

## Students' Digital Literacy Levels in Supporting Technology-Based Learning: A Descriptive Study

Aliskha Zuhra<sup>1\*)</sup>, Nur Azizah Br. Marbun<sup>2</sup>, Ibnu Dzakwan<sup>3</sup>, Rizki Rahmat<sup>4</sup>, Irma Nazwa Panjaitan<sup>5</sup>, Nurdalilah<sup>6</sup>, & Desniarti<sup>7</sup>

<sup>1, 2, 3, 4, 5, 6, 7</sup> Universitas Muslim Nusantara Al Washliyah, Medan, Indonesia

### INFO ARTICLES

#### Article History:

Received: 14-05-2026  
Revised: 21-06-2026  
Approved: 21-06-2026  
Publish Online: 30-06-2026

#### Key Words:

Digital Literacy; Technology-Based Learning; Descriptive Quantitative.



This article is licensed under a Creative Commons Attribution-ShareAlike 4.0 International License.

**Abstract:** This study aimed to comprehensively describe the level of digital literacy of students in supporting technology-based learning. The focus of the study covered five main aspects: technical skills, information skills, communication and collaboration, digital ethics and security, and critical thinking. The research method used was a descriptive quantitative approach involving 35 respondents as a sample. Data were collected through a questionnaire consisting of 6 components and 30 statement items, then analyzed using descriptive statistics. The results showed that the overall digital literacy level of the students was in the "Good" category, with an average score of 75.5. The "Access and Use of Digital Technology" component obtained the highest score of 83 (Very Good), while "Data Literacy and Digital Media" obtained the lowest score of 70 (Good). These findings emphasize the need to strengthen aspects of information evaluation, data literacy, and critical thinking through integrated learning strategies in higher education.

**Correspondence Address:** Jl Y Sudarso G Lilik Kota Bangun, Kec Medan Deli, Kota Medan, Sumatera Utara, Indonesia, Post Code 20243; email: [aliskhazuhra@umnaw.ac.id](mailto:aliskhazuhra@umnaw.ac.id)

**How to Cite (APA 6<sup>th</sup> Style):** Zuhra, A., et. al. (2026). Students' Digital Literacy Levels in Supporting Technology-Based Learning: A Descriptive Study. *JKPM (Jurnal Kajian Pendidikan Matematika)*, 11(2): 293-302. <https://doi.org/10.30998/jkpm.v11i2.3586>

**Copyright:** 2026 Aliskha Zuhra, Nur Azizah Br. Marbun, Ibnu Dzakwan, Rizki Rahmat, Irma Nazwa Panjaitan, Nurdalilah Nurdalilah, Desniarti Desniarti

**Competing Interests Disclosures:** The authors declare that they have no significant competing financial, professional or personal interests that might have influenced the performance or presentation of the work described in this manuscript.

## INTRODUCTION

The development of the current era, marked by advances in information and communication technology, has brought about major changes in the world of education. The way humans learn, interact, and acquire knowledge is no longer confined to the traditional classroom (Masjaya, et al., 2025). Scientific activities in higher education in the digital era require students to be able to conduct literature searches effectively, efficiently, and comprehensively. This ability is closely related to three interrelated but conceptually distinct constructs: information literacy, digital competence, and digital literacy. Information literacy refers to a person's ability to recognize, locate, evaluate, and use information effectively (Romadhan & Aspandi, 2025). Meanwhile, digital competence is a set of knowledge, skills, and attitudes needed to use digital technology confidently, critically, creatively, and safely. This concept is formulated explicitly in the Digital Competence Framework for Citizens (DigComp 2.2) released by the European Commission (Riina, Stefano, & Yves, 2022). Digital literacy is a broader construct, encompassing the ability to access, analyze, evaluate, and create content through various digital media formats, as formulated by UNESCO's Digital Literacy Global Framework (DLGF) (Hammoda & Foli, 2024). Digital competence serves as the technical foundation for digital literacy; thus, the two cannot be treated synonymously. Integrating these two frameworks allows for a more systematic research narrative, particularly in analyzing students' readiness to face a technology-based learning ecosystem (Safitri, Ramlah, Sandy, & Siregar, 2026).

