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Digital Literacy Development Strategy in Higher Education Institutions

Agus Jayadi, Hastuti Diah Ikawati, Abdurrahman, M. Ary Irawan*
Faculty of Educational Science and Psychology, Mandalika University of Education
Corresponding Author e-mail*:m.ary_irawan@undikma.ac.id

Abstract: This study aims to analyze the digital literacy development strategy in higher education institutions with a focus on three main aspects: (1) the digital literacy development strategy implemented, (2) the challenges faced in implementing the digital literacy program, and (3) the effectiveness of the program in improving students' ability to use technology critically and ethically. The research method used is a qualitative approach with a case study at a university in West Nusa Tenggara. Data were obtained through interviews with students, lecturers, and digital literacy program managers as well as analysis of relevant policy documents. The results of the study indicate that the strategies implemented include the integration of digital literacy into the curriculum, training for lecturers and students, and the development of technology infrastructure. However, the main challenges faced include limited infrastructure, lecturers' resistance to technology, and students' lack of critical and ethical understanding of using technology. The digital literacy program has proven effective in improving students' technical skills, but needs strengthening in the aspects of information evaluation and digital ethics. This study suggests the need for increased continuous training for lecturers, strengthening of technological infrastructure, and increasing student awareness of the importance of digital literacy holistically.

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Introduction

In today's digital era, students not only need to have access to technology, but also the ability to use it effectively and critically. Therefore, the development of digital literacy in higher education institutions is important to prepare students to face complex challenges in an increasingly digitally connected society. The research released at the end of January 2023 stated that the We Are Social Report noted that the number of internet users in Indonesia had reached 212.9 million in January 2023. This means that around 77% of the Indonesia population has used the internet. The number of internet users in January 2023 was 3.85% higher than a year ago.

Although students have grown up in the technological era, there is still a gap in digital literacy among them. Many students may have good technical skills, but lack the ability to critically evaluate information and use technology ethically. There are various cases involving the younger generation related to the digital era in Indonesia, including: the spread of hoaxes related to the COVID-19 pandemic which caused panic and distrust of official government information (Ginting, 2020), victims of cyberbullying and online violence (Nugraha &

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Kusumaningrum, 2020), Dependence on gadgets and social media (Utami, 2020), copyright infringement and piracy of digital content such as films, music, and games (Fauzi & Fathurrahman, 2020), Misuse of technology for sexual crimes, such as online grooming and the spread of child pornography content, (Erlangga & Dewi, 2020).

Information technology has brought significant changes in the approach to learning in higher education institutions. Students now have access to a variety of online learning resources, but digital literacy skills are still needed so that they can use this technology optimally. Digital literacy is the knowledge and skills to use digital media, communication tools, or networks to find, evaluate, use, create information, and utilize it in a healthy, wise, intelligent, careful, precise, and lawful manner in order to foster communication and interaction in everyday life (Ministry of Education and Culture, 2017).

Livingstone, 2012; Bawden & Robinson, (2012) explained that Literacy is the ability of individuals to use information and communication technology effectively and critically. This includes the ability to understand, evaluate, use, and create digital content well. So digital literacy is critical knowledge, wise attitudes, and creative skills in utilizing digital media. Designing and implementing digital literacy programs in higher education institutions is not easy. There are challenges in adapting these programs to the needs and characteristics of students, and ensuring that they are effective in improving students' digital literacy.

The success of digital literacy programs in higher education institutions is highly dependent on the availability of resources and support from the institution. Investment is needed in teaching staff training, relevant curriculum development, and facilities and infrastructure that support the use of technology in learning. Traditional curricula in higher education institutions may not fully address digital literacy aspects. Better integration of digital literacy skills with existing learning materials is needed to ensure that students get a comprehensive learning experience.

