ASSESSMENT OF TECHNOLOGY ACCESS GAP AND ITS SOLUTIONS IN DISTANCE EDUCATION IN HIGHER EDUCATION

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Abstract

This study aims to evaluate the gap in technology access in distance education in higher education and present solutions to overcome this problem. This study uses a qualitative approach with a case study method. Data were collected through interviews with students and lecturers, direct observation, and analysis of related documents. The research sample consisted of students and lecturers from several universities that implement distance education. This study revealed that there is a gap in technology access in distance education in higher education. Several factors that influence this gap include the availability of limited technology infrastructure, limited technological knowledge among students and lecturers, and limited internet access in certain areas. The proposed solutions to overcome this problem include improving technology infrastructure in higher education, providing technology training for students and lecturers, and collaborating with internet service providers to expand the reach of internet access. This study contributes to understanding the gap in technology access in distance education in higher education. The findings and solutions presented can be used as a reference for universities in improving technology accessibility in distance education. This study can also be a basis for further research in this field

Keywords: Access to Technology, Distance Education, Higher Education, Gaps, Solutions.

1 INTRODUCTION

Distance learning has become an increasingly popular alternative in the higher education system. In this digital era, information and communication technology has provided the possibility to overcome geographical boundaries and provide access to education to individuals who previously had difficulty accessing it (Philology et al., 2023). However, the gap in access to technology is a major barrier to distance learning in higher education. This article will discuss the assessment of the gap in access to technology and its solutions in distance learning in higher education. According to (Semenets-Orlova et al., (2021) distance learning is a form of education that allows students and instructors to interact without having to be in the same physical location. This can include the use of technologies such as the internet, video conferencing, and mobile applications to connect students with instructors and learning

materials. Distance learning has become a solution for those who cannot physically attend college due to geographical boundaries, time constraints, or physical limitations (Turnbull et al., 2021).

However, the technology access gap is a major issue in distance education in higher education. Not all individuals have equal access to the technology needed to participate in distance education (Bozkurt, 2019). Several factors that contribute to the technology access gap between individuals include income level, geographic location, and the technology infrastructure available in their area. First, income level plays a significant role in the technology access gap. Individuals with low incomes may not be able to afford the hardware and software needed to participate in distance education. In addition, the high cost of internet access can also be a barrier for individuals with low incomes. This means that individuals with low incomes may not be able to access online learning materials or participate in online discussions that are essential in distance education.

Second, geographic location can also be a factor influencing the technology access gap. Remote or isolated areas may not have adequate access to technology infrastructure such as a stable internet connection. This means that individuals living in these areas may not be able to access online learning materials or participate in online lectures. Additionally, low internet speeds can also be an issue in certain areas, affecting students' learning experiences in distance education. Third, the technology infrastructure available in an area can also influence the technology access gap in distance education (Haleem et al., 2022). Some areas may not have adequate technology infrastructure, such as a stable internet connection or reliable electricity. This means that individuals living in these areas may not be able to access distance education at all. Poor technology infrastructure can also affect the quality of students' learning experiences in distance education.

To address the gap in access to technology in distance education in higher education, several solutions can be proposed. Governments and educational institutions should work together to improve access to technology in remote or isolated areas. This can be done through investment in technological infrastructure, such as building a stable internet network and expanding internet coverage in these areas. In addition, governments and educational institutions can also provide subsidies or financial assistance to low-income individuals to purchase the hardware and software needed for distance education.

Educational institutions can also adopt a more inclusive approach in the design and development of distance learning programs. This means considering the needs and limitations of individuals with low incomes or those living in remote areas in designing distance learning programs (Shahroom et al., 2018). Educational institutions can use learning platforms that do not require stable internet access or provide alternative access to learning materials for those who do not have internet access (Ilmi et al., 2020). Educational institutions can also adopt more flexible distance learning models.

1.1 Distance Learning

Distance learning or e-learning has become an important topic in the context of higher education in the digital era. In recent decades, the development of information and communication technology (ICT) has brought significant changes in the way we learn and teach. However, access to technology and access gaps are serious problems in distance education in higher education (Makarenya et al., 2020). In this literature, we will discuss the assessment of the technology access gap and its solutions in distance education in higher education. It is important to understand the concept of distance education and the role of technology in this context. Distance education is a form of education in which students and teachers are geographically separated and use technology to interact and learn. Technology is an important component in distance education, allowing students and teachers to connect, communicate, and access learning materials (Dudar et al., 2021).

However, the gap in access to technology is a major barrier to distance learning in higher education (Shkil & Belikova, 2020). Some factors that cause the gap in access to technology among students include differences in ICT infrastructure, differences in digital literacy levels, and economic differences among students. Some universities may not have adequate ICT infrastructure, such as slow internet connections or lack of devices needed to access distance learning. In addition, students with low digital literacy levels may have difficulty using the technology needed for distance learning. In addition, economic differences among students can also be a factor that affects their access to technology.

To address the technology access gap in distance education in higher education, several solutions have been proposed in this study. One solution that is often suggested is to improve the ICT infrastructure in higher education. This can include improving internet access, providing the necessary hardware and software, and training students and teachers in the use

of technology. In addition, it is important to improve students' digital literacy through relevant training and education programs. By improving students' digital literacy, they will be better able to use the technology required for distance education (Mykolaiko et al., 2022). In addition, the government and educational institutions can also play an important role in addressing the technology access gap. The government can provide financial support and policies that facilitate the development of ICT infrastructure in higher education. Educational institutions can also collaborate with industry partners to provide affordable hardware and software to students (Turnbull et al., 2021). According to Williamson et al., (2020) a collaborative approach between higher education, government, and industry partners can also help in addressing the technology access gap. However, it is important to note that these proposed solutions cannot be implemented universally. Each higher education institution and educational context has unique challenges and needs. Therefore, a careful assessment of the technology access gaps in each higher education institution and tailored solutions are needed.

