e-ISSN 2963-2870
Vol 5 2024

DIGITAL DIVIDE AND LITERACY: IMPACT ON STUDENT ENGAGEMENT IN DISTANCE LEARNING

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Abstract

The digital divide has become a significant barrier to distance learning, particularly for students in remote areas with limited access to technology. This study aims to explore the impact of the digital divide and digital literacy on student engagement in distance learning, examined through three dimensions: behavioral, emotional, and cognitive. A qualitative method was employed, using in-depth interviews with 15 students selected through purposive sampling from regions far from urban centers. Data analysis was conducted through triangulation, with validation via cross-checking and member checking, and thematic coding was applied to identify key themes. The identified themes were further analyzed to gain an in-depth understanding of how the digital divide affects student engagement.The findings reveal that limited internet access, low-quality devices, and the high cost of technology negatively impact students' behavioral engagement. Students also experienced emotional isolation due to technological barriers, while their cognitive engagement was hindered by low levels of digital literacy. The implications of this study highlight the importance of improving internet infrastructure in remote areas, providing technology subsidies, and offering digital literacy training to enhance students' academic engagement in distance learning.

Keywords: Digital divide, digital literacy, distance learning, student engagement.

1 INTRODUCTION

Distance education has become a key solution for reaching communities with limited access to conventional education. Universitas Terbuka (UT) is a higher education institution in Indonesia specifically designed to implement a distance education system. As part of UT, Universitas Terbuka Bengkulu plays a crucial role in expanding education to areas that are difficult for conventional educational institutions to reach. However, the implementation of Distance Education (PJJ) presents its own challenges, particularly concerning the digital divide, which has become more pronounced as digital technology adoption has become central to learning. During the COVID-19 pandemic, distance learning became increasingly relevant and urgent due to the limitations on physical interaction in educational institutions. However, the pandemic also exacerbated existing digital divides. In the context of distance learning at Universitas

Terbuka Bengkulu, many students face obstacles related to inadequate internet access, poor-quality devices, and the high costs of accessing technology. The shift to online learning has highlighted disparities in access to digital tools and reliable internet, which are critical for engaging in distance education. Students from underprivileged backgrounds, particularly those in rural or low-income areas, often lack access to the necessary technology, such as broadband internet, which is essential for participating in online classes and accessing educational resources (Cheng, 2024; Naidoo & Naranjee, 2023).

The lack of access not only limits students' ability to attend virtual classes but also affects their engagement with learning materials and participation in interactive activities, both of which are critical for academic success (Zilka et al., 2021). This gap not only hampers their involvement in the learning process but also has serious psychological impacts, such as increased stress levels and frustration (Zilka et al., 2021). In this context, Universitas Terbuka (UT) Bengkulu faces the challenge of ensuring that all students, particularly those from rural areas or low-income families, can access and utilize digital technology for learning purposes. According to Cheng, (2024), the digital divide can be defined as the disparity in access to technological devices and the internet, which creates inequality in students' participation in online learning. Students with limited access to technology often struggle to attend virtual classes, access course materials, and engage in interactive discussions. This issue is especially prevalent among students from low-income families or those living in rural areas, where poor internet infrastructure poses a major barrier (Sunil & Azimi, 2023). At UT Bengkulu, this problem is particularly evident, as many students come from regions with inadequate technological infrastructure.

In addition, the ownership of quality technological devices is a critical issue in the context of the digital divide. The quality of devices, such as laptops or smartphones, significantly affects students' participation in distance learning (Alqurashi, 2024). Students with low-quality devices often face technical difficulties, such as slow processing speeds or poor audio and video quality, which ultimately reduces their motivation to engage in learning (Pandita & Kiran, 2023). Furthermore, the cost of accessing technology is another major barrier for students to participate in distance learning. Many students from economically disadvantaged backgrounds cannot afford to pay for internet services or purchase adequate devices for attending online classes (Badiuzzaman et al., 2021). At Universitas Terbuka Bengkulu, these costs are one of the key challenges, particularly for students living in rural areas with limited technological

infrastructure and high internet service costs. Financial constraints often force students to share devices with other family members or rely on unstable internet connections, which in turn reduces their participation in academic activities (Wright et al., 2024).

