

EXPLORATION OF THE DIGITAL LITERACY LEVEL OF NEW STUDENTS IN OPEN AND DISTANCE LEARNING

Selly Anastassia Amellia Kharis^{1*}, Melisa Arisanty², Sri Maulidia Permatasari³, Anton Robiansyah⁴,
Sri Sukatmi⁵

¹Mathematics Department, Universitas Terbuka, Indonesia

²Library and Information Science Department, Universitas Terbuka, Indonesia

³Statistics Department, Universitas Terbuka, Indonesia

⁴Public Financial Accounting Department, Universitas Terbuka, Indonesia

⁵Teacher Education in Early Childhood Education Department, Universitas Terbuka, Indonesia

selly@ecampus.ut.ac.id¹, melisa.arisanty@ecampus.ut.ac.id², srimaulidia@ecampus.ut.ac.id³,

anton.robiansyah@ecampus.ut.ac.id⁴, srisukatmi@ecampus.ut.ac.id⁵

INFO ARTIKEL

Riwayat Artikel:

Diterima: 13-02-2025

Disetujui: 04-04-2025

Kata Kunci:

Digital Literacy
Open Learning
Distance Learning
New Students

ABSTRAK

Abstrak: Pembelajaran terbuka dan jarak jauh (PTJJ) semakin diminati oleh masyarakat Indonesia, sebagaimana ditunjukkan dari peningkatan jumlah mahasiswa pada perguruan tinggi terbuka dan jarak jauh dari tahun ke tahun. Salah satu aspek dalam PTJJ adalah penggunaan teknologi yang disebabkan tidak adanya batas ruang dan waktu dalam pembelajarannya. Mahasiswa baru yang memiliki perbedaan cara belajar dari tatap muka menjadi pembelajaran jarak jauh (*online learning*) memerlukan adaptasi dalam proses belajarnya. Apalagi PTJJ tidak membatasi usia pada mahasiswanya sehingga memerlukan analisis kebutuhan pelatihan dan program pembelajaran. Penelitian ini bertujuan untuk mengeksplorasi tingkat literasi digital mahasiswa baru dalam PTJJ. Berdasarkan penelitian terhadap 10.396 mahasiswa baru menunjukkan bahwa kemampuan literasi digital beragam. Skor literasi digital pada *digital skill* sebesar 68,22 yang termasuk klasifikasi tinggi. Skor literasi digital pada *digital ethics* sebesar 95,25 yang termasuk klasifikasi sangat tinggi. Skor literasi digital untuk *digital safety* sebesar 57,46 yang berada pada klasifikasi cukup. Skor untuk *digital culture* adalah 84,94 yang berada dalam klasifikasi sangat tinggi. Hasil ini menunjukkan bahwa *digital skill*, *digital culture* dan *digital ethics* mahasiswa baru sudah baik namun perlu adanya peningkatan pada *digital safety*. Oleh karena itu, diperlukan penguatan literasi digital yang berfokus pada peningkatan kesadaran akan keamanan digital guna mendukung efektivitas PTJJ.

Abstract: *Open and Distance Learning (ODL) has gained increasing popularity in Indonesia, as evidenced by the growing number of students enrolling in open and distance universities each year. Technology integration is a key aspect of ODL, enabling learning without spatial and temporal limitations. New students transitioning from face-to-face learning to distance learning (online learning) require adaptation in their learning process. ODL does not impose age restrictions on its students, necessitating an analysis of training needs and learning programs to support their academic success. This study aims to explore the level of digital literacy among new students in ODL. Based on an analysis of 10,396 new students, the findings indicate diverse levels of digital literacy. The digital skill score was 68.22, classified as high. The digital ethics score reached 95.25, categorized as very high. Meanwhile, digital safety obtained a score 57.46, categorized as moderate, and digital culture achieved a score of 84.94, classified as very high. These results suggest that while new students demonstrate strong digital skills, digital culture, and digital ethics, there remains a need for improvement in digital safety. Therefore, strengthening digital literacy with a focus on increasing awareness of digital safety is essential to enhance the effectiveness of ODL.*

A. INTRODUCTION

Digital literacy has become an essential and highly demanded skill in today's digital era. The rapid advancement of technology has the potential to create an overwhelming surge of information that is

difficult to control. Digital literacy skills play a crucial role in guiding society toward a broader digital space (Komdigi, 2025). More importantly, digital literacy serves as a key indicator of a society's progress in addressing the challenges of globalization,

particularly in the digital age (Humas Prov Jateng, 2022).

