital skills also include all skills related to technology ranging from basic skills or literacy (Motyl et al., 2017). In this case, there are already several features that can be used such as social media and additional features on mobile devices that can convert text into sounds such as Talkback, JAWS, NVDA, Damayanti Vocalizer, and subordinate features of Mobile or Smartphone. The results of online interviews and observations during this pandemic found that blind students using the internet including Social Media (Facebook, Instagram, Telegram, Tiktok, and WhatsApp), YouTube, and Google. Internet use is based on their need to communicate, seek information, and entertain. Internet access is used to access files in audio, visual, or text form with the help of various applications that are able to convert text into audio, according to the ability of blind people who have visual impairments. This is reinforced by research (Sulistyowati & Rafi, 2020) which states that a screen reader is a tool used by blind students to access computers or PCs. Widiyawati (2019) in her research also revealed that blindness does not mean only for those who are blind, but also includes those who are able to see but very limited and cannot be used for daily life, especially in learning. So in this case, students with low vision blindness can see (sightedness) but within a certain distance. Afrianty et al (2020) states that online learning must modify lecture and exam materials by taking into account the principles of accessibility and proper accommodation for blind students so that blind students can understand the material, such as video or audio forms. Based on Karolina & Aulianto's research in (2019) showed that the average blind person who became an informant started using Android smartphones as a daily communication tool in early 2013. As digital media users, we need to pay attention to digital security to protect personal data when using digital media so that personal data is not leaked or used for fraud. By default, today's devices have been designed with various security features to maintain and ensure safe and comfortable digital media activities. However, every technology must have various loopholes that other irresponsible people can take advantage of (Adikara et al., 2021). Based on this, users need to have digital skills when using digital media and understand ethics in communicating using digital media, because digital media users are diverse.

This study covers 7 aspects of digital skills of blind college students in the educational process during a pandemic to determine the ability of blind students from several universities in Makassar. Based on the results of the study, it was found that 7 aspects of the digital skills of blind students found the abilities and barriers of blind students when using digital media, both in using screen reader applications, using hardware or software, searching for

information, tracing lecture references and others used in digital media. It can be seen from several aspects found, as follows:

The following is a description of 7 aspects of Digital Skills for blind college students in the educational process during the pandemic:

1. Basic knowledge of screen reader applications found that the average blind student uses the same screen reader application, only one of the blind students uses the subordinate features of a smartphone device for their screen reader and they can operate the screen reader application themselves on an android-based smartphone screen but to use a laptop, still requires friends or other people help.
2. Basic knowledge about the digital-internet and virtual world landscape based on answers from several informants concluded that some informants used smartphones, laptops, and computers as devices to access online learning and were used to do assignments. Some informants also used applications such as zoom, google meet, moodle, and the university's website or learning system in accessing lectures. However, one of the informants has a problem related to network connections that do not support online learning.
3. Basic knowledge of information search engines, how to use and select data. It is known that the average informant uses Google Chrome as an information search engine and also searches information on KBBI and Ministry of Education and Culture websites to get the information needed.
4. Basic knowledge of tracing lecture references, it was found that some informants' knowledge of tracing lecture references was quite good. Two other informants are still having difficulties due to lack of access to screen reader applications on the website and e-books, which makes 2 informants have to ask friends for help and look for lecture references on Blogspot which shows an inadequate understanding of digital literacy.
5. Basic Knowledge of Conversational Applications and Social Media. Based on the results of interviews conducted, it was found that the basic knowledge of blind college students about conversational applications and social media, only two informants who know and are able to use some additional features of social media applications. The other four are still unable to use the application features, such as WhatsApp, Instagram, Telegram, and Facebook. In addition, blind students have started using Tik Tok to find information.
6. The digital media skills of blind college students sometimes have obstacles in accessing a scientific article to obtain more references and improve their abilities. And it was found that 5 out of 6 informants interviewed did not know about the digital records.
7. Ethics in using digital media. It is known that some blind students are still lacking in choosing correct information, some use social media as educational media, and others are able to provide instructions to be careful in using digital media to other students.

Based on several aspects examined, the important findings of this research are that 7 aspects of the ability of blind college students in digital media have met the criteria for using devices and applications, such as screen reader applications, seeking information using social media applications, and conversations to support online classes. 7 aspects of the ability of blind college students in digital media still require sufficient understanding and literacy for proper use of search engines, ethics and security on social media, and also maintaining digital records to be clean. In line with this, research by Bhowmick & Hazarika in (2017) shows that the visually impaired can improve like people who are not blind with the help of current technology in terms of digital literacy. To support this, there is a need for the accessibility of all forms of barriers that hinder equal access to education.

CONCLUSSION

Based on this research, the blind students' digital skills during the pandemic based on interviews that have been conducted online, shows that their skill in using digital media is quite good in terms of several aspects such as using and operating the screen reader application is good. The use of smartphones and laptops as devices that are often used in accessing online learning using applications such as zoom, google meet, moodle, and the university's website or another learning system.

The need for digital skills for blind students in participating in the educational process during this pandemic requires accessibility and accommodation for blind and visually impaired students such as screen readers so that when online learning is being conducted in conditions like this blind college students can obtain and understand the material provided by the lecturer. In online learning, educators must be able to modify the material so that it can be accessed or studied by blind students. Blind students need adequate understanding and literacy for proper use of search engines, ethics and social media safety, and maintaining clean digital records.

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