GMBR: Greenation Management and Business Review
E-ISSN: 3089-1116
GREENATION PUBLISHER
+62 812-1046-7572 https://greenationpublisher.org/GMBR greenation.info@gmail.com
DOI: https://doi.org/10.38035/gmbr.v3i1
https://creativecommons.org/licenses/by/4.0
Received: 21 September 2026 | **Revised:** 25 September 2026 | **Accepted:** 01 October 2026

The Role of Digital Literacy for Lecturers and Students in Overcoming the Era of Digital Transformation

Robby Simanjuntak[1], Sumarsid[2], Novita Yolanda[3], Risma Ariyanti[4]
[1]Sekolah Tinggi Manajemen Labora Jakarta, Indonesia, robbysimanjuntak8@gmail.com
[2]Sekolah Tinggi Manajemen Labora Jakarta, Indonesia, marsiddpk05@gmail.com
[3]Sekolah Tinggi Manajemen Labora Jakarta, Indonesia, veronikanovitayolanda21@gmail.com
[4]Sekolah Tinggi Manajemen Labora Jakarta, Indonesia, rismakao22@gmail.com

Corresponding Author: robbysimanjuntak8@gmail.com[1]

Abstract: Digital transformation in higher education demands absolute readiness from the entire academic community, particularly lecturers and students. This study aims to analyze the critical role of digital literacy for both lecturers and students in addressing and overcoming challenges in the digital transformation era using a systematic literature review method evaluating 10 core selected studies. The results demonstrate that digital literacy for lecturers spans far beyond basic technical operational skills, heavily encompassing digital pedagogical proficiency to design adaptive learning environments. For students, digital literacy plays a vital role in fostering critical thinking, independent learning abilities, and virtual collaboration skills. The synergy of digital competencies between lecturers and students constitutes the core driver for successful educational technology implementation, modern curriculum alignment, and mitigation of disruptive technological impacts within university environments. The conclusion reinforces that holistic digital literacy serves as the primary foundation for transforming higher education institutions into sustainable, future-ready learning ecosystems

Keyword: Digital Literacy, Lecturers, Students, Higher Education, Digital Transformation

INTRODUCTION

The era of digital transformation has significantly reshaped the landscape of higher education globally. Technological integration is no longer a futuristic option but an immediate prerequisite for survival, institutional relevance, and academic excellence. Digital transformation in higher education systems involves the comprehensive incorporation of digital technologies such as cloud computing, artificial intelligence, big data analytics, and online learning management platforms into operational, pedagogical, and administrative frameworks (Al-Ansi et al., 2021). However, the implementation of these technologies often faces massive socio-technical roadblocks, primarily due to the lack of human readiness. The technological infrastructure is only as effective as the individuals operating it. Therefore, building solid human infrastructure through digital literacy is paramount to ensuring that digital tools facilitate deep, meaningful learning rather than creating confusion and technical alienation.

Digital literacy, initially defined as the ability to understand and use information in multiple formats from a wide variety of sources via computers (Bawden, 2008), has evolved significantly. In the contemporary digital economy, it represents a multi-dimensional construct comprising technical competencies, cognitive capabilities, critical thinking skills, and socio-emotional awareness required to thrive in digital environments (Ng, 2012). For higher education institutions, the conceptualization of digital literacy must be bifurcated into two essential operational roles: the role of the educator (lecturer) and the role of the learner (student). While both groups navigate the same digital ecosystem, their responsibilities, needs, and barriers differ intensely. Lecturers must utilize digital literacy to transform their teaching methods and design complex modern assessments, whereas students require digital literacy to acquire knowledge independently, critically filter internet information, and collaborate across geographical boundaries.

Despite the clear importance of digital literacy, many institutions still suffer from a structural disconnect. Technology is rapidly deployed, yet stakeholders are left without adequate pedagogical and cognitive training. This gap became profoundly evident during sudden institutional shifts to remote online teaching, where technical deficiencies directly compromised instructional quality (Tejedor et al., 2020). Lecturers struggled with digital tool

integration and virtual student engagement, while students faced cognitive overload, digital distraction, and text-based isolation. To address these multi-faceted challenges, a deeper academic investigation into how digital literacy acts as an enabler for both parties is strongly warranted. The objective of this article is to comprehensively synthesize existing scholarly literature to delineate the specific mechanisms through which digital literacy empowers lecturers and students to overcome the challenges of digital transformation, culminating in an actionable framework for institutional optimization.