According to the Indonesian Internet Service Providers Association (APJII), the number of internet users in Indonesia in early 2024 reached 221.56 million people, equivalent to a penetration rate of 79.5% of the total population (APJII, 2024). This figure increased from 78.19% in the previous survey period (2022-2023), showing a consistent positive trend since 2018 when penetration was still at 64.8% (Databoks, 2024). In the context of higher education, this trend of increasing internet access has significant implications, with more students having access to digital learning resources, online collaboration platforms, and global scholarly repositories. However, increased access alone does not necessarily guarantee improved academic use of information (Susanti & Lestari, 2025). Therefore, it is important for higher education institutions to ensure that the expansion of digital infrastructure is accompanied by an increase in the digital literacy competencies of their students, so that wider access can be optimized to support meaningful learning outcomes.

The majority of Indonesian internet users, at 34.40%, belong to Generation Z (APJII, 2024), an age group directly related to the academic and active student population of higher education. Referring to Generation Z in this context is important because this group is a key subject of digital literacy discourse in higher education. They grew up with digital technology but do not necessarily possess adequate digital skills for academic purposes (Kenang, Puspita, & Wijayadne, 2025). Referring to the Indonesia Digital Literacy Index, which is measured using the four pillars of the Ministry of Communication and Information Technology (Kominfo) instrument (digital skills, digital ethics, digital security, and digital culture) on a scale of 1-5, the national digital literacy score was 3.54 in 2022, classified as "moderate" (Kominfo, 2023). These scores consistently show that technical skills in using digital devices are not aligned with critical thinking skills, digital security, and ethics in the information ecosystem (Simbolon, 2026). This condition reflects the existence of a digital skill gap, namely the gap between basic technical skills and high-level literacy skills required in an academic context (Yaqin, Prasajo, Haji-Othman, & Yusof, 2024). This gap needs to be understood not only as an individual problem, but also as a structural challenge that requires a systemic response from higher education institutions.

The issue of student digital literacy now extends beyond technical aspects. Every day, they deal with an overload of information that makes it difficult to verify the authenticity of content. The impact is visible in two areas: from a security perspective, the Indonesian National Police Cyber Crime Unit (2024) recorded a 32% increase in cybercrime cases, with the 18-25 age group (the majority of students) being the most frequent victims. Academically, 28% of students have

used unverified online sources for assignments. This figure reflects students' weak ability to assess the quality and ethical use of digital sources (Opini, 2025).

Students typically possess intermediate to advanced procedural ICT skills. They can navigate digital libraries, manage citations, and use AI-based grammar checkers. However, these operational skills are not always directly proportional to their ability to critically integrate read sources into academic writing (Waloyo, Hartono, Wahyuni, & Yulianto, 2025).

Universities are now adopting a variety of learning technologies, from smart classrooms and Learning Management Systems (LMS) to collaborative platforms. This adoption requires students to have adequate digital literacy. Research shows that technology utilization significantly contributes to the quality of learning and digital literacy, with motivation to learn strengthening this relationship. However, despite technology's potential, its effectiveness still depends on students' readiness to utilize it optimally (Nurcholifah & Harsono, 2025).

Previous research on college students' digital literacy has been conducted from various perspectives. A study involving 2,921 college students (805 males and 2,116 females) from various regions in Indonesia revealed that digital literacy was measured using six subscales: technology skills, personal security, critical thinking, device security, information, and communication (Simanjuntak, Mulya, Engry, & Alfian, 2025). In addition, the level of digital literacy skills of students at Dian Nusantara University is in the sufficient category, with the information literacy and digital security indicators being the weakest dimensions (Hidayatullah, Patria, & Septanto, 2024). PGSD students showed that although prospective teachers have adequate digital operational skills, their ability to critically evaluate and create digital content still needs to be improved (Ginting & Magistra, 2024). A study of 10,396 new students in Distance Learning found a digital skill score of 68.22, which is classified as high, but there are significant disparities between regions (Kharis, Septiarini, Zili, Arisanty, & Permatasari, 2025). Students' digital literacy levels have a significant impact on future learning outcomes, particularly in the context of technology-based education (Susanti & Lestari, 2025).

