The Contribution of Digital Literacy Competence to the Success of Using E-learning as a Support for Digital Age Learning

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ABSTRACT

Digital transformation in Indonesia has been going on since the Covid 19 period. Like it or not, the pandemic has forced the learning system to be carried out from home or remotely. The government made the pandemic moment the first step in responding to digitalized technological developments through the digital transformation acceleration program. One of the sectors that are encouraged to transform more quickly is education. So, to succeed in digital transformation in education requires human resources competent in using digital technology (digital literacy). In addition, it also requires digital technology to support the learning process in the digital era. In this case, e-learning is a means of learning in the digital era. This study aims to see the significant contribution of digital literacy competencies in supporting the successful use of e-learning in learning. This research is a causality model using a quantitative approach—data analysis using regression. The respondents of this study were 157 Informatics Engineering students. The study's results found that digital literacy competencies contributed to the successful use of e-learning as a learning support. This indicates that for the successful use of e-learning in learning, students must have digital literacy competencies, which include: the ability to operate digital technology (computers and smartphones), be able to select information, understand content messages, verify content, be critical of information in digital media, disseminate information, create content and the ability to interact in digital media.

Keywords: Digital Literacy, Education Digital Transformation, E-Learning, Learning.

1. INTRODUCTION

Technological transformation keeps up with the times and knowledge. As the years go by, science continues to develop and encourages the creation of increasingly sophisticated technologies. The current developments have reached the era of the industrial revolution 4.0 and Society 5.0. The industrial revolution 4.0 is also called the era of digital disruption or the digital revolution because Industry 4.0 saw the spread of communication and information tools and spontaneity in all aspects of life, resulting in advances in the industrial sector [1]. While Society 5.0 still has the theme of automation and digitalization in industry and production, the concept of Society 5.0 focuses on technology and humans [2]. Welcoming this technological development, the Indonesian government responded by pursuing digital transformation. This was directed directly by President Joko Widodo through the Indonesia Digital 2021-2024 roadmap [3].

Education is one of the sectors that are being encouraged in accelerating digital transformation. The current era of the industrial revolution has changed the way of thinking about education. Changes are not only from teaching methods but from the perspective of the concept of education itself [4]. In the digital era, the development of technology and digital devices is allegedly increasingly sophisticated and continues to grow so that humans cannot be separated from technology and the internet [5]. No exception in education; in this digital era, the learning paradigm is also experiencing a shift. The teacher has become a learning facilitator from what used to be the teacher as the leading figure in learning. Learning is now cantered on students (student-cantered), no longer on teachers.

Technological developments in education are also unstoppable; many innovations have been born to support learning. One of the impacts of technological developments in education is the birth of various kinds of learning media [6]. In addition to learning media, learning technology is continually developing, namely e-learning. E-learning is electronic learning that utilizes information and communication technology to build learning classes without meeting face-to-face [7]. E-learning is one of the access media that supports internet-based learning activities [8]. According to Jepriana [8], the e-learning system can provide good service, have a good impact, and become an infrastructure solution in learning. The same thing was also expressed that the time had come to utilize digital technology and the internet as a learning tool, such as e-learning, to keep up with current technological advances [9]. This indicates that one of the learning alternatives that support the use of digital technology is e-learning as a learning tool. However, in its use, educators and students must have the ability or competence to use digital technology.

In the digital era as it is today, digital competence is a capability that someone must possess because of the all-around technology era, not only being able to operate technology but also optimizing its use positively for personal and public needs [10]. Digital competence (digital skills) are abilities, knowledge, and attitudes essential in integrating life by responding to, utilizing, and communicating technological changes.

Regarding the acceleration of digital transformation in the education sector, technological advances affect the criteria for the need for educators. Educators must study well, optimize learning resources, and have particular expertise in technology to support learning using e-learning [11]. Apart from teaching staff, students must also have specific expertise in technology so that the e-learning program can run well [12].

Bawden (2008) describes that digital skills consist of ICT skills, information literacy, information evaluation, media literacy, and internet literacy. The Department of Education of Thailand mapped out four leading digital literacy indicators: technology, critical thinking, collaborative work, and social awareness skills [11]. Then formulates six digital literacy frameworks: digital photo-visual skills, digital reproduction, digital branching, digital information, digital socio-emotional, and direct digital skills. The same thing was expressed that three primary abilities are needed in the third era: cognitive abilities, soft skills, and mastery of technology. Apart from these three primary abilities, the digital era also requires competencies such as [13]:

1. Information and literacy (the ability to search, select, sort, evaluate and manage data and information).

2. Communication and collaboration (interaction skills, sharing, collaborating, utilizing digital technology.

3. We create digital content (skills, development, integration, and collaboration).

4. Security guarantees the protection of devices, data, and confidentiality.

5. Problem-solving, creativity, and identification ability.

Based on some of the opinions mentioned above, it can be concluded that digital literacy competency indicators include information literacy, communication and collaboration, creating digital content, operating ICT tools, critical thinking, and problem-solving.

This study aims to see how far digital literacy competencies contribute to supporting the successful use of e-learning as a learning tool. The results of this study will provide insight into the importance of digital literacy competencies (digital skills) in the current era, especially in supporting the use of e-learning.

2. METHOD

This research is a causality model using a quantitative approach. The research instrument used a questionnaire containing indicators of variable X (digital literacy competence) and variable Y (success in using e-learning). The respondents of this study were 157 Informatics Engineering students—data analysis using regression.

3. RESULTS AND DISCUSSION

The results of this study describe the level of student digital literacy competence and the contribution of digital literacy competence in supporting the successful use of e-learning as a learning tool based on the student's point of view.