The urgency of digital literacy continues to increase in line with the rapid development of digital technology and its growing user base. As of 2024, the number of internet users worldwide has reached 5.5 billion and is expected to rise each year. This means that 70% of the global population has adopted internet technology (Tanjung, 2024). In Indonesia alone, internet users have reached 221.56 million in 2024 (Finaka, 2024). Furthermore, future projections suggest a shift in societal habits, where mainstream media consumption will decline, and digital media will become the primary source of information (Yuniarto, 2022).

The rapid development of internet technology must be accompanied by a high level of digital literacy. Developed countries such as Sweden, Finland, the United Arab Emirates, Sweden, and Qatar have successfully achieved both strong economic growth and high digital literacy levels (Pradinantia, 2029). However, other nations must also strive to enhance digital literacy among their populations. One country that requires continuous improvement in digital literacy is Indonesia.

Indonesia's digital literacy level has shown a positive trend. Data indicate that the National Digital Literacy Index increased from 2021 to 2022, with a growth rate of 0.05. The assessment of digital literacy is based on four key pillars: digital skills, digital ethics, digital safety, and digital culture. While three of these indicators showed improvement, the fourth pillar, digital culture, experienced a decline (Ministry of Communications and Informatics, 2022).

Although Indonesia has shown a slight improvement in digital literacy skills, disparities in digital literacy remain across different regions. A study conducted by the ASEAN Foundation, titled *One Divide or Many Divides? Underprivileged ASEAN Communities' Meaningful Digital Literacy and Response to Disinformation*, highlights that digital literacy gaps persist in Indonesia, particularly in various aspects. One significant disparity is the difference in critical thinking skills between urban and rural communities (Putri, 2024).

Digital literacy is essential for individuals to acquire and implement in their daily lives. It enables people to develop critical thinking skills and effectively solve various problems in the digital era.

Furthermore, the rapid advancement of internet technology has led to significant changes that require the ability to adapt, innovate quickly, and approach challenges systematically. Today, digital literacy is no longer an option but a necessity for navigating the complexities of digital technology (Cynthia & Sihotang, 2023).

One of the sectors that most urgently requires digital literacy skills is education (Kharis, Arisanty, Wiradharma, et al., 2024). Digital literacy is essential in distance learning, as this educational system predominantly relies on digital technology as its primary medium of instruction (Sunarmintyastuti et al., 2022). Strong digital literacy skills enable students to critically analyze and evaluate information, ensuring a high-quality understanding of learning materials. Additionally, the effective use of digital learning media requires a high level of digital proficiency (Restianty, 2018). Without adequate digital literacy, navigating distance learning effectively would be challenging.

Distance learning, commonly known as online learning, integrates technology into its educational system (Verawati et al., 2023). It serves as a primary solution to ensure the continuity of teaching and learning processes despite spatial and temporal constraints. This approach has driven increased public participation in digital-based education, including the use of e-learning platforms, video conferencing applications, and social media as tools for communication and collaboration. On one hand, distance learning—designed as a future-oriented education model—offers students greater flexibility. On the other hand, it presents challenges, requiring students to be more discerning and responsible in using technology as a learning medium.

The success of distance learning largely depends on students' digital literacy skills. Digital literacy encompasses the ability to access, understand, evaluate, and effectively utilize digital technology in various activities, including learning (Zahroh & Sholeh, 2022). This competency is a crucial prerequisite for facilitating student interactions with various online learning platforms, such as e-learning systems, video conferencing tools, and other digital resources that support the learning process.