Based on this background, this study aims to comprehensively describe the level of digital literacy of students in supporting technology-based learning. Referring to the developed questionnaire instrument, the focus of the study covers six main components, namely: (1) access and use of digital technology, (2) searching and evaluating digital information, (3) utilization and production of digital content, (4) digital ethics and security, (5) social awareness and digital impact, and (6) data and digital media literacy. An in-depth understanding of these six components is expected to provide a complete picture of the digital literacy profile of students, as well as serve as an empirical basis for curriculum development and digital literacy improvement programs in higher education. In addition, the findings of this study are expected to serve as a policy basis for institutions in designing pedagogical interventions that are responsive to students' digital literacy needs in the era of technology-based learning.

## METHOD

This research uses a descriptive quantitative approach. This method was chosen to provide a systematic, factual, and accurate picture of the facts and relationships between the phenomena investigated, particularly regarding students' digital literacy levels in supporting technology-based learning.

The data collection instrument used was a questionnaire to assess students' digital literacy levels. The questionnaire consisted of six components and 30 statements (refers Table 1.). The subjects in this study included students from various study programs, with a total sample size of 35 respondents. The response options for each statement were: Strongly Agree (5), Agree (4), Neutral (3), Disagree (2), and Strongly Disagree (1). A 5-point Likert scale was used.

**Table 1. Questionnaire Indicators of Students Digital Literacy Levels**

| Component                                     | Indicator                                                                                                              | Statement Items    | Source                                        |
|-----------------------------------------------|------------------------------------------------------------------------------------------------------------------------|--------------------|-----------------------------------------------|
| Access and Use of Digital Technology          | Students' ability to access, operate, and utilize digital devices and applications for academic activities.            | 1, 2, 3, 4, 5      | (Carretero, Vourikari, & Punie , 2017)        |
| Digital Information Search and Evaluation     | Students' ability to search, select, evaluate, and verify information obtained from digital media.                     | 6, 7, 8, 9, 10     | (Carretero, Vourikari, & Punie , 2017)        |
| Utilization and Production of Digital Content | Students' ability to process, create, and communicate digital content for academic and collaborative purposes.         | 11, 12, 13, 14, 15 | (Carretero, Vourikari, & Punie , 2017)        |
| Digital Ethics and Security                   | Understanding and application of ethical norms, responsibility, and protection of personal data in digital activities. | 16, 17, 18, 19, 20 | (Kurnia, et al., 2021)                        |
| Social Awareness and Digital Impact           | Students' awareness of the social, psychological, and legal impacts of using digital technology.                       | 21, 22, 23, 24, 25 | (Tang & Chaw, 2016)                           |
| Data Literacy and Digital Media               | Students' ability to understand, interpret, and use digital media data and content critically.                         | 26, 27, 28, 29, 30 | (Dolniakova, Francistyova, & Furtakova, 2024) |

To calculate the average value of each digital literacy component, the following average formula (1) was used:

$$\bar{x} = \frac{\sum x}{n} \quad (1)$$

Information:

- $\bar{x}$  is the average of the component scores;
- $\sum x$  is the sum of the scores for each statement item in a component;
- $n$  is the total number of statement items in that component.

Next, the average score for each component was converted to a scale of 0-100 using formula (2), adapted from Dinata (2021).

$$Component\ value = \frac{\bar{x}_k}{5} \times 100 \quad (2)$$

The total value of students' digital literacy skills was calculated using formula (3).

$$Total\ Value = \frac{\sum_{j=1}^N Y_j}{N \times Maximum\ Score} \times 100 \quad (3)$$

Information:

- $\sum_{j=1}^N Y_j$  is the total score across all respondents;

- $N$  is the number of respondents;
- *Maximum Score* refers to the total possible score for the 30 statements.

The assessment category for each component and the total value were determined using the criteria shown in Table 2. (Arikunto, 2010).