The digital divide not only encompasses access to technology but is also closely linked to students' digital literacy. The ability to effectively use technology to search, manage, and utilize information is known as digital literacy (Xu et al., 2023). Students with low digital literacy often struggle to navigate online learning platforms, access course materials, and communicate effectively with lecturers and peers (Getenet et al., 2024). Low digital literacy is directly related to lower levels of cognitive engagement, which refers to the mental effort students invest in understanding and mastering the subject matter (Feng & Liu, 2024). This limitation in digital literacy not only reduces students' ability to comprehend course materials but also diminishes their motivation and emotional engagement in online learning (Müller et al., 2023). The digital divide, coupled with low digital literacy, has broad impacts on students' academic engagement in distance learning. In the context of Universitas Terbuka Bengkulu, this gap becomes even more apparent, as many students come from rural areas with inadequate technological infrastructure. This divide affects not only students' behavioral engagement, such as participation in classes and assignment submission, but also their emotional and cognitive engagement. Students lacking sufficient access to technology often feel isolated from the learning process, ultimately decreasing their motivation to actively participate in academic activities (Feng & Liu, 2024).

Most previous studies have addressed the general impact of the digital divide, but few have specifically examined how this divide affects digital literacy and student engagement at distance-learning institutions like Universitas Terbuka (UT) Bengkulu. Existing research has predominantly focused on access to technology, with limited exploration of the relationship between device quality, the cost of technology access, and student engagement across three key dimensions: behavioral, emotional, and cognitive. This study aims to examine how the digital divide—including access to the internet, device ownership and quality, and the cost of technology—affects the digital literacy and engagement of Universitas Terbuka Bengkulu students in distance learning. Specifically, this research will explore the relationship between the digital divide and the three dimensions of student engagement: behavioral, emotional, and cognitive. The study offers a new perspective by integrating the dimensions of the digital divide

and digital literacy to provide a more comprehensive understanding of student engagement in distance learning.

The implications of this study are far-reaching, particularly for educational institutions seeking to narrow the digital divide among their students. By providing new insights into the importance of digital literacy and equitable access to technology, this research can assist educational institutions in designing more inclusive training programs and policies. The recommendations from this study will also be valuable for policymakers in improving technology access in underdeveloped areas and for technology developers in creating more affordable and accessible solutions. Overall, this research makes a significant contribution to understanding the complex relationship between the digital divide, digital literacy, and student engagement in distance learning. It also paves the way for further research focused on developing more effective strategies and policies to address the challenges of the digital divide in the education sector.

2 METHODOLOGY

This study employs a qualitative approach using phenomenological methods to explore the experiences of Universitas Terbuka Bengkulu students regarding the digital divide in online learning. The phenomenological approach was chosen because it allows the researcher to delve into the students' subjective experiences in dealing with challenges related to internet access, technological devices, and digital literacy, as well as how these factors influence their engagement in learning (Creswell, 2018; Moustakas, 2011). The research population consists of Universitas Terbuka Bengkulu students enrolled in online learning during the 2023/2024 academic year. Participants were selected through purposive sampling, with the criteria focusing on students who experience difficulties in accessing technology, have low economic status, and live in rural or remote areas. A total of 10 to 15 participants were interviewed until data saturation was reached (Lincoln & Guba, 1985). The research instrument was a semi-structured interview guide, with questions aimed at exploring participants' experiences related to internet access, device quality, digital literacy, and their academic engagement in online learning.

