Al-Fikru: Jurnal Ilmiah
Vol. 19 No. 1 (2025)
https://jurnal.staiserdanglubukpakam.ac.id/index.php/alfikru

P-ISSN: 1978-1326
E-ISSN: 2721-4397

IMPLEMENTATION OF DIGITAL LITERACY TO IMPROVE THE ACADEMIC COMPETENCE OF STUDENTS IN ISLAMIC RELIGIOUS UNIVERSITIES

Habibi

Sekolah Tinggi Agama Islam Serdang Lubuk Pakam
Jl. Negara Km. 27-28 No. 16 Lubuk Pakam, Deli Serdang, Sumatera Utara
E-mail: habibi.joli2@gmail.com

Abstract: The rapid digital transformation that is changing the academic lives of students, raises the need for digital literacy as a fundamental competency to compete in the technological era. However, many educational institutions, especially religious institutions in the regions, still face weaknesses in the systematic implementation of digital literacy. This study aims to explore the implementation of digital literacy in improving students' academic competencies at STAI Serdang Lubuk Pakam, with a focus on Islamic religious education. The research method used is a phenomenological approach to understand the experiences of students and lecturers in the use of digital literacy in the learning process. The results showed that digital literacy implementation strategies include digital task-based curriculum integration, lecturer capacity building, and collaborative learning. Despite barriers related to access and resistance to technology, the implementation of digital literacy succeeded in strengthening students' academic and religious competencies. The implications of this study provide recommendations for the development of inclusive access policies, continuous training for lecturers, and evaluations that pay attention to ethical aspects and religious values in digital literacy.

Keywords: Digital Literacy, Academic Competence, Education Digitalization

Abstrak: Transformasi digital yang cepat mengubah kehidupan akademis mahasiswa, memunculkan kebutuhan akan literasi digital sebagai kompetensi fundamental untuk berkompetisi di era teknologi. Meskipun begitu, banyak lembaga pendidikan, khususnya institusi keagamaan di daerah, masih menghadapi kelemahan dalam implementasi literasi digital yang sistematis. Penelitian ini bertujuan untuk mengeksplorasi implementasi literasi digital dalam meningkatkan kompetensi akademik mahasiswa di STAI Serdang Lubuk Pakam, dengan fokus pada pendidikan agama Islam. Metode penelitian yang digunakan adalah pendekatan fenomenologi untuk memahami pengalaman mahasiswa dan dosen dalam penggunaan literasi digital dalam proses pembelajaran. Hasil penelitian menunjukkan bahwa strategi implementasi literasi digital meliputi integrasi kurikulum berbasis tugas digital, pengembangan kapasitas dosen, dan pembelajaran kolaboratif. Meskipun terdapat hambatan terkait akses dan resistensi terhadap teknologi, penerapan literasi digital berhasil memperkuat kompetensi akademik dan religius mahasiswa. Implikasi penelitian ini memberikan rekomendasi untuk pengembangan kebijakan akses inklusif, pelatihan berkelanjutan bagi dosen, serta evaluasi yang memperhatikan aspek etika dan nilai keagamaan dalam literasi digital.

Kata Kunci: Literasi Digital, Kompetensi akademik, Digitalisasi Pendidikan

INTRODUCTION

The academic life of students today cannot be separated from the pressure of rapid digital transformation. The shift in the learning paradigm is not merely replacing blackboards with screens, but also demanding that students be able to become actors in the digital information ecosystem—accessing, analyzing, evaluating, creating, and communicating content through digital media wisely and effectively. Digital literacy is no longer an added value, but a fundamental competency for students to keep up in the technological era. However, in many higher education institutions, especially small religious institutions in rural areas, students' digital literacy skills still show fundamental weaknesses, and how the process of implementing digital literacy systematically to strengthen their academic competencies is rarely studied in depth.