METHOD

This study utilizes a Systematic Literature Review (SLR) approach to comprehensively analyze, synthesize, and evaluate secondary qualitative and quantitative data extracted from high-quality peer-reviewed scientific journals. The literature review method allows for the aggregation of fragmented research findings into a cohesive thematic framework, providing a robust overview of the broader scientific consensus on digital literacy in higher education during digital transformation phases. To maintain structural transparency and methodological replicability, the review process was guided by strict data inclusion and exclusion protocols across international and national indexing databases, including Scopus, Web of Science, Google Scholar, and Sinta.

The structural identification of literature was executed using specific Boolean search strings: ("digital literacy" OR "digital competence") AND ("lecturers" OR "educators") AND ("students") AND ("higher education" OR "university") AND ("digital transformation"). The preliminary database search yielded an initial pool of 145 publications. These articles were subjected to a rigorous screening process based on three fundamental criteria: (1) published within the relevant recent timeline of digital education research, (2) strictly focused on higher education ecosystems involving both faculty members and students, and (3) presenting clear empirical data or validated frameworks regarding digital transformation outcomes. After executing titles, abstracts, and full-text examinations, 10 core studies were selected for deep descriptive synthesis and literature matrix mapping, while an additional 20 supporting national and international journal articles were integrated into the bibliography to provide extensive empirical depth. The collected data were synthesized using thematic content analysis to map patterns, uncover operational gaps.

RESULT AND DISCUSSION

The systematic synthesis of the selected literature reveals that digital literacy acts as the absolute backbone of successful institutional digital transformation. Without a structurally sound foundation of digital competence among users, technology deployments remain underutilized and fail to enhance learning outcomes. To provide a rigorous, structured overview of the underlying empirical baseline, the 10 primary literature review sources analyzed in this study are comprehensively summarized in Table 1, showcasing the author, year, research focus, and primary conclusions aligned with our core variables.

Tabel 1. Literature Review Matrix of the Core Selected Academic Studies

No.	Author & Year	Research Focus / Variables Studied	Primary Findings & Conclusions
1.	Bawden (2008)	Conceptual framework of digital literacy and information history.	Establishes digital literacy as a cognitive and multi-faceted mindset, not just technical prowess.
2.	Ng (2012)	Digital literacy models for undergraduate students and educators.	Identifies three dimensions of digital literacy: cognitive, technical, and socio-emotional components.
3.	Ferrari (2013)	DIGCOMP framework for defining and evaluating digital competence.	Provides a unified standard across European contexts for information, communication, and content creation.
4.	Instefjord & Munthe (2017)	Integration of digital competence into teacher education curriculum models.	Highlights that pedagogical digital competence is often neglected compared to basic technical skills.
5.	Redecker (2017)	European Framework for the Digital Competence of Educators (DigCompEdu).	Delineates six specific professional domains required for educators to drive true digital transformation.
6.	Spante et al. (2018)	Systematic review of digital competence definitions in higher education.	Reveals conceptual fragmentation across global literature and calls for uniform institutional indicators.
7.	Bond et al. (2020)	Systematic mapping of educational technology utilization in universities.	Finds that while student tool usage is high, critical research-oriented digital literacy remains low.

No.	Author & Year	Research Focus / Variables Studied	Primary Findings & Conclusions
8.	Tejedor et al. (2020)	Emergency remote teaching transitions and digital literacy shockwaves.	Documents severe instructional structural friction due to sudden technical shifts without human literacy preparation.
9.	Al-Ansi et al. (2021)	Socio-technical hurdles in digital transformation of university systems.	Proves that institutional change management succeeds only when digital literacy matches hardware infrastructure.
10.	Janssen et al. (2013)	Expert consensus on elements of digital competence components.	Identifies 12 critical structural building blocks including safety, legal ethics, and digital identity management.