Educational institutions that implement open learning systems face increasing challenges in their implementation, as they do not impose age

restrictions on students. This results in a highly diverse range of digital literacy skills among students. Such variations can be attributed to demographic differences, including generational background, occupation, and access to technology. For instance, Generation Z, particularly in urban areas, tends to be more familiar with technology compared to previous generations. As a result, Gen Z is often referred to as the Digital Natives or Internet Generation (Nurlaila et al., 2024). Meanwhile, students who work full-time or reside in areas with limited internet access may encounter greater obstacles in developing their digital literacy skills.

Given the crucial role of digital literacy in supporting the success of distance learning, an in-depth exploration of the digital literacy levels of first-year students in open and distance learning is necessary. This study aims to describe and analyze the digital literacy levels of new students. Several previous studies have explored digital literacy, including research on the digital literacy levels of Indonesian students (Yanti et al., 2021), digital literacy among biology students (Rachmatika & Fikri, 2023), and an analysis of the digital literacy skills of elementary teacher education students (Ginting & Magistra, 2024). However, these studies primarily focus on measuring digital literacy levels descriptively without conducting a more detailed exploration of the specific aspects of digital literacy. Additionally, other studies have examined the implementation of digital literacy in online learning activities (Fitriani et al., 2022) and mapped the digital literacy competency profiles of educational technology students (Wirasti et al., 2024). However, these studies lack an in-depth and specific exploration of the digital literacy skills possessed by students.

Unlike previous studies, this research adopts a more specific exploratory approach by focusing on first-year students in open and distance learning systems. The unique characteristics of this population, such as diverse age groups, professional backgrounds, and levels of digital experience, pose both challenges and opportunities in assessing and analyzing their digital literacy levels. Therefore, the findings of this study are expected not only to address gaps in the existing literature but also to offer practical contributions in developing targeted strategies for enhancing digital literacy. These strategies can be

specifically designed to support first-year students in open and distance learning environments.

B. RESEARCH METHOD

This study was conducted using a quantitative descriptive method. This method presents the results numerically and identifies patterns or trends in the data. The steps taken are as follows:

1. Data collection

The data collection process was carried out using a questionnaire distributed via Google Forms. The questionnaire consists of two parts: respondent profiles and the exploration of digital literacy among students based on four elements defined by the Ministry of Communication and Information Technology in Indonesia, namely digital skills, digital ethics, digital culture, and digital safety. The respondent profile section consists of 8 questions. Answers for each question in the questionnaire were provided, allowing respondents to choose the one that best suits their situation. The digital skills element consists of 12 questions, the digital ethics element contains 8 questions, the digital safety element includes 7 questions, and the digital culture element consists of 6 questions. The response options for the digital literacy ability exploration questions were provided in the form of a Likert scale.

The target respondents are new students at open and distance learning colleges spread throughout Indonesia. Sampling was carried out using simple random sampling where all students had an equal chance of being selected as a sample.

2. Data Cleaning

The collected data needs to be verified for completeness and validity. Rechecking the results of data collection is conducted to minimize the possibility of errors in the responses and to improve data accuracy. Data cleaning is the process of identifying, correcting, and removing inconsistencies in the data (Ariefa Desyunda et al., 2024). At this stage, issues that may arise include incomplete responses to certain items (missing values), a single respondent filling out the questionnaire more than once (duplicates), and inconsistencies referring to contradictory answers provided by the respondents.

3. Data coding

In a questionnaire with closed-ended questions (where answer choices are provided), responses on the Likert scale, which are in the form of text options,

can be coded into numbers to facilitate analysis. This coding process is essential in order for the data to be counted and analyzed statistically. The coding for the likert scale used for each element of digital literacy is presented in Table 1, Table 2, and Table 3.