2 METHODOLOGY

This study aims to evaluate and analyze the gap in technology access in the context of distance education in higher education, and to provide solutions that can overcome these problems. The method used in this study consists of several stages, including the selection of research subjects, data collection, data analysis, and interpretation of results.

4.1 Selection of Research Subjects

The selection of research subjects was carried out by considering several factors, such as geographic location, type of university, and level of technological access. In this case, we selected three universities in Indonesia, which represent various levels of technological access, namely University A, University B, and University C. These universities have different geographic locations, as well as differences in terms of available technological infrastructure.

6. Data Collection

Data for this study were collected through surveys and interviews with students and lecturers at each of the universities that were the subjects of the study. The survey was conducted using a questionnaire specifically designed to collect information about the access to technology owned by students and lecturers, as well as the obstacles they face in using technology for distance education. Interviews were conducted to gain a deeper understanding of the subjects' experiences and perceptions related to the issue of access to technology.

7. Data Analysis

The data collected from the survey and interviews were analyzed using qualitative and quantitative analysis methods. Qualitative analysis was conducted by identifying themes and patterns that emerged from the interview data, while quantitative analysis involved processing the survey data using statistical programs such as SPSS. This analysis aims to identify gaps in technology access that exist in each university, as well as the factors that influence them.

8. Interpretation of Results

The results of the data analysis are interpreted to identify the main problems in technology access in each university, as well as to find solutions that can overcome these problems. This interpretation is done by comparing data from the three universities and looking at similarities and differences in terms of technology access. In addition, the results of the interpretation are also used to formulate recommendations that can be used by universities to improve technology access in distance education.

9. Validity and Reliability

To ensure the validity and reliability of this study, several steps have been taken. First, surveys and interviews were conducted using instruments that have been tested for validity and reliability. Second, triangulation was conducted by comparing data from various sources, such as students and lecturers. Third, the results of this study will also be compared with previous studies that have been conducted in the same field to ensure the consistency and accuracy of the findings.

3 RESULTS

This study aims to evaluate the gap in technology access in distance education in higher education and present solutions that can address this problem. Data were obtained through a survey conducted on students and lecturers from various universities in Indonesia. In data analysis, we used descriptive statistical methods to identify differences in technology access between groups of students and lecturers. The survey results show that there is a significant gap in technology access between students and lecturers in higher education. Most students have more limited access to technological devices such as personal computers, laptops, and smartphones compared to lecturers. In addition, internet speed is also a significant problem for students, with most students reporting that they experience slow or unstable internet connections.

In addition to the gap in device access and internet speed, there is also a gap in the level of technological skills between students and lecturers. Lecturers generally have a higher level of technological skills than students, which can affect their ability to adopt and use technology in the distance learning process. To address this gap in technology access, several solutions can be proposed. Universities should invest in adequate technological infrastructure, including increasing internet speeds on campus and providing adequate device access for students. In addition, universities should also provide adequate technological training for students and lecturers, so that they can develop the skills needed to adopt and use technology in distance learning.

In addition, collaboration between universities and the government is also important in addressing this technology access gap. The government must provide financial support and policies that address the technology needs of distance education. Universities can also partner with technology companies to provide access to devices at affordable prices for students. In addition to infrastructure and policy solutions, pedagogical approaches are also important in addressing the technology access gap in distance education. Universities must develop learning strategies that combine technology with effective learning methods. This can involve the use of online learning platforms, video conferencing, and mobile applications to increase student interaction and participation in the learning process.

4 CONCLUSION

The assessment of the technology access gap in distance education in higher education shows that there are significant differences in technology access between students from different economic backgrounds and different study programs. The main challenges faced in implementing distance education are the lack of adequate technology infrastructure and the lack of knowledge and skills of teaching staff in using educational technology. To address the technology access gap, higher education institutions need to improve their technology infrastructure, establish partnerships with technology organizations or companies, and develop effective teaching strategies. By taking these steps, it is hoped that distance education in higher education can become more inclusive and effective in achieving educational goals.

This study has examined the gap in access to technology in distance education in higher education and sought solutions that can overcome this problem. From the results of our study, it can be concluded that the gap in access to technology is still a major challenge in the implementation of distance education in higher education. One of the factors that causes the gap in access to technology is the lack of adequate infrastructure in most higher education institutions. This includes limited internet access, lack of adequate hardware, and lack of training for lecturers and students in using educational technology. In addition, economic factors are also an obstacle for some students who cannot afford to buy the necessary technological devices. To overcome the gap in access to technology in distance education, we recommend several solutions. First, universities need to improve their technological infrastructure by providing fast and stable internet access, and updating outdated hardware. In addition, universities must also provide adequate training for lecturers and students in using educational technology effectively. Furthermore, to overcome economic constraints, universities can collaborate with the government and private companies to provide scholarships or financial assistance for students in need. In addition, universities can also consider the use of more affordable technological devices, such as smartphones or tablets, as an alternative for students who cannot afford expensive computer devices.

In the long term, it is important for the government and universities to work together in formulating policies that support the development of technological infrastructure in universities. In addition, further research is needed on the role of technology in distance education and its impact on the quality of learning. In conclusion, the gap in access to technology in distance education in universities is still a problem that needs to be addressed.

However, with the right efforts, such as improving technological infrastructure, adequate training, and financial assistance for students, this gap can be reduced. The government, universities, and all related parties need to work together to overcome these challenges and ensure that distance education can provide maximum benefits for students.

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