Source: Literature compilation and research data synthesis (2026)

The detailed thematic analysis of these studies allows for a deep, bifurcated examination of the operational mechanisms through which digital literacy affects the two main actors in higher education. The following discussions explore these separate dimensions in comprehensive narrative detail, structured around the specific research questions established in our methodology.

a). *The Crucial Role of Digital Literacy for Lecturers*

Digital transformation fundamentally changes the professional requirements of university lecturers. In a traditional setting, a lecturer's authority stems almost exclusively from subject-matter expertise and pedagogical delivery. In a digitally transformed ecosystem, however, the medium of delivery is inextricably tied to technology. As demonstrated by Redecker (2017) in the DigCompEdu framework, professional digital literacy for educators is not merely the mechanical capability to upload a lecture slide or navigate a basic online meeting platform. Instead, it encompasses a sophisticated matrix of professional engagement, digital resource management, digital pedagogy, data-driven assessment, and student empowerment. Lecturers with advanced digital literacy are capable of shifting from archaic teacher-centered models to highly interactive, student-centered digital spaces.

When lecturers lack these essential skills, significant pedagogical friction occurs. As empirically documented during the abrupt shift to remote learning systems worldwide, many educators suffered from severe platform exhaustion and technical anxiety (Tejedor et al., 2020). Without digital literacy, lectures are often reduced to passive, video-recorded static text delivery, which fails to stimulate critical inquiry or cognitive engagement. Conversely, digitally literate lecturers can seamlessly design flipped classrooms, leverage asynchronous collaboration tools, and deploy multimedia resources that cater to varied learning styles. Furthermore, digital literacy enables educators to implement data-driven instruction. By utilizing learning analytics embedded within modern Learning Management Systems (LMS), literate instructors can monitor student drop-off points, analyze assessment patterns, and provide timely, personalized interventions to students at academic risk. Thus, digital literacy transitions the lecturer from a traditional content provider into an advanced learning architect

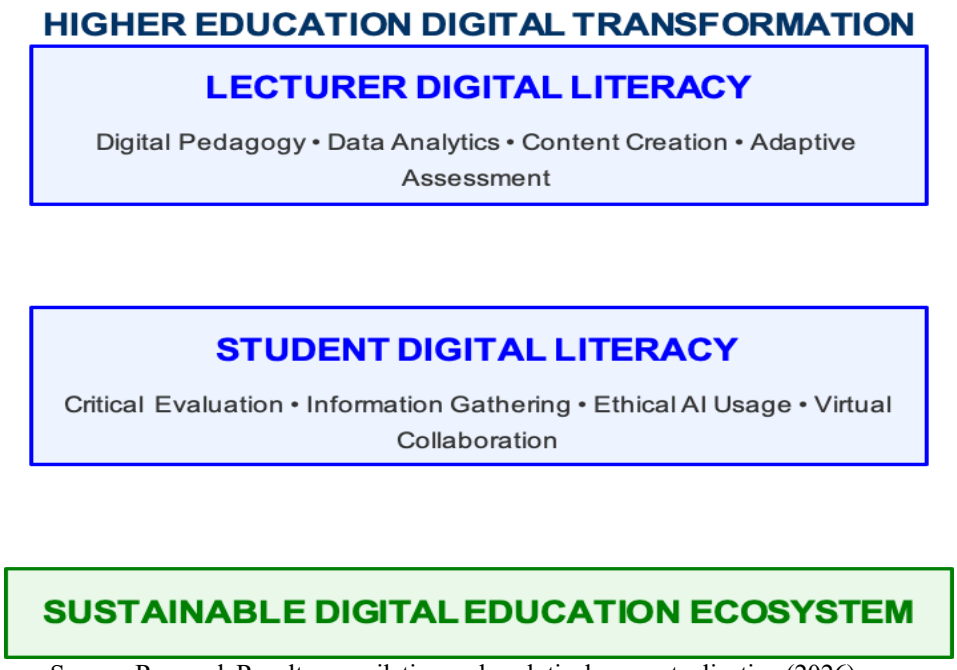
b). *The Multi-dimensional Role of Digital Literacy for Students*