Table 1. Likert Scale of Digital Skill

Answer Options	Code
not capable	1
slightly capable	2
mostly capable	3
highly capable (expert)	4

Table 2. Likert Scale of Digital Ethics

Answer Options	Code
very often	1
fairly often	2
rarely	3
never	4

Table 3. Likert Scale of Digital Culture and Digital Safety

Answer Option	Code
never	1
rarely	2
fairly often	3
very often	4

4. Data Presentation and Analysis

In the respondent profile section, data exploration is conducted descriptively by calculating the percentage of each answer choice for every question item. For the student digital literacy section, analysis is performed on each element. The data exploration for each element involves calculating the overall average and the average for each question item. Next, scale normalization is carried out by converting the average results into a range of 1 to 100. This value is then classified to determine the level of digital literacy among students. The classification used refers to the study conducted by Podgorny & Volokhova (2020). The classification index used is shown in Table 4.

Table 4. Digital Literacy Classification Index

Score	Classification
1-20	Very low
21-40	Low
41-60	Moderate
61-80	High
81-100	Very high

C. RESULT AND DISCUSSION

The research involved 10,396 respondents who are new students in distance learning. The respondents are spread across various regions in Indonesia. Based on generational profiles, the majority of the respondents are Generation Z, aged 13-22 years, with a total of 5,967 individuals (57.4%). The second largest group is Generation Y, aged 23-38 years, with 3,817 respondents (36.7%). Generation X, aged 39-58 years, ranks third, followed by Baby Boomers, aged over 58 years. In accordance with the open learning system, the respondents' age range is quite diverse due to the system's lack of age restrictions (Kharis, Arisanty, et al., 2024; Kharis, Zili, et al., 2024).

The majority of respondents work as private sector employees, totaling 3,960 respondents (38.1%). Other occupations included students, with 3,218 respondents (31%), and entrepreneurs with 1,157 respondents (11.1%). Additionally, there are groups of respondents employed as civil service/military/police officers, educators, housewives, and in various other professions. The diverse range of occupations among new distance learning students demonstrates that individuals from various professional backgrounds are attracted to the distance learning system whether to enhance their educational qualifications or to advance their careers.

Based on the internet access time ranges, the majority of respondents accessed the internet between 18.01 to 24.00 with 4,849 respondents (46,7%). The second most frequent time slot was between 12.01 to 18.00, comprising 2,686 respondents (25,8%), followed by the period from 06.01 to 12.00, with 2,269 responden (21,8%). The smallest proportion of access (5,7%) occurred during the early hours between 00.01 to 06.00. This access pattern reflects the flexible study schedule of open and distance university students, who tend to be more active in the late afternoon and evening, likely due to daytime work or other commitments.

The most common online activity among respondents was communicating via short message, with 6,417 respondents, followed by using social media (2,744 respondents), seeking information or browsing (850 respondents), entertainment (225 respondents), online gaming (131 respondents), and online shopping (29 respondents). These survey results indicate that digital communication-

particularly through instant messaging applications- has become an integral part of the daily routine for new students. Moreover, social interaction via social media is significantly more prevalent than engagement in entertainment or online shopping.

The largest source of information among respondents was social media, with 9,219 individuals (88.68%). This finding underscores that the platforms such as Facebook, Instagram, X, TikTok, and Youtube have become the primary channels for students engaged in open and distance learning to obtain information. However, it is concerning that more credible and valid sources are underutilized; online news is used by only 4.87% of respondents and official government websites are accessed by merely 2.79% of respondents. These two sources are generally considered more reliable compared to social media, which is frequently associated with misinformation, hoaxes, and biased opinions.

Information sources such as television and radio were chosen very infrequently by respondents. This aligns with the trend of shifting information consumption from conventional media to digital media, especially among younger generations who are more familiar with digital technology. The survey results indicate that students in open and distance learning rely more on quickly and easily accessible information than on verified and credible sources. This poses a challenge for improving students' digital literacy, particularly in terms of their ability to select and evaluate information obtained from various social media sources.