Digital literacy includes not only technical skills, but also soft skills such as critical thinking skills, creativity, and collaboration. The development of digital literacy in higher education institutions must also pay attention to the development of these skills. Cultural and social contexts also influence the development of digital literacy in higher education institutions. Factors such as educational background, technology usage habits, and the academic culture of each institution can influence the implementation of digital literacy programs. Digital literacy has a significant impact on students' careers after graduation. Students who have strong digital literacy skills tend to be more successful in adapting to an increasingly digitally connected work environment. Therefore, the development of digital literacy in higher education institutions can also be interpreted as an investment in students' future careers.

Based on the description of the problems above, a research gap was found with the research that the researcher will conduct, where this research focuses on analyzing the strategy for developing digital literacy in higher education institutions that can affect students' ability to use technology effectively and critically. This research is very important to be conducted as an insight for decision makers in higher education institutions to improve digital literacy strategies and programs.

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Research Method

The research method used is a qualitative approach with case studies at universities in West Nusa Tenggara Province. Data were obtained through interviews with students, lecturers, and digital literacy program managers as well as analysis of relevant policy documents. Data analysis in this study uses a model developed by Miles and Huberman (2014: 18), where the qualitative data analysis method is through three activities, namely (1) data reduction, (2) data presentation (data display), and (3) drawing conclusions and verification (conclusion drawing/verification).

Result and Discussion

Based on interviews, observations, and document analysis, this study aims to identify and analyze three main focuses related to digital literacy development strategies in higher education, including: (1) digital literacy development strategies currently implemented, (2) main challenges in implementing digital literacy programs, and (3) the effectiveness of digital literacy programs in improving students' ability to use technology critically and ethically. The results of the study are described as follows.

Result

Digital Literacy Development Strategies Implemented in Higher Education

Based on interviews and document analysis, there are several strategies currently implemented by higher education institutions to develop students' digital literacy, including:

a) Integration of Digital Literacy in the Curriculum

Higher education institutions have begun to integrate digital literacy into compulsory courses, especially in areas directly related to the use of technology, such as introduction to information technology, data communication, multimedia technology, philosophy of science, human and computer interaction, web programming, interactive multimedia, IT professional ethics, network security, e-learning design and development, 3D content, and other supporting courses. This aims to ensure that students gain a strong foundation of knowledge about the use of digital tools efficiently and effectively.

b) Training and Workshops for Students and Lecturers

The university also organizes training programs, workshops, seminars, and guest lectures that involve students and lecturers in improving digital literacy skills. This training includes: Basic Web Developer, Introduction to Computer Networks and Subnetting and Building Efficient Networks for RT/RW, Personal Branding Through Social Media Content, use of e-learning applications, and cybersecurity for students and teaching staff. A National Seminar was also held regarding Alibaba Cloud Exploring the Potential of Digitalization Together To support digital literacy competency, the university also held a guest lecture agenda and signing of cooperation between the program and Lombok Sinergi Analitika, 1000 Digital Startups and unboxlabs.id.

c) Development of Supportive Technology Infrastructure

Universities, developing technology infrastructure is a priority. This includes providing computer rooms with internet access, developing online-based learning systems, and providing e-library access. Universities, already have computer laboratory facilities equipped with software and full access to various digital scientific journals.

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Challenges in Implementing Digital Literacy Programs

Although various strategies have been implemented, there are several challenges faced by universities, especially universities in implementing digital literacy programs, namely:

a) Limited Infrastructure and Access

According to the results of interviews with the management team and students, it was stated that many students still have difficulty accessing digital learning materials due to limited devices. The technological infrastructure they have is not yet adequate. Universities still have difficulty in providing sufficient devices and stable and fast internet access to support digital learning.

b) Resistance to Change from Lecturers

Some lecturers find it difficult or are reluctant to adapt to new technologies in learning. Some lecturers consider the use of technology in education to reduce direct interaction with students or consider technology too complicated to be implemented in learning. This requires ongoing training and greater support from the university administration.

c) Lack of Understanding of the Importance of Digital Literacy

Some parties in universities, including students, still consider digital literacy as an additional skill that is not important for their academic development. This is reflected in the finding that many students have not made maximum use of the various digital tools that have been provided by the campus, such as online learning systems or e-libraries.