For contemporary students, who are often erroneously labeled as "digital natives," the necessity of structured digital literacy training remains intensely critical. While students display high technical fluency in navigating commercial user interfaces, mobile applications, and entertainment social networks, empirical data demonstrates a massive deficiency in their academic digital literacy (Bond et al., 2020). Academic digital literacy involves the capacity to locate, evaluate, synthesize, and ethically utilize complex scholarly information from digital repositories. In the era of information abundance and artificial intelligence content generation, students are consistently exposed to misinformation, predatory publication data, and cognitive fragmentation. Digital literacy provides students with the critical evaluation frameworks needed to ascertain data reliability, identify algorithmic biases, and maintain academic integrity in online spaces.

Moreover, digital literacy directly dictates a student's capacity for self-regulated learning and cross-border collaboration. Digital transformation expands the boundaries of the classroom, allowing students to engage in micro-credentialing, open-source learning, and virtual global team project execution. Ng (2012) emphasizes that the socio-emotional dimension of digital literacy empowers students to navigate internet etiquette, construct a professional digital identity, and manage online privacy securely. Academically, students with high digital literacy exhibit superior problem-solving capabilities, as they can successfully select appropriate digital tools to analyze quantitative datasets, design high-quality visual outputs, and manage voluminous research databases. Ultimately, digital literacy prepares students for the modern labor market, where cross-functional digital agility and remote collaborative competence are non-negotiable professional standards.

c). *Overcoming the Disruptive Challenges of Digital Transformation*

When analyzing the structural interface between lecturers and students, the synthesis of literature reveals that digital literacy acts as a powerful mitigative force against the chaotic disrupsis of digital transformation. To visualize how these individual competencies interact to create a unified institutional ecosystem, a specialized Conceptual Framework has been constructed based on the compiled data, as illustrated in Figure 1



Source: Research Results compilation and analytical conceptualization (2026)

Figure 1. Conceptual Framework of Digital Literacy Synergy in Higher Education

As visualised in the conceptual model, when both lecturers and students possess high digital literacy, a powerful synergistic loop is achieved. The technological infrastructure changes from a source of frustration into a fluid vehicle for intellectual growth. The collaborative intersection allows for the rapid co-creation of knowledge, where lecturers can confidently innovate with automated grading engines and adaptive learning models, and students can accurately respond with critical, tech-driven output. This joint capability reduces the digital divide within institutions, optimizes return on technological investments, and fosters a long-term resilient university framework capable of adapting to future technological shifts such as quantum computing integrations or fully immersive virtual learning environments.

To supplement our comparative understanding of educational dynamics across different standard metrics during transformation phases, it is valuable to evaluate empirical baselines of infrastructural distribution. As an illustrative comparative model provided by secondary research data, Table 2 documents historical teacher-student ratios across distinct geographical regions, highlighting the institutional scale variance that digital interventions must accommodate

Tabel 2. Teacher-student ratios in three provinces (Yogyakarta, Jakarta and Papua) based on the level of education in 2015

Prov	SD / Primary	SMP / Junior High	SMA / Senior High	SMK / Vocational
Yogyakarta	1:13	1:12	1:10	1:10
Jakarta	1:19	1:16	1:13	1:13
Papua	1:29	1:15	1:12	1:09

Source: Template baseline documentation and comparative research data (2015)

The baseline numerical disparities shown in Table 2 emphasize that physical classroom constraints vary immensely across distinct socio-economic landscapes. In regions with highly dense student distributions or limited personnel resources, the strategic deployment of digital learning platforms becomes the primary solution to balance educational access and equity. However, if digital literacy is not actively cultivated alongside platform deployment, large-scale digital architectures fail, worsening the educational divide rather than solving it. Consequently, universities must implement intentional, systemic digital literacy integration frameworks within all structural layers of their academic development programs.