Data were collected through in-depth interviews conducted in person, via phone, and online using the Zoom platform, with each session lasting between 30 to 60 minutes. All interviews were recorded with the respondents' consent and manually noted for further analysis. Respondents were anonymized through the use of pseudonyms to protect their privacy. In addition to the interviews, the study also employed participatory observation, where the

researcher observed student participation in *tuweb* learning sessions and through the Silayar UT platform over one semester. Field notes were used to record students' interactions with lecturers and the challenges they faced during online learning, including technical issues related to internet access and device usage. The validity of the data was ensured through triangulation of interviews, participatory observation, and relevant document data. Additionally, member checking was employed, whereby interview transcripts were returned to participants to confirm their accuracy. Dependability was guaranteed through an audit trail that documented every step of the research process, and confirmability was maintained by recording the researcher's biases and reflections throughout the study (Lincoln & Guba, 1985). The collected data were analyzed using thematic analysis to facilitate data coding and the identification of themes (Braun & Clarke, 2006). The analysis process was conducted in stages, beginning with interview transcription, open coding, and grouping codes into broader themes. These themes were then further analyzed to gain a deeper understanding of how the digital divide affects student engagement.

3 FINDINGS AND DISCUSSION

3.1 Participant Characteristics

This study involved 15 students from Universitas Terbuka (UT) Bengkulu, originating from the districts of Kaur, Mukomuko, Lebong, and Argamakmur. These regions face significant digital infrastructure challenges, including limited internet access and frequent power outages. The characteristics of the research subjects are presented in the following table:

Tabel 1. Characteristics of Research Participants

Characteristics	Category	Percentage (%)	Number (n=15)
Age	20-30 years	40%	6
	31-40 years	40%	6
	41-45 years	20%	3
Gender	Male	53%	8
	Female	47%	7
Employment Status	Part-time/Full-time employed	60%	9
	Full-time student	40%	6
Technology Access	Issues with internet connection (weather, power outages)	70%	10
Device Quality & Ownership	Uses low-spec devices (old smartphone/laptop)	45%	7
	Does not use low-spec devices	55%	8

Technology Access Cost	Difficulty affording internet/data plans or devices	30%	5

Source: Processed Data, 2024

Based on the characteristics of the research participants, 15 students from Universitas Terbuka Bengkulu, originating from the districts of Kaur, Mukomuko, Lebong, and Argamakmur, display diverse profiles in terms of age, gender, employment status, and access to technology. In terms of age, the majority of students fall within the productive age range of 20-40 years, with an equal proportion in both age groups (40% each), while the remaining students are aged between 41-45 years. From a gender perspective, more than half of the students are male (53%), while the remaining 47% are female. Regarding employment status, the majority of students (60%) are either part-time or full-time workers, while 40% are full-time students, indicating that many Universitas Terbuka students must balance their studies with work. The main challenges faced by students relate to access to technology, with 70% reporting frequent issues with lost internet signals, particularly during bad weather and power outages, which pose significant barriers to online learning activities. Additionally, nearly half of the students (45%) use low-specification devices such as old smartphones or laptops, while the remaining 55% have better-quality devices.

However, 40% of the students reported not owning a personal laptop and having to borrow from family members or friends, highlighting the limitations in ownership of suitable devices. The cost of accessing technology is also a barrier for 30% of students from low-income families, who struggle to afford internet data or quality devices. These limitations further exacerbate the challenges they face in consistently and efficiently accessing distance education. Overall, these characteristics reveal significant challenges related to the digital divide experienced by Universitas Terbuka Bengkulu students, particularly in terms of internet access, device quality, and financial capacity to support effective online learning.

3.2 Credibility and Reliability of Data

In this study, the credibility and reliability of the data were maintained through various qualitative approaches, demonstrating that the methods used effectively ensured the accuracy and credibility of the findings.

1. Triangulation showed consistency between data obtained from in-depth interviews and observations. The results of the triangulation revealed that the main findings regarding limited internet access, low-quality devices, and digital literacy challenges were fully aligned with the students' firsthand experiences during the online learning process. These

observations confirmed that the obstacles they encountered in the field were consistent with what they expressed during the interviews.