In the global academic sphere, a number of studies show that digital competence or digital literacy is significantly positively related to student academic achievement. For example, a study by Cabero-Almenara et al. (Cabero-Almenara et al., 2022) found that the digital competence of students in higher education affects academic success, including the possibility of repeating an academic year. Chen (2025) investigated the relationship between digital literacy and student achievement with considering the mediating path through learning adaptation and online self-regulation, finding that digital literacy directly and indirectly affects academic outcomes. Li et al., (2025) also reinforce the evidence that digital literacy has a significant positive correlation with students' academic achievement in general. Furthermore, Frontiers Education presents findings that improvements in student digital literacy promote their digital competence, informal engagement in digital learning, and digital self-efficacy, which in turn strengthen their academic achievement.

However, the literature also reminds us that mastering digital devices alone is not enough—digital literacy must touch on cognitive, social, ethical, and affective dimensions for its implementation to be meaningful in higher education. A systematic review by "Smart Learning Environments" organizes key themes in digital literacy research and shows that many studies still focus only on technical aspects, while critical or ethical aspects are often under-elaborated. According to Zakir et al., (2025) a review in Frontiers Psychology, digital literacy developed in universities is often closely related to students' perceptions of self-efficacy in using learning technologies. In addition, the interdependence between domains in digital literacy (e.g., between digital security, creative content, collaboration) is also a complex issue that has not been fully explored in higher education.

In the Indonesian context, despite significant increases in internet penetration and digital device ownership,

digital literacy challenges remain real, especially in areas outside of urban centers. Low digital literacy competencies are not only a matter of access, but also a lack of training, curriculum integration, and cultural resistance to the use of technology in learning. In the field of religious education, this challenge is even more pronounced: Islamic Education students are often accustomed to traditional methods and are not yet trained to use digital media as a vehicle for preaching, dialogue, or the production of moderate religious content. Therefore, how digital literacy is strategically implemented in the context of Islamic religious education at local institutions (such as STAI Serdang Lubuk Pakam) and how it impacts their academic competencies is a highly relevant and urgent area of research.

Against this backdrop, this study aims to explore in depth how the implementation of digital literacy can strengthen the academic competencies of students at STAI Serdang Lubuk Pakam in facing the ever-evolving technological era. Specifically, this study is directed at describing the implementation strategies of digital literacy applied in the learning process on campus, identifying various obstacles and supporting factors that influence the implementation of digital literacy, and analyzing the meaning and experiences of students in utilizing digital literacy as a means of improving their academic and religious competencies.

The distinction (novelty) of this research lies in its highly contextual focus: it does not merely describe the relationship between digital literacy and academic achievement (which has been done quite extensively in secular institutions), but explores the process of implementing digital literacy in Islamic educational institutions in the local region of the archipelago. Field data sources from students and lecturers at STAI Serdang Lubuk Pakam will provide rich local insights, and the resulting empirical model is expected to provide a foundation for similar institutions in the context of religious education. This research also attempts to combine the technical, cognitive, social, and ethical components of digital literacy into a comprehensive operational framework, as well as to examine how mediating or moderating variables (e.g., digital self-efficacy, digital self-regulation) influence the relationship between digital literacy and academic competence.

The contributions of this research are theoretical and practical. Theoretically, this research will add to the literature on Islamic education and digital literacy by proposing an adaptive implementation model of digital literacy in religious education in the Indonesian context. This model can be used as a reference for future researchers in testing digital literacy in other religious institutions. Practically, the results of this study are expected to be useful for campus policymakers (rectors, deans, departments) and curriculum

managers in designing sustainable, inclusive, and contextual digital literacy programs. In addition, this study can provide input for the design of lecturer training, the integration of digital literacy content into Islamic religious education courses, and steps to monitor the quality of digital literacy in student academic development.

METHOD

This study uses a qualitative research method with a phenomenological approach. This approach was chosen because it is in line with the research objective to deeply understand students' experiences, meanings, and awareness of digital literacy practices in the context of learning in Islamic higher education. The phenomenological approach allows researchers to explore students' subjective perceptions of how they utilize digital technology as a means of improving academic and spiritual competencies in the learning process (Creswell, 2013; Moustakas, 1994).