Information sources such as television and radio were selected very infrequently by respondents. This finding is consistent with the trend of shifting information consumption from conventional media to digital media, especially among young people who are more familiar with digital technology. The survey results indicate that students in open and distance learning rely more on quickly and easily accessible information rather than on verified and credible sources. This reliance presents a challenge in enhancing digital literacy among students, particularly regarding their ability to select and evaluate information obtained from various social media platforms.

As a follow-up to the previous inquiry regarding social media as an information source, this study also identifies the social media platforms most frequently

used by new students. The platforms, in order of frequency, are WhatsApp (57.72%), Instagram (20.78%), TikTok (11.67%), X (3.27%), Youtube (2.69%), Facebook (2.60%), Telegram (0.34%), and others. These findings indicate that new students prioritize fast and interactive communication platforms such as WhatsApp, Instagram, and TikTok over text-based social media or discussion communities like X and Telegram. Furthermore, the dominance of WhatsApp demonstrates that UT students' digital communication patterns remain strongly oriented toward direct, group-based interactions rather than consuming information through feeds or long videos.

Questions regarding the duration of media access were also posed to respondents. The distribution of daily social media usage was as follows: 3-5 hours (43.32%), 0-2 hours (20.14%), 5-7 hours (19.99%), and more than 7 hours (16.54%). The distribution indicates that the majority of new students in open and distance learning spend more than 3 hours per day on social media. The high duration of social media usage among these students presents opportunities to leverage these platforms for academic purposes. For example, institutions implementing open and distance learning could use platforms such as WhatsApp, Instagram, and Youtube to disseminate academic information, conduct interactive discussions, and provide learning materials in engaging and easily accessible formats. However, it is crucial to maintain a balance in social media usage, as excessive use may lead to academic distractions, reduced productivity, and negative health impacts. Therefore, while the integration of social media in open and distance learning is promising, it is imperative to educate students on effective time management and digital health practices.

Furthermore, the study explores digital literacy in accordance with the elements defined by the Ministry of Communication and Informatics, namely digital skill, digital culture, digital ethics, and digital safety.

1. Digital Skills

Based on the overall average score, the digital skills of new students in open and distance learning are at a high level, with an average score of 68.22. The item that received the highest score was the students' ability to connect their devices to the internet, with a score of 77.48. This indicates that new students do not face difficulties connecting their devices for

distance learning, which requires internet access for e-learning and related activities.

The question receiving the lowest score in digital skills pertained to students' ability to use the features available in Microsoft Teams (e.g. screen sharing, unmuting, chat functionality, recording, virtual background), with an obtained score of 62.33. Microsoft Teams was chosen because a large number of respondents in the study used this application compared to other video conferencing tools. The low score indicates that most students have not yet fully mastered the features of Microsoft Teams, which may adversely affect the learning process. For instance, if students are required to conduct presentations by sharing materials on their screens with instructors and peers, the learning process will be disrupted if they are unable to perform these functions effectively.

Based on these results, there is a need to enhance technical training for new students to better understand and optimize the available features. This training can take various forms, such as video tutorials, online training sessions, self-directed learning modules, or workshops focused on technical skills in using video conferencing tools like Microsoft Teams.

2. Digital Ethics

Based on the overall average score, digital ethics achieved a score of 95.25, placing it in the very high category. In open and distance learning, digital ethics relates to students' awareness and compliance with digital ethical standards. The survey items addressing digital ethics pertained to issues such as the ethical dissemination of information, plagiarism, the formation of virtual groups, social media etiquette, and more. The item with the highest score concerned students refraining from posting harsh comments on their university's social media, which received a score of 99.24. This score indicates that new students in open and distance learning have a very high awareness of ethical communication on academic social media, particularly with regard to their educational institution. The high score also demonstrates that students understand and adhere to academic regulations and guidelines for online interactions, thereby fostering a more positive and conducive communication environment.

The survey item with the highest score pertained to behavior of students refraining from posting harsh comments on their university's social media,

receiving a score of 99.24. This score indicates that new students in open and distance education exhibit a very high level of awareness regarding ethical communication on academic social media, particularly concerning their educational institutions. Moreover, the high score suggests that these students understand and adhere to academic regulations and online interaction guidelines, thereby fostering a more positive and conducive communication environment.