**Table 2. Digital Literacy Assessment Categories**

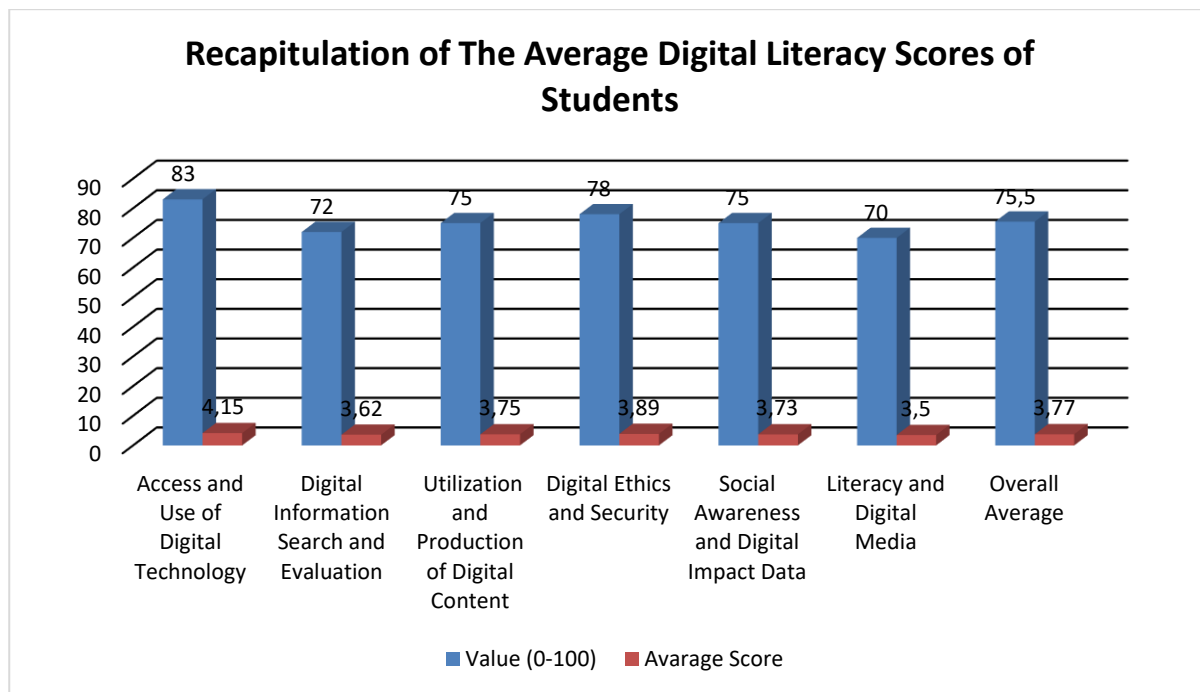
| Value Interval | Assessment Category |
|----------------|---------------------|
| 81-100         | Very Good           |
| 61-80          | Good                |
| 41-60          | Fairly Good         |
| 21-40          | Poor                |
| 0-20           | Very Poor           |

## RESULTS

Based on data collected from 35 respondents, calculations were performed using a predetermined formula. The results showed that the average score for each component of students' digital literacy varied between 70 and 83. A summary of the scores for each component is presented in Table 3.

**Table 3. Recapitulation of The Average Digital Literacy Scores of Students**

| No | Components of Digital Literacy                | Average Score | Value (0-100) | Category  |
|----|-----------------------------------------------|---------------|---------------|-----------|
| 1. | Access and Use of Digital Technology          | 4,15          | 83            | Very Good |
| 2. | Digital Information Search and Evaluation     | 3,62          | 72            | Good      |
| 3. | Utilization and Production of Digital Content | 3,75          | 75            | Good      |
| 4. | Digital Ethics and Security                   | 3,89          | 78            | Good      |
| 5. | Social Awareness and Digital Impact           | 3,73          | 75            | Good      |
| 6. | Data Literacy and Digital Media               | 3,50          | 70            | Good      |
|    | Overall Average                               | 3,77          | 75,5          | Good      |



**Figure 1. Recapitulation of The Average Digital Literacy Scores of Students**

The total value of students' digital literacy skills was calculated as follows:

$$\text{Total Value} = \frac{3.962}{35 \times 150} \times 100$$

$$\text{Total Value} = \frac{3.962}{5.250} \times 100 = 75.5$$

The total value of 75.5 falls within the 61-80 interval, placing it in the 'Good' category.