This research was conducted at the Serdang Lubuk Pakam Islamic College in the Islamic Education Study Program. This location was chosen purposively because the institution has actively implemented digital-based learning through various platforms such as Learning Management System (LMS), educational social media, and other technology-based applications. This condition is considered relevant to the research objective, which is to explore the phenomenon of digital literacy in Islamic higher education environments that are adapting to the era of digital transformation (Sugiyono, 2021).

The data sources in this study consisted of primary and secondary data. Primary data was obtained from in-depth interviews and observations of active students in the Islamic Education Study Program, while secondary data came from supporting documents such as academic policies, archives of digital learning activities, and student work in the form of technology-based religious content. There were ten main informants selected using purposive sampling with the criteria of being at least in their third semester, actively using digital media in the learning process, and willing to participate in interviews and observations. In addition to students, two lecturers were also involved as supporting informants to provide a contextual perspective on the application of digital literacy in lecture activities.

Data collection techniques were carried out through participatory observation, semi-structured in- , and documentation studies. Observations were made of student activities when using digital media for learning and discussion, while interviews were directed at exploring the views, experiences, and reflections of students and lecturers on digital literacy. Documentary studies were used to reinforce field findings by examining digital materials such as online learning modules, digital preaching videos, and interactive materials used in academic activities.

Data analysis was conducted using thematic analysis as developed by Braun and Clarke (2006). The analysis process was carried out in several stages, namely reading and understanding the entire data, coding relevant units of meaning, grouping codes into main themes, and compiling descriptive interpretations that describe the essence of students' experiences in the context of digital literacy. This process was cyclical and reflective, in which the researcher continuously examined the connections between the emerging themes to produce a deep phenomenological understanding.

To ensure data validity, the researcher applied source and technique triangulation techniques. Source triangulation was carried out by comparing the results of interviews between students and lecturers, while technique triangulation was carried out by combining the results of interviews, observations, and documentation. In addition, member checking was also carried out, which is reconfirming the results of data interpretation to informants so that the meaning obtained is in accordance with the reality intended by the participants. The researcher also maintained the credibility of the research through systematic field notes and continuous reflection on the researcher's position during the research process.

With this methodological design, the study is expected to produce an in-depth description of the phenomenon of digital literacy among Islamic Education students and reveal how these digital experiences contribute to strengthening their academic competencies and Islamic values in facing the challenges of learning in the modern era.

RESULTS AND DISCUSSION

Digital Literacy Implementation Strategies in Improving Academic Competence

The results show that the digital literacy implementation strategy at STAI Serdang Lubuk Pakam is not a single action but a series of integrated practices that seek to address the academic and cultural needs of the institution. First, the campus adopted curricular integration—incorporating digital-based assignments and projects into the syllabus of Islamic Religious Education courses. Students are routinely asked to create digital products (lecture videos, infographics, interactive modules) as part of their assessment, so that digital literacy is learned through authentic practice. This approach is in line with study findings that emphasize the effectiveness of task-based learning in developing digital competencies because it provides an applied context for technical and cognitive skills (Cabero-Almenara et al., 2022; Gutiérrez-Ángel et al., 2022).

Second, the institution implements a program to strengthen the capacity of lecturers and digital tutors. Short training courses on online learning design, the use of LMS, and digital communication ethics are part of routine professional development. This strategy is relevant to

the idea that the digital competence of teachers is a major determinant of the quality of digital competence transfer to students (Vaszkun & Szakács, 2024). Field findings confirm that when lecturers demonstrate reflective and critical use of technology—rather than merely operational use—students tend to imitate these critical practices in managing information sources and religious content ethically.