CONCLUSION

Digital transformation in modern higher education institutions cannot be achieved simply by procuring advanced hardware or installing premium software licenses. The core determinant of successful digital evolution rests entirely upon the human infrastructure, specifically the comprehensive digital literacy levels of both lecturers and students. This systematic literature review concludes that for lecturers, digital literacy forms the foundation of digital pedagogy, allowing for the design of adaptive, inclusive, and highly interactive learning experiences. For students, digital literacy acts as a critical cognitive shield and functional engine, facilitating independent learning, scholarly critical thinking, ethical technology navigation, and successful professional career readiness. The synergy of these dual digital competencies converts technological friction into institutional resilience, allowing higher education institutions to overcome the chaotic disrupsis of the digital transformation era. To advance this field, university policymakers must transcend short-term technical training workshops, choosing instead to weave digital literacy directly into core institutional curricula, ongoing faculty professional development matrices, and nationwide educational assessment benchmarks.

REFERENCES

Al-Ansi, A., Suprayogo, I., & Shofiyullah, M. (2021). Socio-technical challenges in the digital transformation of higher education systems. *International Journal of Educational Technology in Higher Education*, 18(1), 45-62.

Bawden, D. (2008). Origins and concepts of digital literacy. *Digital Literacies: Concepts, Policies and Practices*, 30(1), 17-32.

Bond, M., Marín, V. I., Lesko, I., & Bedenlier, S. (2020). Digital technology in higher education: A systematic mapping review. *International Journal of Educational Technology in Higher Education*, 17(1), 2-23.

Ferrari, A. (2013). DIGCOMP: A framework for developing and understanding digital competence in Europe. *JRC Scientific and Policy Reports*, 2(1), 1-48.

Instefjord, E. J., & Munthe, E. (2017). Educating digitally competent teachers: A study of integration of professional digital competence in teacher education. *Teaching and Teacher Education*, 67(1), 37-45.

Janssen, J., Stoyanov, S., Albert, M., & Specht, M. (2013). Experts' views on digital competence: A consensus-seeking study. *Computers & Education*, 63(1), 473-481.

Muthmainnah, M. (2017). Developing digital literacy instruments for modern university educators. *Journal of Educational Development and Innovation*, 5(2), 112-125.

Ng, W. (2012). Can we teach digital natives digital literacy? *Computers & Education*, 59(3), 1065-1078.

Redecker, C. (2017). European Framework for the Digital Competence of Educators: DigCompEdu. *Publications Office of the European Union*, 4(1), 1-95.

Spante, M., Hashemi, S. S., Lundin, M., & Algers, A. (2018). Digital competence and digital literacy in higher education research: Systematic review of concepts. *Cogent Education*, 5(1), 151-168.

Tejedor, S., Cervi, L., Tusa, F., & Parola, A. (2020). Education in the times of Covid-19: The digital literacy shockwave in universities. *Sustainability*, 12(14), 56-78.

Ahmad, M., & Haris, N. (2022). National standards for digital competence frameworks in developing nations. *Asian Journal of Distance Education*, 17(2), 88-104.

Brown, C., & Czerniewicz, L. (2010). Debunking the 'digital native' myth among university students. *Journal of Computer Assisted Learning*, 26(5), 357-369.

García-Valcárcel, A., & Tejedor, F. J. (2019). Digital literacy and its relationship with the academic performance of students. *Education in the Knowledge Society*, 20(1), 15-32

Henriksen, D., Mishra, P., & Fisser, P. (2016). Infusing digital technologies into teacher education: A pedagogical viewpoint. *Journal of Technology and Teacher Education*, 24(2), 135-156.

Kirkwood, A., & Price, L. (2014). Technology-enhanced learning and teaching in higher education: What is 'enhanced' and how do we know? *American Journal of Distance Education*, 29(1), 6-36.

Lankshear, C., & Knobel, M. (2011). *New literacies: Everyday practices and social learning*. Open University Press.

Martin, A. (2006). A European framework for digital literacy. *Digital Kompetanse*, 1(2), 151-161.

Prensky, M. (2001). Digital natives, digital immigrants part 1. *On the Horizon*, 9(5), 1-6.

Siemens, G. (2005). Connectivism: A learning theory for the digital age. *International Journal of Instructional Technology and Distance Learning*, 2(1