## DISCUSSION

Based on the data analysis, the students' overall digital literacy level is in the good category, with an average score of 75.5. This finding indicates that students are sufficiently prepared to utilize technology to support their learning process. This finding aligns with the conclusion that students' digital literacy skills in the Mathematics Education study program at the Muhammadiyah University of Kotabumi are also in the good category. This finding also aligns with research showing that 81% of students achieve digital literacy skills in the good category. This also reinforces the view that students, as part of Generation Z, have a close relationship with digital devices (Dinata, 2021) (Ririen & Daryanes, 2022).

In the digital technology access and use component, students achieved the highest score of 83 (very good). This high score reflects students' functional proficiency in operating digital hardware and applications for academic purposes. This finding aligns with Simanjuntak, Mulya, Engry, and Alfian (2025), who found technological skills to be one of the subscales with the highest scores ( $M=4.15$ ) among Indonesian students, indicating that functional proficiency in operating digital devices is a key strength for students nationally. Mastery of digital media is an important prerequisite in the 21st-century learning paradigm, which is shifting from traditional models to flexible digital content-based models (Dinata, 2021) (Kurniawati, 2016) (Sakolan & Rahmadani, 2020) (Fitriyani & Nugroho, 2022).

The digital information search and evaluation component received a score of 72 (Good). The main challenge lies in the ability to verify the accuracy of information amidst the flood of information. While positive, this score is lower than the digital technology access and use component, which highlights the gap between proficiency in using devices and proficiency in managing the information itself. Furthermore, Simanjuntak, Mulya, Engry, and Alfian (2025)

found that informational skills obtained the lowest average ( $M=3.26$ ) compared to other subscales, making it the weakest dimension in the digital literacy profile of Indonesian students.

The digital content utilization and production component received a score of 75 (Good). It was also found that creativity was only in the good category, indicating that students' creative thinking skills were not optimal, even though creativity plays a crucial role in successful learning. The ability to create content is closely related to student creativity, which plays a crucial role in the success of the learning process. Those who are able to process learning materials into digital formats tend to have a deeper understanding of the topic. Although in the positive category, this score indicates that students' ability to produce content is still below their ability to simply access technology (Dinata, 2021) (Resti, 2015) (Subur, 2013).

The digital ethics and security component scored 78 (good), showing positive results but still requiring attention. This is in line with Simanjuntak, Mulya, Engry, and Alfian (2025), who found that personal security skills received the highest score ( $M=4.37$ ). Understanding ethical norms and personal data protection is crucial given the increasing number of cybercrime cases targeting the productive age group, emphasizing that digital literacy is not just a technical skill, but an effort to build the character of an ethical and responsible digital society. However, the increase in cybercrime cases among the 18-25 age group shows that understanding alone is not enough without strong awareness in daily practice. This is important so that students are not only technologically literate but also wise in interacting in public spaces (Nada & Sari, 2020) (Isabella, Iriyani, & Lestari, 2023) (Cyber Crime Unit Bareskrim Polri, 2024).

The social awareness and digital impact component received an average score of 75, placing it in the good category. This achievement indicates that respondents have sufficient awareness of how their digital activities affect their social environment and personal well-being. However, this understanding still needs to be improved so that students not only 'know' theoretically but are also able to consistently practice healthy digital behaviors. Dinata (2021) reported similar findings in the cultural and social understanding component, with a score of 77. They added that cultural values are crucial in aligning information in the digital space with the context of socio-cultural understanding (Dinata, 2021) (Pranoto & Wibowo, 2018).

The data and digital media literacy component received the lowest score, at 70 (good). This score is one of the lowest compared to other components, indicating challenges for students in processing raw data into meaningful information. This is in line with Simanjuntak, Mulya, Engry, and Alfian (2025), who identified that Indonesian students' digital literacy skills still face challenges, particularly on the thinking subscale ( $M=4.02$ ). Although the figure seems moderate, it is a concern considering that critical skills are the foundation of the ability to process data and information analytically.