Third, the campus strengthens the blended learning mechanism: a combination of face-to-face and online learning through a learning management system and campus social media channels. This blended strategy facilitates synchronous and asynchronous interactions that extend students' learning time and provide space for digital literacy practices—for example, the habit of archiving sources, digital citations, and online source evaluation. The literature shows that blended models are effective in facilitating the development of multi-dimensional digital literacy when accompanied by pedagogical scaffolding and clear instructional support (Carretero et al., 2017; Redecker, 2017).

Fourth, the campus initiated collaborative learning practices and digital peer mentoring. Digital project-based learning groups and peer assessment encouraged students to share content creation techniques, information verification strategies, and collaborative moderation of religious content. This strategy strengthens the socio-cultural dimension of digital literacy—that digital competence is not only individual, but also a competence of the learning community (Caton et al., 2025). Findings in the field show that peer mentoring is effective in closing the technical skills gap between more proficient and novice students; however, the quality of mentoring is highly dependent on the abilities of the facilitators (lecturers or senior students).

Although these strategies show positive results, in-depth analysis identifies several structural weaknesses. Infrastructure is still unevenly distributed: in some areas of the campus, bandwidth and devices are adequate, but a number of students experience connectivity limitations at home—a phenomenon consistent with the literature on the digital divide (Pelaéz-Sánchez et al., 2024). Furthermore, the initial orientation toward technology tends to be instrumental—focusing on the use of tools—while critical, ethical, and evaluative aspects of digital content still require explicit reinforcement in the curriculum (Palacios-Rodríguez et al., 2023). Observations show that some digital assignments assess creative output without rubrics that evaluate information literacy, digital ethics, or critical reflection.

Further analysis reveals important supporting factors: faculty leadership commitment, technical support (functional LMS and Google Workspace accounts), and the existence of successful examples (role models) among lecturers and students who actively create moderate da'wah content. However, inhibiting factors such as cultural

resistance (the tendency to view technology as 'foreign' to traditional methods), lecturers' limited time to design quality digital learning, and the lack of continuous evaluation of digital literacy achievements need to be addressed for the strategy to be sustainable. This is in line with studies that emphasize that the digital transformation of education requires policy changes, teacher capabilities, and systematic measurement of competencies (Aslan & Pong, 2023; Purnasari et al., 2024).

From a phenomenological perspective, the findings indicate that students perceive digital literacy not only as a technical skill but also as a means of affirming their academic identity and religious outreach relevant to the times. The experiences of students who were given space for digital creation showed an increase in academic confidence and moderate religious publication activity. However, this meaning is not yet uniform; some students still view technology as a mere tool, indicating the need for a pedagogical approach that fosters critical reflection on the ethics of technology use (Haq et al., 2023).

Implicitly, the most effective strategy is a combination of: a practical task-oriented curriculum, faculty professional development, inclusive infrastructure support, and collaborative learning mechanisms that emphasize critical values and ethics. To ensure sustainability, recommendations from these results include the development of a digital literacy assessment rubric, continuous training programs for lecturers, and formative measurement of digital literacy based on an international framework. This holistic approach is necessary so that the implementation of digital literacy at STAI Serdang Lubuk Pakam not only improves technical skills but also strengthens students' academic competencies and religious integrity.

Opportunities and Challenges in Implementing Digital Literacy for Academic Competency Enhancement

The results of the study show that the implementation of digital literacy at STAI Serdang Lubuk Pakam is characterized by a combination of adequate structural and practical opportunities, along with significant obstacles rooted in technical, organizational, and cultural factors. On the opportunity side, the institution has taken advantage of the momentum of digital transformation in higher education by integrating LMS, campus Google Workspace accounts, and academic content creation initiatives by students. This infrastructure opens up space for authentic practice—students are assigned tasks to create digital modules, presentation videos, and social media-based preaching materials—which provide a real context for the development of technical and cognitive skills (Priyanto & Suhandi, 2022; Subroto et al., 2023). Theoretically, such opportunities are consistent with findings that directed

exposure to digital tasks and pedagogical scaffolding promote the achievement of multi-dimensional digital literacy (Ningsih, 2024; Triwiyanto et al., 2024).