Effectiveness of Digital Literacy Programs in Improving Student Skills

Regarding the effectiveness of digital literacy programs, several findings indicate that these programs can improve students' ability to use technology critically and ethically, although with several notes:

a) Improved Technology Skills

Most students who participated in digital literacy programs reported significant improvements in their ability to use various digital tools, such as word processing software, online learning applications, and online collaboration tools (Google Drive, Zoom, Gmeet, etc.). This shows that existing training programs have succeeded in providing the necessary technological skills.

b) Critical and Ethical in the Use of Technology

However, the critical and ethical use of technology has not been fully achieved. Some students still have difficulty assessing the quality of information found online and do not fully understand the importance of privacy and ethics in interacting in cyberspace. For example, some students admitted that they still find it difficult to distinguish between valid and invalid information on the internet, even though they have taken digital literacy training.

Discussion

The development of digital literacy in higher education institutions is currently very important, considering that the world is increasingly influenced by the development of digital technology. Digital literacy not only includes technical skills in using digital devices and applications, but also includes a deep understanding of how to use technology critically and ethically. Based on the results of research conducted at several universities in Indonesia, the

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development of digital literacy through existing strategies has shown some progress, although there are still significant challenges that need to be overcome.

As an effort to develop digital literacy, many universities have begun to integrate digital literacy into their curriculum. This is in line with the findings of Johnson & Co (2020), which emphasizes that the integration of digital literacy into the curriculum can provide a strong foundation for students to master the digital skills needed in the world of work. The programs offered cover various dimensions, from technical skills using certain software, to training to improve critical thinking skills when accessing and assessing digital information.

In this study, digital literacy courses are part of a compulsory program or elective courses in various disciplines. This course not only provides an understanding of the use of technology, but also teaches how to use the internet ethically and safely, and how to assess the quality of information in cyberspace.

Training and workshops are also quite popular strategies in improving digital literacy for students and lecturers. Universities, for example, hold annual training on the use of digital tools in learning, such as online learning platforms (e-learning), collaboration tools, and other productivity applications. This reflects the importance of digital literacy in supporting successful learning in the technological era (Moser, 2019).

In addition, the development of technological infrastructure is also an important concern for universities. Adequate technological facilities, such as computer laboratories, fast internet access, and e-libraries, support the creation of a conducive environment for the development of students' digital literacy. Universities, for example, have equipped their classrooms with computer devices and access to a variety of digital resources that can be used by students to explore various academic topics in more depth. This is also in accordance with the findings of Lee & McRae (2018), which show that the existence of adequate technological infrastructure plays a major role in accelerating the development of digital literacy in universities.

Although many strategies have been implemented, there are several challenges faced in implementing digital literacy programs in universities. One of the main challenges is limited infrastructure. Although larger universities often have more complete technological facilities, universities in certain areas still face difficulties in providing stable internet access or adequate devices for all students. This limitation is certainly a barrier for students who do not have personal devices that can support the digital learning process.

As explained by Yuen et al. (2017), the inequality of access to technology among students from different economic backgrounds can exacerbate inequalities in digital education. Students from remote areas or those from families with limited economic resources tend to have difficulty accessing various digital resources provided by universities. Several students reported that they often had difficulty accessing online lecture materials due to limited devices and internet network quality.

In addition, resistance from lecturers to the use of technology in learning is also a significant challenge. Some lecturers feel unfamiliar or have difficulty adapting to the use of digital technology in the classroom. This could be due to the lack of technological skills possessed by lecturers or their comfort with traditional, more face-to-face learning methods. Lecturers who are not familiar with educational technology such as online learning platforms or online collaboration tools tend to feel that this technology is not relevant to their learning. According to research conducted by Moser (2019), the lack of training for lecturers on how to

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use technology effectively in learning can hinder the implementation of digital literacy to the fullest.