A limitation of this study is the small sample size and the exclusion of several research sources due to limited search capabilities. Therefore, this research is far from perfect and clear. Consequently, we recommend that future researchers improve upon these limitations

## CONCLUSION

Students' digital literacy in supporting technology-based learning was categorized as good, with an average score of 75.5. This indicates that students possess relatively good skills in using digital technology to meet academic needs. However, there are still many aspects that need improvement, particularly their ability to evaluate digital information and data literacy.

Conversely, this study also revealed several areas of data and digital media literacy that, when paired with digital information retrieval and evaluation, scored significantly lower. This suggests that we have not yet trained students to critically analyze digital information, assess the validity of sources, or read data from digital sources. However, empowering relevant learning processes and evidence-based academic decisions in this information age is crucial. Therefore, universities need to develop more integrated learning strategies to comprehensively improve

students' digital literacy, particularly in the aspects of information evaluation and digital data literacy.

## REFERENCES

- APJII. (2024). *Survei penetrasi internet Indonesia tahun 2024*. Retrieved from <https://apjii.or.id/berita/d/apjii-jumlah-pengguna-internet-indonesia-tembus-221-juta-orang>
- Arikunto, S. (2010). *Prosedur Penelitian Suatu Pendekatan Praktis*. Jakarta: Rineka Cipta.
- Carretero, S., Vourikari, R., & Punie, Y. (2017). *DigComp 2.1: The Digital Competence Framework for Citizen with eight proficiency levels and example of us*. Luxembourg: European Union.
- Cyber Crime Unit Bareskrim Polri. (2024). *Laporan Tahunan Kejahatan Siber 2024*. Jakarta: Bareskrim Polri.
- Databoks. (2024). *Tingkat penetrasi internet Indonesia capai 79,5% per 2024*. Retrieved from <https://databoks.katadata.co.id/teknologi-telekomunikasi/statistik/e6f9d69e252de32/tingkat-penetrasi-internet-indonesia-capai-795-per-2024>
- Dinata, K. B. (2021). Analisis Kemampuan Literasi Digital Mahasiswa. *Edukasi: Jurnal Pendidikan*, 19(1), 105-119. Retrieved from <https://journal.upgripnk.ac.id/index.php/edukasi/article/view/2499/>
- Dolniakova, M. M., Francistyova, M. B., & Furtakova, M. L. (2024). *Quo Vadis 2024 CommUnity*. Trnave: UCMFMK.
- Fitriyani, & Nugroho, A. T. (2022). Literasi Digital Di Era Pembelajaran Abad 21. *Literasi Jurnal Pengabdian Masyarakat Dan Inovasi*, 2(1), 307-314. <https://doi.org/10.58466/literasi.v2i1.1416>
- Ginting, L. C., & Magistra, A. A. (2024). Membangun guru literat digital: Analisis kemampuan literasi digital mahasiswa PGSD. *JPPD: Jurnal Pedagogik Pendidikan Dasar*, 11(1), 40–51. Retrieved from <https://ejournal.upi.edu/index.php/jppd/article/view/70425>
- Hammoda, B., & Foli, S. (2024). A digital competence framework for learners (DCFL): A conceptual framework for digital literacy. *Knowledge Management & E-Learning*, 16(3), 477-500. Retrieved from <https://www.kmel-journal.org/ojs/index.php/online-publication/article/view/596>
- Hidayatullah, A., Patria, M., & Septanto, H. (2024). Analisis tingkat literasi digital skill di kalangan mahasiswa Universitas Dian Nusantara. *EXPLORE: Jurnal Sistem Informasi dan Telematika*, 15(1), 104–112. Retrieved from <https://jurnal.ubl.ac.id/index.php/explore/article/view/3626>
- Isabella, Iriyani, A., & Lestari, D. P. (2023). Literasi Digital sebagai Upaya Membangun Karakter Masyarakat Digital. *Jurnal Pemerintahan Dan Politik*, 8(3), 167–172. <https://doi.org/10.36982/jpg.v8i3.3236>
- Kenang, R. H., Puspita, S., & Wijayadne, D. R. (2025, December). Do Digital Competencies Matter? Exploring Entrepreneurial Education, Self-Efficacy, and Intention Among Gen Z in Indonesia. *Journal The Winners*, 26 (2), 121-132. Retrieved from <https://journal.binus.ac.id/index.php/winners/article/view/13507>
- Kharis, S. A. A., Septiarini, T. W., Zili, A. H. A., Arisanty, M., & Permatasari, S. M. (2025). IDENTIFYING THE DRIVERS OF DIGITAL LITERACY IN INDONESIA'S DISTANCE LEARNING ERA. *Paedagoria : Jurnal Kajian, Penelitian dan Pengembangan Kependidikan*, 16(4), 466-473. Retrieved from <https://journal.ummat.ac.id/index.php/paedagoria/article/view/34482>
- Kominfo. (2023, Februari 2). *Indeks literasi digital Indonesia 2022*. Retrieved from <https://www.komdigi.go.id/berita/pengumuman/detail/berita-foto-kominfo-rilis-status-literasi-digital-indonesia-tahun-2022>