The second opportunity arises from teacher capacity building programs. Lecturers who receive training on online learning design and digital communication ethics serve as models for students, making the transfer of literacy practices more effective (Hanifah & Nadlifatin, 2024) . International literature confirms that teachers' digital competence is one of the main drivers of successful digital transformation in higher education institutions. In addition, peer-learning and digital mentoring practices that develop informally on campus provide a social mechanism for disseminating digital skills and norms; this emphasizes the community dimension of digital literacy—that these skills are built through collective interaction, not merely through individual abilities (Afriani et al., 2024; Pimentel, 2024).

However, substantive obstacles hinder effective implementation. First, the *digital* divide is still evident for some students who live in areas with unstable connectivity or who do not always have adequate devices. This phenomenon reduces students' opportunities to consistently practice digital literacy outside of campus and is a classic obstacle that affects the sustainability of online learning (Hanifah & Nadlifatin, 2024; Isdendi et al., 2023). Second, the implementation orientation still tends to be instrumental—assessing digital output based on aesthetics or quantity without rubrics that measure critical thinking skills, source evaluation , and digital ethics—making the development of the cognitive and affective dimensions of digital literacy less assured (Ningsih, 2024; Triwiyanto et al., 2024). Field observations show that some tasks assess "completed videos" without criteria for source understanding or ethical reflection.

The third obstacle relates to organizational capacity: high lecturer workloads and a lack of incentives to design quality digital materials reduce the intensity of guidance. Global research identifies people-related factors and organizational culture as the main obstacles to digital transformation in higher education—failure to allocate time, remuneration, and technical support makes digital initiatives sporadic rather than systemic. Fourth, the aspects of evaluation and monitoring of digital literacy are still weak; without formative measurement mechanisms and operational rubrics based on international frameworks, its development is prone to becoming a one-time program without continuity.

A more in-depth analysis reveals the complex interaction between these opportunities and obstacles. Infrastructure and training programs pave the way for digital practices, but if they are not balanced by supportive institutional policies (bandwidth allocation, student device subsidies, lecturer workloads that

take into account the development of digital materials), then initiatives remain vulnerable. Beyond , cultural factors—including some faculty resistance to pedagogical change and some students' perception that digital activities are merely "technical tasks"—limit the internalization of the critical and ethical values that are at the core of true digital literacy (Yuan, 2025). In other words, without a holistic approach that integrates technical, pedagogical, and policy aspects, infrastructure opportunities do not automatically translate into significant improvements in academic competence.

From a phenomenological perspective, students' experiences show that when digital literacy is applied to meaningful tasks (creating academic/preaching content that requires source verification, reference-based arguments, and ethical reflection), they report increased academic confidence and critical thinking skills. However, this experience is heterogeneous: students with intensive access and coaching support feel real benefits, while those on the access-deficient side tend to only gain fragmentary experiences. These findings are in line with studies that emphasize the mediating role of self-efficacy and informal digital learning in connecting digital literacy with academic achievement (Zakir et al., 2025).

The implications suggest that recommended interventions include: (1) strengthening inclusive access policies—e.g., device subsidy schemes or campus hotspot facilities ; (2) developing a digital literacy assessment rubric that evaluates critical and ethical dimensions; (3) continuous training programs that combine technical and pedagogical aspects for lecturers; and (4) formative monitoring mechanisms based on international frameworks to ensure continuous competency improvement. Without these steps, existing opportunities will be hampered by access inequalities and inconsistent implementation—limiting the contribution of digital literacy to improving the academic competencies of STAI Serdang Lubuk Pakam students.

Students' Perceptions of Literacy-Based Learning in Academic Competency Improvement

The results of the study reveal that the perceptions of STAI Serdang Lubuk Pakam students regarding the use of digital literacy as a means of improving academic and religious competencies are layered: they see digital literacy as a tool for academic empowerment as well as a testing ground for religious identity. Most informants interpret the ability to search for, evaluate, and compile digital information as an essential skill that improves learning effectiveness—for example, facilitating access to references, speeding up task completion, and opening up opportunities for scientific collaboration through online forums. This perception is in line with the findings of a study that shows a positive relationship between digital literacy and learning outcomes when digital skills are used for

online learning adaptation and self-regulation (Getenet et al., 2024).