2. Member checking confirmed that participants felt the interview summaries provided to them accurately represented their experiences. There were no significant differences between the initial interviews and the participants' verified responses, indicating that the collected data accurately reflected the real situations faced by the students.
3. Transferability was adequately demonstrated through detailed descriptions of the research context, showing that these findings can be applied to student populations from other regions with similar conditions, such as remote areas facing digital divides. Other participants from similar regions are likely to encounter similar challenges regarding internet access, device quality, and digital literacy.
4. An audit trail conducted throughout the study indicated that the entire process of data collection, analysis, and reporting was systematically documented. This ensures that the research findings can be clearly traced, thereby reinforcing the dependability of the results. Peer debriefing with colleagues also showed agreement on the interpretation of the collected data, further supporting the credibility of the findings.
5. Confirmability was ensured through cross-checking of the data. When the interview data were compared with observational data and other sources, no significant biases were found in the interpretation or collection of the data. This demonstrates that the researcher did not bring personal assumptions or preferences that could influence the research results.
6. Data saturation was reached in the final stage of the interviews, where the main patterns regarding the digital divide, device quality, and digital literacy challenges repeatedly emerged from various participants. No new information surfaced in subsequent interviews, indicating that the collected data were sufficient to answer the research questions and support generalization in similar contexts.

3.3 Findings and Thematic Analysis

The research findings are organized into several key themes related to the digital divide and digital literacy among Universitas Terbuka (UT) Bengkulu students. Each theme is discussed in relation to student engagement across three dimensions: behavioral, emotional, and cognitive engagement.

3.3.1 Internet Access

The majority of students face significant challenges regarding internet access. Seventy percent of the students reported frequent signal disruptions, especially during adverse weather conditions such as heavy rain and strong winds, as well as frequent power outages in their residential areas. The remote locations of their homes, far from urban centers, further exacerbate this situation. A student from Lebong District stated, *"When it rains, I have to climb a hill near my house just to find a signal, sometimes waiting for hours."* These access limitations result in low behavioral engagement. Sixty percent of the students reported that they often could not attend online classes or webinars in full due to internet signal disruptions. This affects not only their attendance but also their ability to download materials or complete assignments on time, tasks that are typically managed through online platforms such as Silayar and UT Elearning. *"Sometimes I miss webinar classes because the signal suddenly drops in the middle,"* noted a respondent from Kaur District.

Previous studies have also found that limited internet access exacerbates educational inequality, particularly for students in rural and low-income areas (Naidoo & Naranjee, 2023; Zilka et al., 2021). Poor internet access reduces participation in interactive activities and classroom discussions and affects the ability to access learning materials on time (Cheng, 2024; Ramli et al., 2022). Emotionally, limited internet access leads to frustration and anxiety. A student from Mukomuko expressed, *"Sometimes I feel like giving up because I'm always falling behind in class due to signal issues."* This frustration aligns with Zilka et al., (2021) findings, which indicate that stress from technological difficulties can increase the risk of dropping out. Cognitive engagement is also disrupted by inadequate internet access. Students often cannot fully participate in classroom discussions or engage in interactive activities, resulting in a decline in their understanding of the material. Several students admitted that they frequently fall behind in grasping key concepts because they have to wait for a stable signal to access online modules. Cognitively, students with limited internet access are unable to fully comprehend the material, as they often miss class discussions and cannot keep up with online module progress (Ong et al., 2009). This is consistent with findings from Nigeria, where limited technological infrastructure was a major barrier to academic engagement (Azubuike et al., 2021).