- Kurnia, N., Astuti, I. S., Monggilo, Z. M., Prananingrum, E. N., Kusumastuti, F., & Adikara, G. J. (2021). *Ringkasan Eksekutif: Seri Modul Literasi Digital Kominfo-Japelidi-Siberkreasi 2021-2023*. Retrieved from <https://www.studocu.id/id/document/universitas-bosowa/literasi-digital/ringkasan-eksekutif-seri-modul-literasi-digital-japelidi/56805349>
- Kurniawati, J. B. (2016). LITERASI MEDIA DIGITAL MAHASISWA UNIVERSITAS MUHAMMADIYAH BENGKULU (Survei Tingkat Literasi Media Digital pada Mahasiswa Universitas Muhammadiyah Bengkulu Ditinjau dari Aspek Individual Competence). *Jurnal Komunikator*, 8(2), 51-66. Retrieved from <https://journal.umy.ac.id/index.php/jkm/article/view/2069>
- Masjaya, M., Saipul, S., Tejawati, A., Sitania, M.H.F., Septiarini, A., Hamdani, H., Anwar, S., Herlihah, E., Syuja, H., & Saputra, G.Y. (2025). *TRANSFORMASI TEKNOLOGI DALAM PEMBELAJARAN : "Integrasi Digital Untuk Meningkatkan Kualitas Pendidikan"*. Indramayu: PT Adab Indonesia.
- Nada, E. I., & Sari, W. K. (2020). Analisis Literasi Digital Calon Guru Dalam Pelaksanaan PPL Berbasis Virtual di Masa Pandemi COVID-19. *ORBITAL: Jurnal Pendidikan Kimia*, 4(2), 111-121. Retrieved from <https://jurnal.radenfatah.ac.id/index.php/orbital/article/view/6704>
- Nurcholifah, M., & Harsono. (2025). Pengaruh Penggunaan Smart Classroom terhadap Kualitas Pembelajaran dan Literasi Digital Mahasiswa dengan Mediasi Motivasi Belajar. *Didaktika: Jurnal Kependidikan*, 14(3 Agustus), 4873–4888. <https://doi.org/10.58230/27454312.2283>.
- Opini, K. (2025, Januari 16 ). *Tantangan Literasi Digital di Kalangan Mahasiswa di Tengah Arus Informasi Cepat*. Retrieved from <https://ktp.fip.unesa.ac.id/post/tantangan-literasi-digital-di-kalangan-mahasiswa-di-tengah-arus-informasi-cepat>
- Pranoto, H., & Wibowo, A. (2018). Identifikasi Nilai Kearifan Lokal Pill Pesenggiri dan Perannya Dalam Pelayanan Konseling Lintas Budaya. *Jurnal Bimbingan Konseling Indonesia*, 3(2), 36-42.
- Resti, V. D. (2015). Analisis Kreativitas Mahasiswa Dalam Penyusunan Peta Konsep Berbentuk E-Mind Map Berdasarkan Kajian Neurosains. *Jurnal Pendidikan Biologi*, 128-134. <https://doi.org/10.17977/um052v6i22015p128-134>
- Riina, V., Stefano, K., & Yves, P. (2022, 03 17). *DigComp 2.2: The Digital Competence Framework for Citizens - With new examples of knowledge, skills and attitudes*. Luxembourg: Publications Office of the European Union. Retrieved from <https://publications.jrc.ec.europa.eu/repository/handle/JRC128415>
- Ririen, D., & Daryanes, F. (2022). Analisis Literasi Digital Mahasiswa. *Research and Development Journal of Education*, 8(1), 210-219. Retrieved from <https://journal.lppmunindra.ac.id/index.php/RDJE/article/view/11738>
- Romadhan, M. R., & Aspandi, A. (2025). PENGARUH LITERASI DIGITAL TERHADAP KEMAMPUAN MENULIS TEKS PROPOSAL DAN ARTIKEL ILMIAH MAHASISWA. *Argopuro: Jurnal Multidisiplin Ilmu Bahasa*, 11 (5), 1-11. Retrieved from <https://cibinstitute.id/index.php/argopuro/article/view/4739>
- Safitri, F., Ramlah, R., Sandy, W., & Siregar, A. C. (2026). *Literasi Digital Dalam Dunia Akademik*. Hulu Sungai Utara: PT Literatus Digitus Indonesia.
- Sakolan, S., & Rahmadani, H. (2020). Profil Keterampilan Literasi Digital: Penelitian Survey di SMA IT Al Bayyinah Pekanbaru. *Instructional Development Journal*, 3(2), 96-103. Retrieved from <https://ejournal.uin-suska.ac.id/index.php/IDJ/article/view/11306>
- Simanjuntak, E., Mulya, H. C., Engry, A., & Alfian, I. N. (2025). Dataset of Digital Literacy of University Students In Indonesia. *Data in Brief* 58, 2-7. <https://doi.org/10.1016/j.dib.2024.111227>
- Simbolon, P. (2026, Maret 4 ). *Skripsi, tesis, disertasi di era AI: Ujian kedalaman ilmu di Indonesia*. Retrieved from <https://sumsel.antaranews.com/berita/812119/skripsi-tesis-disertasi-di-era-ai-ujian-kedalaman-ilmu-di-indonesia?page=all>