In addition, there is also a problem related to the lack of awareness of the importance of digital literacy among students and lecturers. Some students may not fully realize that digital literacy is not just about mastering tools or devices, but also about the ability to think critically, evaluate sources of information, and use technology ethically. This could be due to a view that is too narrow about digital literacy, which only considers it as a technical skill. As stated by UNESCO (2013), effective digital literacy must include an understanding of the wise and safe use of technology, including how to protect privacy and personal data.

Digital literacy programs implemented in many universities generally succeed in improving students' technical skills, such as the use of software, access to digital resources, and skills in utilizing various learning applications. According to the results of this study, most students who took part in digital literacy training felt more confident in using technology for academic purposes. Many students reported that they felt more prepared to use online learning platforms and collaboration applications such as Google Classroom or Zoom for group assignments and class discussions.

However, the ability to think critically and ethically in using technology, although increasing, still needs further strengthening. Some students admitted that they still had difficulty distinguishing between valid and invalid information on the internet. As found by Aviram & Eshet-Alkalai (2006), although students' technical skills in using digital devices have increased, skills in evaluating information sources and understanding the ethical implications of using technology are still aspects that need more emphasis. Some students are still trapped in the phenomenon of information overload or have difficulty in choosing relevant and reliable information in cyberspace.

In addition, some students also showed a lack of understanding of digital ethics—for example, related to plagiarism or copyright—even though they had received material on this during digital literacy training. As noted by Johnson & Co (2020), the development of more comprehensive digital literacy should include critical and ethical aspects, such as how to manage personal digital footprints and use online resources responsibly.

Conclusion

Based on the results of the study on digital literacy development strategies in higher education institutions, it can be concluded that:

1. Digital Literacy Development Strategies
   Higher education institutions have implemented several strategies to develop digital literacy among students, such as integrating digital literacy into the curriculum, training and workshops for students and lecturers, and developing technology infrastructure. This program aims to improve students' technical skills in using technology, as well as introduce them to the concept of digital ethics and critical evaluation of information.
2. Challenges in Implementation
   Although these strategies have been implemented, there are a number of challenges faced by higher education institutions in developing digital literacy. The main challenges include limited technological infrastructure, especially computer devices with high specifications and stable and fast wifi access, as well as resistance from some lecturers who are not yet fully accustomed to the use of technology in teaching. In addition, there is still a gap in

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students' understanding of the importance of digital literacy involving ethical aspects and critical thinking.

3. Effectiveness of the Digital Literacy Program
   The digital literacy program implemented has proven effective in improving students' technical skills, such as the use of software, online learning applications, and digital collaboration tools. However, the effectiveness of the program in improving students' ability to think critically, evaluate information sources, and use technology ethically still needs to be improved.

Recommendation

Based on these findings, several recommendations to improve the development of digital literacy in higher education institutions are as follows:

1. Strengthening Technology Infrastructure
   Higher education institutions need to prioritize strengthening technology infrastructure, including providing adequate devices and ensuring stable internet access for all students. In addition, the development of a more inclusive and accessible online learning system also needs to be considered.
2. Continuous Training for Lecturers
   To overcome lecturers' resistance to the use of technology, higher education institutions need to provide continuous training that focuses not only on technical skills, but also on innovative ways to utilize technology in teaching. Lecturers who are skilled in technology will be able to teach students more effectively and facilitate more interactive and collaborative learning.
3. Improving Critical and Ethical Aspects in Digital Literacy
   Digital literacy is not just about mastering tools, but also involves the ability to think critically and use technology ethically. Therefore, higher education institutions need to emphasize more material on evaluating digital information, understanding online privacy and security, and ethics in interacting in cyberspace. This can be done by introducing courses or modules that specifically discuss digital ethics, as well as implementing case study-based learning related to the misuse of technology and social media.
4. Increasing Collaboration between Universities and the Technology Industry
   To ensure the relevance of the digital literacy taught, universities need to increase collaboration with the technology industry to provide learning that is in line with the needs of the world of work. Internship programs, industry training, or collaboration with technology providers can help students better understand current technology practices and equip them with more applicable skills.
5. Counseling and Awareness of the Importance of Digital Literacy
   Universities also need to hold counseling programs for students regarding the importance of digital literacy, both in academic and social contexts. Raising awareness of how technology can be used for positive purposes and its impact on personal and professional lives is essential to forming a generation of students who are not only skilled in technology, but also wise in its use.