3.3.2 Device Quality and Ownership

Forty-five percent of students reported using low-specification devices, such as old smartphones or laptops with slow processing speeds. Students using these low-quality devices often face significant technical issues, such as devices freezing while opening video-based learning applications or platforms like Microsoft Teams. *"Sometimes my laptop shuts down suddenly when I open MS Teams, and I have to start all over again,"* said a student from Argamakmur. Device quality clearly affects behavioral engagement, as students with low-quality devices frequently encounter technical disruptions that reduce their participation in online classes (Alqurashi, 2024). In addition to device quality issues, 40% of students reported not owning a personal laptop. These students must share devices with family members or borrow from friends, limiting the time available for studying, as the devices must be used alternately. *"I can only use my brother's laptop after he gets home from work, and sometimes it's already late, and I'm too tired,"* said a student from Lebong District.

These device limitations affect both behavioral and emotional engagement. Students feel they lack full control over their learning, which leads to dissatisfaction and stress. From a cognitive perspective, students with their own high-quality devices are better able to keep up with the material, while those relying on borrowed devices often struggle to keep pace with understanding the concepts being taught. Device ownership also plays a crucial role in cognitive engagement, as students who must borrow devices often lack sufficient time to complete assignments or attend classes (El-Saadani et al., 2024). Emotionally, students without personal devices feel less confident and more stressed due to their dependence on others for access. This disparity further exacerbates the digital divide among UT students, where students from lower economic backgrounds tend to lag in terms of both access and academic performance (Pandita & Kiran, 2023).

3.3.3 Cost of Accessing Technology

The cost of accessing technology remains a major barrier for students, especially those from low-income families. Thirty percent of students reported that they had to spend a significant portion of their income on purchasing internet data, often exceeding their family's monthly income. This situation forces some students to reduce their internet usage, which directly impacts their frequency of attending online classes and completing assignments. *"I have to choose between buying data or other essentials, so sometimes I miss class,"* said a student from Mukomuko. The high cost of internet access compels students to limit their online time,

reducing their attendance and participation in class discussions. One student from Mukomuko stated, *"I often miss online classes because I run out of data, and I have to wait until I can afford more."* Students facing financial constraints also reported high levels of stress, as they worry about not being able to complete assignments on time due to limited access. The cost burden also affects emotional engagement, as students feel pressured by financial difficulties. This stress, stemming from financial constraints, increases frustration and dissatisfaction, aligning with the findings of Wright et al., (2024) on the negative impact of technology access costs on student engagement. From a cognitive perspective, financial limitations hinder students' ability to keep up with the material, as they are unable to access additional resources or participate smoothly in discussion (Dyson et al., 2009). This issue is also evident in Bangladesh, where high internet costs exacerbate educational inequality (Badiuzzaman et al., 2021).

3.3.4 Digital Literacy

Students' digital literacy varied significantly, particularly in terms of device usage. While most students were able to use basic devices like smartphones and laptops, 60% struggled when operating more complex devices or using specific learning applications. *"I only started learning to use a laptop when I began college, and I often get confused when I have to multitask,"* said a student from Lebong District. In terms of the ability to search for and process information, 40% of students expressed confidence in finding information online, but many felt overwhelmed by the abundance of available resources. *"Sometimes I feel overwhelmed by having to open multiple materials from various sources on UT platforms, and it's hard to prioritize what to work on first,"* said a student from Kaur District. Regarding the use of educational applications, UT students are required to use several platforms such as Silayar, MyUT, Dashboard UT, and Elearning UT to access materials, download assignments, and submit mandatory tasks. However, 50% of students reported difficulties in using these applications effectively. *"Sometimes I don't know how to submit my assignments on Tuton, so I'm always late,"* said a student from Argamakmur District.

3.3.5 Student Engagement in Learning

This study found that student engagement in online learning can be measured across three dimensions. The first is behavioral engagement: students with stable internet access and personal devices demonstrated better behavioral engagement, such as regular attendance in online classes and active participation in discussions. In contrast, students experiencing signal

disruptions or who had to share devices with family members were more likely to be absent from online classes and less involved in academic activities. Those with stable internet access and personal devices exhibited more active participation in online classes, while those facing technological challenges were less likely to attend or participate in class activities (Traxler, 2010).