One possible explanation for the high scores in digital ethics may be related to the respondents' professional and age backgrounds. Given that the open learning system includes individuals of diverse ages and that some respondents come from formal employment sectors, this diversity could encourage students to uphold an academic image and maintain professionalism on social networks. However, further research is necessary to confirm this.

Furthermore, the survey item with the lowest score pertained to students contacting the university's online services outside of official operating days or hours, which received a score of 90.77. Although this score is the lowest among all the digital ethics items, it still falls within the very high category. This indicates that the majority of students understand and respect the operational boundaries of online academic services. Overall, the survey demonstrates that students in open and distance learning have a solid understanding of digital ethics in their communications with the university and the academic services they receive.

3. Digital Safety

One of the key elements of digital literacy is digital safety, which pertains to students' understanding and skills in maintaining digital security, protecting personal data, and avoiding cyber threats. Based on the conducted survey, the score for digital safety was 57.46, placing it in the "adequate" category. This classification indicates that students have not yet fully grasped the importance of safeguarding data confidentiality and protecting themselves from cyber threats. The survey item with the lowest score concerned students not uploading personal data in academic groups, which received a score of 50. This suggests that a majority of students still lack a high level of awareness regarding the risks associated with sharing data in academic digital spaces. Students with limited understanding of digital privacy tend to assume

that their data is secure simply because the academic group consists solely of lecturers and fellow students.

Another question that received a relatively low score pertained to the confidentiality of usernames and passwords for distance learning accounts when shared with others, with a score of 50.15. This score indicates that some students remain unaware of the risks associated with sharing their academic account credentials or do not perceive such actions as a serious threat to their digital security. Moreover, sharing usernames and passwords with others can increase the risk of academic misconduct, as it may allow students to access answers from other students' discussions or assignments. There is also a potential security threat if these credentials are disclosed to unauthorized parties, as they could alter information or delete important data, ultimately causing students to lose access to their e-learning platforms and hindering their ability to effectively participate in the learning process.

Based on the survey results, there is a need for improvements in digital safety. Higher education institutions can provide guidelines or brief training sessions that explain the dangers of data theft, sharing account credentials with unauthorized parties, and similar risks. Universities may also launch digital security campaigns through social media, email, or within educational materials. In addition, enforcing disciplinary measures related to data security rules could further enhance safety. It is hoped that students will become more aware of the risks associated with account sharing and data privacy, and begin to adopt better digital safety practices in their academic activities.

4. Digital Culture

Based on the survey, the average score for digital culture was 84.94, placing it in the very high category. This score indicates that Universitas Terbuka students possess a strong understanding of the norms, ethics, and practices of digital interaction, especially in a distance learning environment. The highest score was recorded for the question regarding the use of polite language in e-learning discussion forums or on the Learning Management Systems (LMS) platform, with a score of 89.21. This suggests that students are well aware of the importance of maintaining courtesy in online communications. In contrast, the lowest score was observed in the area of students' attitudes toward considering the

readability of responses submitted through distance learning applications such as e-learning and LMS.

D. CONCLUSION

Based on the study conducted with 10,396 new students in the open and distance learning system, it was found that the level of digital literacy among these students varies. The digital literacy examined in this study comprised digital skills, digital ethics, digital safety, and digital culture. The average scores for these four aspects ranged from adequate to very high. Specifically, the average score for digital skills was 68.22 (high), digital ethics reached 95.25 (very high), digital safety obtained a score of 57.46 (adequate), and digital culture scored 84.94 (very high). The digital safety component still requires improvement, suggesting that higher education institutions could design policies or programs to enhance digital security. Moreover, there is variation in digital literacy levels based on generational background, occupation, and access to technology. Therefore, institutions may develop training modules tailored to the needs of new students regarding digital literacy-particularly digital safety, including the risks of sharing personal information, data protection, and cyber threats. Future research could further analyze the factors influencing students' digital literacy.

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