In the religious domain, students reported two main narratives. The first narrative positions digital literacy as a medium for preaching and enriching religious knowledge: the ability to create reference-based preaching content, moderate online discussions, and produce religious learning materials is considered to expand the reach of preaching and deepen the understanding of religious texts. This experience is in line with studies that emphasize the role of technology in increasing student engagement in religious education when digital devices are used reflectively and contextually. The second narrative is more critical: some students worry that digital spaces also contain deviant or radical religious content, making them vulnerable to influence without critical literacy and digital ethics. This concern drives a desire for digital literacy training that emphasizes source verification, communication ethics, and moderate religious values.

An in-depth analysis of the data shows that students' positive perceptions of digital literacy are not uniform; differences are driven by access and experience factors. Students who have stable access and active experience producing digital content report increased academic confidence and argumentation skills, while students with limited access tend to see digital literacy as a "luxury" that has not yet had a real impact on their academic competence. This pattern reinforces evidence about the role of *digital atmosphere* and self-efficacy as mediators of the relationship between digital literacy and learning outcomes—meaning that technical skills alone are not enough without *self-efficacy* and a conducive environment.

In addition, students place great importance on the collaborative and reflective aspects of digital literacy. Activities such as online group discussions, peer reviews of digital work, and digital mentoring provide opportunities for the development of critical thinking and digital ethics skills—two aspects that students identify as supporting meaningful academic and religious competence. These findings support the perspective that digital literacy is effective when framed within a learning context that provides pedagogical scaffolding and constructive social interaction, rather than merely technical training (Mashudi & Hilman, 2024).

However, there is also resistance: some students, especially those who are more traditional in their religious orientation, feel that the use of technology in the context of worship or sacred texts needs to be limited; they want clear ethical guidelines so that digital practices do not obscure scientific authority. This perception calls for campus policies that not only promote digital skills, but also integrate contextual religious values—a "value-based digital literacy" approach that can reinforce the credibility of religious content in the digital public sphere. Studies

on digital literacy in the context of religious values show that embedding local/religious values into digital training increases the relevance and adoption of ethical digital practices.

Implicitly, students' perceptions reveal practical and normative needs. Practically, they need more equitable access, ongoing training that combines technical skills, source evaluation capabilities, and content creation pedagogy; normatively, they seek a clear ethical and religious framework to guide the production and distribution of religious content in the digital space. This combination of needs confirms that campus interventions must be holistic: improving infrastructure, developing digital literacy assessment rubrics that include ethical and religious dimensions, and structuring curricula that provide space for critical reflection on digital practices (Lubis et al., 2021, 2024; Maharani et al., 2025).

From a phenomenological research perspective, the essence of the students' experience is that digital literacy is understood as a transformational tool—not merely an operational skill—which, when practiced with institutional support and a foundation of values, can strengthen academic competence while enriching moderate and responsible religious expression. These findings invite the development of policies that position digital literacy as a multidimensional competency: technical, cognitive, social, and religious-value, so that its benefits are felt by all levels of students.

CONCLUSION

The conclusion of this study shows that the implementation of digital literacy at STAI Serdang Lubuk Pakam has been carried out through various integrated strategies, including the integration of a digital task-based curriculum, strengthening the capacity of lecturers, and collaborative learning. Task-based approaches, such as creating digital content in the form of video lectures and interactive modules, provide a practical context for students to develop technical and cognitive skills. In addition, training programs for lecturers and digital mentors strengthen the transfer of digital competencies to students. The blended learning mechanism has also proven effective in facilitating multidimensional digital literacy development, extending learning time, and enabling synchronous and asynchronous interactions. However, several challenges remain, particularly related to unequal access, infrastructure limitations, and cultural resistance to the use of technology in religious education. These findings indicate that although digital technology can strengthen academic and religious competencies, its successful implementation requires inclusive infrastructure support, more holistic curriculum development, and an emphasis on ethical and religious values. Therefore, this study recommends the development of policies that strengthen access, continuous training, and continuous evaluation to ensure the sustainability of digital literacy in religious educational institutions.