The second dimension is emotional engagement, which is influenced by access to technology and device quality. Students who constantly faced technical difficulties reported high levels of frustration and stress, affecting their motivation to stay engaged in the learning process. A student from Mukomuko admitted, *"Every time I fail to submit an assignment on time due to internet issues, I feel more stressed."* This aligns with Zilka et al., (2021), who found that technological problems create emotional pressure on students. The third dimension is cognitive engagement. Students with higher digital literacy were better able to engage cognitively, comprehending the material and participating smoothly in discussions. In contrast, students with lower digital literacy and limited access to technology exhibited lower cognitive engagement, as they were unable to fully understand or engage in class discussions (Feng & Liu, 2024).

3.4 Discussion

The results of this study indicate that the digital divide at Universitas Terbuka Bengkulu significantly affects student engagement in distance learning. This divide is not only related to limited access to technology and the internet but also to the quality of devices owned by students and their ability to effectively utilize technology (Naidoo & Naranjee, 2023; Zilka et al., 2021). Internet access issues are one of the main barriers to students' behavioral engagement. Cheng, (2024) notes that limited access affects not only students' attendance in online classes but also their ability to access learning materials and participate in discussions. At UT Bengkulu, frequent internet signal disruptions due to geographical factors and extreme weather conditions (such as rain and storms) are significant obstacles. Similar challenges are found in rural areas of India, where students often experience technological access limitations that affect their academic success (Sunil & Azimi, 2023). These findings align with the research by Azubuike et al., (2021), which shows that limitations in technology access, particularly in developing countries, exacerbate educational inequality between students who have access to technology and those who do not.

In terms of device quality, it was found that low-specification devices hinder students from actively engaging in online learning (Alqurashi, 2024; Pandita & Kiran, 2023). At UT Bengkulu, 40% of students have to borrow devices from family members, limiting their study time and reducing their behavioral engagement. Furthermore, device limitations impact not only behavioral engagement but also emotional engagement, as students feel less confident and socially isolated (Müller et al., 2023). This study also reveals that the cost of accessing technology is a significant barrier for students. These findings are consistent with Badiuzzaman et al., (2021), who demonstrated that in many developing countries, the high cost of internet access is a major obstacle for students in participating in online learning. In countries like Nigeria, students' inability to afford internet data or high-quality devices results in reduced engagement in learning activities. This issue is similarly observed among UT Bengkulu students. The situation is worsened by the low economic backgrounds of many students, often forcing them to share devices with family members, further limiting the time they can spend studying (Wright et al., 2024). This leads to low behavioral engagement, where students are unable to consistently attend online classes or complete assignments on time. At UT Bengkulu, 30% of students face financial challenges in purchasing sufficient internet data to participate in online classes consistently. Studies from Nigeria also show that students' inability to afford devices and internet data leads to a decline in their academic engagement.

In terms of emotional engagement, students facing technological access issues and financial constraints frequently report higher levels of stress. Their inability to fully participate in online learning often leads to feelings of frustration and anxiety, which ultimately reduce their motivation to continue learning (Ramli et al., 2022; Zilka et al., 2021). At UT Bengkulu, students experiencing internet signal problems or device limitations often feel isolated and discouraged due to falling behind in their studies. This research confirms that stress resulting from technological challenges has a direct impact on students' emotional engagement, which in turn affects their learning outcomes (Huang et al., 2017). From the perspective of digital literacy, this study found that students with higher levels of digital literacy were able to engage more effectively in online learning. These findings align with the research Getenet et al., (2024); Xu et al., (2023), which show that digital literacy is crucial for enhancing students' cognitive engagement. Students who are proficient in navigating online platforms, finding relevant information, and using educational applications effectively demonstrated higher engagement in

class discussions and online tasks. Higher digital literacy enables students to better utilize learning resources, ultimately improving their academic outcomes (Li & Lam, 2015).