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References

Aviram, A., & Eshet-Alkalai, Y. (2006). *Digital literacy: A new terminology framework*. The International Review of Research in Open and Distributed Learning, 7(1), 1-18.

Bawden, D., & Robinson, L. (2012). *Introduction to Information Science*. Facet Publishing.

Fraillon, J., Schulz, W., & Ainley, J. (2019). *Preparing for Life in a Digital World: IEA International Computer and Information Literacy Study 2018 International Report*. Springer.

Eshet-Alkalai, Y. (2004). *Digital literacy: A conceptual framework for survival skills in the digital era*. Journal of Educational Multimedia and Hypermedia, 13(1), 93-106.

Hobbs, R. (2010). *Digital and Media Literacy: A Plan of Action*. The Aspen Institute.

Hsieh, Y. J., Cho, S. H., & Huang, Y. M. (2018). From Information Literacy to Digital Information Literacy: Moving Beyond the Basics. *Computers in Human Behavior*, 89, 23-29.

Jenkins, H. (2006). *Convergence Culture: Where Old and New Media Collide*. New York University Press.

Johnson, L., Adams Becker, S., & Estrada, V. (2020). *The NMC Horizon Report: 2020 Higher Education Edition*. New Media Consortium.

Kellner, D. (2002). *Technological Transformation, Multiple Literacies, and the Restructuring of Education. In M. Warschauer & R. Kern (Eds.), Networked-Based Language Teaching: Concepts and Practice (pp. 29-66)*. Cambridge University Press.

Kementerian Pendidikan dan Kebudayaan. (2017). *Materi Pendukung Literasi Digital*. Jakarta: Kemdikbud.

Lankshear, C., & Knobel, M. (2008). *Digital Literacies: Concepts, Policies and Practices*. Peter Lang.

Lee, M., & McRae, N. (2018). *The role of digital literacy in higher education: A framework for teaching and learning*. Higher Education, 75(2), 289-304.

Livingstone, S. (2008). *Taking Risky Opportunities in Youthful Content Creation: Teenagers' Use of Social Networking Sites for Intimacy, Privacy and Self-Expression*. New Media & Society, 10(3), 393-411.

Livingstone, S. (2012). *Critical Reflections on the Benefits of ICT in Education*. Oxford Review of Education, 38(1), 9-24.

Livingstone, S., & Bulger, M. (2013). *A Global Agenda for Children's Rights in the Digital Age*. Journal of Children and Media, 7(3), 317-335.

Martin, A., & Grudziecki, J. (2006). *DigEuLit: Concepts and Tools for Digital Literacy Development*. Innovate: Journal of Online Education, 3(4), Article 3.

Moser, K. (2019). *Digital literacy as a key competence for the 21st century*. Journal of Educational Technology & Society, 22(2), 38-48.

Raths, D., Liang, J., & Cao, Y. (2017). *Effects of Digital Literacy Instruction on Pre-service Teachers: A Longitudinal Investigation*. Teaching and Teacher Education, 63, 319-327.

UNESCO. (2013). *The UNESCO ICT Competency Framework for Teachers*. United Nations Educational, Scientific and Cultural Organization (UNESCO).

Warschauer, M. (2007). The Paradoxical Future of Digital Learning. *Learning Inquiry*, 1(1), 41-49.

Yuen, A. H. K., Cheng, R. W. Y., & Zhang, W. (2017). *Digital literacy and learning in higher education: Exploring the impact of digital tools on students' academic development*. Journal of Educational Computing Research, 55(8), 1121-1138.