REFERENCES

Afriani, G., Soegiarto, I., Suyuti, S., Amarullah, A., & Aristanto, A. (2024). Transformasi Guru sebagai Fasilitator Pembelajaran di Era Digital. *Global Education Journal*, *2*(1), 91–99. https://doi.org/10.59525/gej.v2i1.332

Aslan, A., & Pong, K. S. (2023). Understanding the Trend of Digital Da'wah Among Muslim Housewives in Indonesia. *Fikroh Jurnal Pemikiran Dan Pendidikan Islam*, *16*(1), 11–22. https://doi.org/10.37812/fikroh.v16i1.681

Cabero-Almenara, J., Gutiérrez-Castillo, J. J., Guillén-Gámez, F. D., & Gaete-Bravo, A. F. (2022). Digital Competence of Higher Education Students as a Predictor of Academic Success. *Technology, Knowledge and Learning*, *28*(2), 683–702. https://doi.org/10.1007/s10758-022-09624-8

Caton, A., Kinshuk, & Savenye, W. (2025). Dependencies of Digital Literacy Domains for Improved College Readiness in Higher Education: A Systematic Literature Review. *Technology, Knowledge and Learning*. https://doi.org/10.1007/s10758-025-09872-4

Chen, F. (2025). The relationship between digital literacy and college students' academic achievement: the chain mediating role of learning adaptation and online self-regulated learning. *Frontiers in Psychology*, *16*. https://doi.org/10.3389/fpsyg.2025.1590649

Getenet, S., Cantle, R., Redmond, P., & Albion, P. (2024). Students' digital technology attitude, literacy and self-efficacy and their effect on online learning engagement. *International Journal of Educational Technology in Higher Education*, *21*(1). https://doi.org/10.1186/s41239-023-00437-y

Gutiérrez-Ángel, N., Sánchez-García, J.-N., Mercader-Rubio, I., García-Martín, J., & Brito-Costa, S. (2022). Digital Literacy in the University Setting: A Literature Review of Empirical Studies Between 2010 and 2021. *Frontiers in Psychology*, *13*. https://doi.org/10.3389/fpsyg.2022.896800

Hanifah, K. Q., & Nadlifatin, R. (2024). *The Importances of Teachers' Digital Competence in Digital Learning Process: A Systematic Review* (pp. 276–282). https://doi.org/10.1109/icitsi65188.2024.10929403

Haq, A. K., Rizkiah, S. N., & Andara, Y. (2023). Tantangan dan Dampak Transformasi Pendidikan Berbasis Digital Terhadap Kualitas Pembelajaran di Sekolah Dasar. *Jurnal Pengajaran Sekolah Dasar*, *2*(2), 168–177. https://doi.org/10.56855/jpsd.v2i2.865

Isdendi, R. R., Nanda, I., & Suganda, M. W. (2023). The Role of Indonesia's Digital Citizenship Generation in the Realization of Ethics in Cyberspace. In *Advances in Social Science, Education and Humanities Research/Advances in Social Science, Education and Humanities Research* (pp. 514–525). https://doi.org/10.2991/978-2-38476-096-1_57

Li, F., Cheng, L., Wang, X., Shen, L., Ma, Y., & Islam, A. Y. M. A. (2025). The Causal Relationship Between Digital Literacy And Students' Academic Achievement: a Meta-Analysis. *Humanities and Social Sciences Communications*, *12*(1). https://doi.org/10.1057/s41599-025-04399-6

Lubis, R. R., Hanafiah, M. A., Dalimunthe, R. A., & Rashed, Z. N. (2024).