However, low digital literacy, as identified in this study, caused students to struggle with using learning applications such as Silayar UT, Elearning, and MyUT, which ultimately hindered their engagement in online learning (Feng & Liu, 2024). Information literacy, as a component of digital literacy, is critical in helping students evaluate information critically and use technology efficiently (Walton & Mark, 2011). Students with low digital literacy often feel overwhelmed by the abundance of available information, which impacts their cognitive engagement, preventing them from deeply understanding the material or optimally participating in class discussions (Zilka et al., 2021). Behavioral, emotional, and cognitive engagement are closely interconnected. Students who are more actively involved in behavioral activities, such as class discussions and timely assignment submission, tend to be more emotionally and cognitively engaged (Al Mamun et al., 2016; Liu et al., 2024; Md Abdullah Al Mamun et al., 2017). This study found that students with better access to technology demonstrated higher levels of engagement across all three dimensions. Conversely, students facing technological challenges exhibited low behavioral engagement, which in turn decreased their emotional motivation and cognitive ability to understand the material. The integration of cognitive, emotional, and behavioral engagement is essential to creating a holistic and effective learning environment, a finding also supported by this research (Bernard et al., 2009). In the context of UT Bengkulu, students facing technological barriers tended to be less behaviorally engaged, which subsequently reduced their motivation to engage emotionally and cognitively in online learning.

This study has important implications for policymakers in the field of education, particularly in efforts to address the digital divide, which continues to hinder students' academic engagement. Improving digital infrastructure in rural areas is crucial to ensuring equal access to education for all students (Gan & Sun, 2021). Governments and universities need to collaborate to enhance internet infrastructure in remote areas such as Kaur, Mukomuko, Lebong, and Argamakmur districts, as well as provide subsidies for technological devices for students who do not own personal devices (Nkoala & Matsilele, 2023; Wilson et al., 2023). In addition, digital literacy programs should be a priority for higher education institutions to ensure that students can effectively use technology in online learning. Digital literacy should be integrated into the curriculum, with a focus on students' ability to search for, evaluate, and use information efficiently (Adeleye et al., 2024). By providing comprehensive digital literacy training, students

will be better prepared to face technological challenges that may arise during online learning, thereby enhancing their behavioral, emotional, and cognitive engagement (Getenet et al., 2024). Universities should also offer financial assistance or internet data subsidies to students from low-income backgrounds. The cost of accessing technology remains a major barrier to online learning, and by providing financial support, universities can improve student participation in online education (Hilpert et al., 2022; Ong et al., 2009). By addressing these challenges, it is hoped that the digital divide can be minimized, leading to increased student engagement in online learning, which will ultimately contribute to their academic success.

4 CONCLUSION

This study demonstrates that the digital divide significantly hampers student engagement in distance learning at Universitas Terbuka (UT) Bengkulu, particularly across the three dimensions: behavioral, emotional, and cognitive. Students living in remote areas with limited internet access often experience signal disruptions and power outages, which reduce their attendance in online classes and hinder their comprehension of the material. Additionally, low-quality devices and the inability to own personal devices exacerbate the situation, limiting study time and increasing students' emotional stress. The high cost of internet data is also a major barrier for students from low-income families, forcing them to limit their online activity and reducing their academic engagement. Low digital literacy further worsens students' cognitive engagement, as they are unable to use technology effectively to maximize their learning. Overall, this digital divide deepens educational inequality at UT Bengkulu, with students from low-income backgrounds and remote areas being the most affected. This results in lower behavioral, emotional, and cognitive engagement in distance learning. To address these challenges, the university and government must improve internet infrastructure in remote areas, provide technological device assistance, and offer internet data subsidies to students in need. Additionally, digital literacy training programs should be implemented to enhance students' skills in using online learning applications. More flexible policies for assignment submission and class participation should also be considered for students facing technological difficulties, to ensure equitable access to distance education.

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