- Subur, J. (2013). Analisis Kreativitas Siswa Dalam Memecahkan Masalah Matematika Berdasarkan Tingkat Kemampuan Matematika di Kelas. *Jurnal Penelitian Pendidikan*, 50-55. Retrieved from <https://ejournal.upi.edu/index.php/jer/article/view/3478>
- Susanti, A. I., & Lestari, N. A. (2025). Analisis tingkat literasi digital mahasiswa dan dampaknya pada pembelajaran di masa depan. *GHANCARAN: Jurnal Pendidikan Bahasa dan Sastra Indonesia*, 1100–1114. Retrieved from <https://ejournal.iainmadura.ac.id/index.php/ghancaran/article/view/21791>
- Tang, C. M., & Chaw, L. Y. (2016). Digital Literacy: A Prerequisite for Effective Learning In A Blended Learning Environment? *The Electronic Journal of e-Learning*, 54-65. Retrieved from <https://eric.ed.gov/?id=EJ1099109>
- Waloyo, E., Hartono, R., Wahyuni, S., & Yulianto, H. J. (2025). From Digitized to Dialogic Writing: How ICT Literacy Shapes Intertextual Competence in Cyber-Learning Environments. *Jurnal Imiah Pendidikan dan Pembelajaran Volume 9*, 473-483. Retrieved from <https://ejournal.undiksha.ac.id/index.php/JIPP/article/view/100084>
- Yaqin, L. N., Prasajo, L. D., Haji-Othman, N. A., & Yusof, N. (2024). *Addressing the Digital Divide in Indonesian Higher Education: Insights, Implications, and Potential Solutions*. doi:[https://doi.org/10.1007/978-981-99-7645-4\\_13](https://doi.org/10.1007/978-981-99-7645-4_13)