Modernization of Islamic Education Lecture At Islamic Higher Education Institutions In Contemporary Indonesia. *Miqot: Jurnal Ilmu-Ilmu Keislaman*, *48*(2), 146–168. http://dx.doi.org/10.30821/miqot.v48i2.1189

Lubis, R. R., Ramli, M., Siregar, J., & Panjaitan, R. W. (2021). Analisis Kompetensi Profesional Guru dalam Meningkatkan Keefektifan Belajar Selama Pembelajaran Jarak Jauh. *Al-Fikru: Jurnal Ilmiah*, *14*(1), 32–47. https://doi.org/10.51672/alfikru.v14i1.37

Maharani, D., Setiawan, H. R., & Lubis, R. R. (2025). Implementation of the Listening, Reading, Explaining Method in Tadabbur Qur'an Learning at Islamic Boarding Schools in Percut Sei Tuan District. *Tadrib: Jurnal Pendidikan Agama Islam*, *11*(1), 209–221. https://doi.org/10.19109/tadrib.v11i1.30201

Mashudi, M., & Hilman, C. (2024). Digital-Based Islamic Religious Education: A New Orientation in Enhancing Student Engagement and Spiritual Understanding. *Global International Journal of Innovative Research*, *2*(10), 2488–2501. https://doi.org/10.59613/global.v2i10.342

Ningsih, E. P. (2024). Implementasi Teknologi Digital dalam Pendidikan: Manfaat dan Hambatan. *Edutech Journal.*, *1*(1), 1–8. https://doi.org/10.62872/qbp1fg61

Pimentel, A. J. (2024). Unveiling the Barriers to Digital Transformation in Higher Education Institutions: A Systematic Literature Review. *Research Square (Research Square)*. https://doi.org/10.21203/rs.3.rs-4970233/v1

Priyanto, P., & Suhandi, N. P. M. (2022). Indonesian Higher Education Institutions Competitiveness and Digital Transformation Initiatives. *JPI (Jurnal Pendidikan Indonesia)*, *11*(1), 86–95. https://doi.org/10.23887/jpi-undiksha.v11i1.34263

Purnasari, P. D., Sadewo, Y. D., Santosa, D. S. S., & Sanoto, H. (2024). Analisis Digitalisasi Pembelajaran Sekolah Dasar Wilayah Perbatasan. *Scholaria Jurnal Pendidikan dan Kebudayaan*, *14*(2), 198–205. https://doi.org/10.24246/j.js.2024.v14.i2.p198-205

Subroto, D. E., Supriandi, Wirawan, R., & Rukmana, A. Y. (2023). Implementasi Teknologi dalam Pembelajaran di Era Digital: Tantangan dan Peluang bagi Dunia Pendidikan di Indonesia. *Jurnal Pendidikan West Science*, *1*(7), 473–480. https://doi.org/10.58812/jpdws.v1i07.542

Triwiyanto, T., Kusumaningrum, D. E., & Sobri, A. Y. (2024). Hambatan Implementasi Sistem Manajemen Akuntabilitas di Sekolah Dasar Negeri. *Scholaria Jurnal Pendidikan Dan Kebudayaan*, *14*(2), 119–132. https://doi.org/10.24246/j.js.2024.v14.i2.p119-132

Vaszkun, B., & Szakács, K. (2024). *The Effect of Digital Literacy, Personal Skills and Learning Habits and Conditions on Self-Evaluated Online Learning Effectiveness Among University Students*. Elsevier BV. https://doi.org/10.2139/ssrn.4947192

Zakir, S., Hoque, M. E., Susanto, P., Nisaa, V., Alam, M. K., Khatimah, H., & Mulyani, E. (2025). Digital literacy and Academic Performance: the Mediating Roles Of Digital Informal Learning, Self-Efficacy, and Students' Digital Competence. *Frontiers in Education*, *10*. https://doi.org/10.3389/feduc.2025.1590274