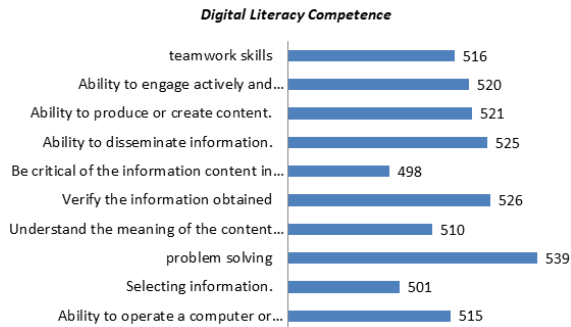### 3.1 Student Digital Literacy Competence

Based on the results of data analysis, overall, student digital literacy competencies show an average value of 33.02. When viewed based on the level criteria table, this value is in the vulnerable 32.5-40, indicating a very high category.

Table 1. Level Category.

Value	Criteria
10 – 17.5	Very low
17.5 –25	Low
25 – 32.5	Tall
32.5 – 40	Very high

Furthermore, when viewed based on each indicator of digital literacy competence, problem-solving abilities

rank highest. This means informatics engineering students' problem-solving ability is very high.

Figure 1. Student Digital Literacy Competency Level.

Based on Figure 1. It can be seen that Problem-Solving occupies the highest position with 539 points. Second place is the ability to verify information obtained with 526 points. Third place is the ability to disseminate information with 525 points. Next, the ability to produce or create digital content is 521 points. Next, the ability to engage actively, interactively, and be critical in the digital media platform environment is 520 points. Next, the ability to cooperate with 516 points. Ability to operate a computer or smartphone 515 points. Next, Next ability to understand the meaning of the content accessed 510 points. Ability to select information 501 points. Finally, the ability to be critical of information content in digital media with 498 points.

The study results showed that the digital literacy competence of UNG Informatics Engineering students was very high. This is following the need for digital skills, which are now a common requirement in the world of work, especially in using e-learning as a learning tool. As stated by Hasriadi (2022), in the digital era as it is today, the creativity of educators and students is needed in using digital technology devices to support the learning process in the digital era [14]. This is further strengthened by Winda et al. (2022) opinion that one of the essential aspects of work readiness in the digital era is digital skills [15]. So it can be concluded that the workforce's needs in this digitalized era are digital skills or digital literacy competencies following developments.

3.2 The Contribution of Digital Literacy Competence to the Successful Use of E-Learning as a Learning Support

Table 2. The regression coefficient of the contribution of digital literacy to the successful use of e-learning.

Model	B	Std. Error	t	Sig.
Constant	19.950	2.719	7.338	0.000
Digital Literacy Competence	0.289	0.082	3.531	0.001

Based on the results of the data analysis shown in Table 2. The significance value of the results is more diminutive than alpha 0.05, so it can be concluded that digital literacy competence contributes to the successful use of e-learning in learning. Values that show a positive indication that the influence or contribution is positive. The contribution of digital literacy competencies to the successful use of e-learning is 0.175 (17.5%).

Table 3. Determination of R^2.

R	R Square	Adjusted R Square
0.274	0.175	0.794
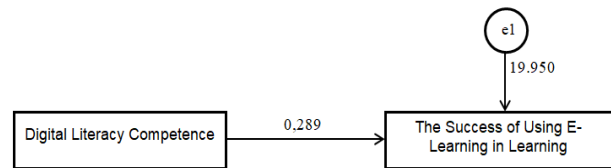
Figure 2. Regression Diagram.

Based on the results of the simple regression test presented in the table above and Figure 2, the regression equation can be obtained as follows:

$$Y = 19.950 + 0.175X$$

(1)

The regression equation above implies that the constant value is 19.950, meaning that if the digital literacy competence is 0 or does not exist, then the success value of using e-learning is 25.503. The regression coefficient for digital literacy competence (X) is 0.175, meaning that if digital literacy competence is increased by 1 unit, the success of using e-learning as a learning tool will increase by 0.175. The positive coefficient indicates a unidirectional relationship between digital literacy competencies and the successful use of e-learning as a learning tool. If students' digital literacy competencies continue to be improved, the likelihood of successful use of e-learning as a learning tool will increase or be higher.

The results of data analysis show that digital literacy competencies have proven to contribute to the successful use of e-learning in learning. This implies that one factor that influences the successful use of e-learning as a learning tool is the competency or ability of students related to digital literacy. Students must have digital skills or digital literacy competencies to support learning optimization using e-learning. The results of the same research were also revealed by Marguna [16] that there is a significant favorable influence relationship between digital competence (e-skills) on the performance of librarians. The same thing was also expressed by Sakkinah and Patmanthara [17] that several factors that influence the successful use of e-learning are digital literacy competencies, precisely the quality of

information/learning content, and the quality of the e-learning system itself.

Furthermore, Seliana [18] also revealed that the effectiveness and success of using e-learning at the Faculty of Engineering, University of Riau, is the quality of information and service. Another thing expressed by Hasan et al. is that the factors that influence the success of implementing e-learning are critical success factors (CSF) which are grouped into five domains: the abilities of students, instructors, design and content, systems and technology, and institutions. Based on the research results and supporting opinions, it can be concluded that digital literacy competency factors influence the successful use of e-learning.

As previously explained, the current digital era demands the efforts of all parties in the education sector, not only the government but also academics engaged in education, who must strive to contribute to accelerating digital transformation in education. One way that can be done is to optimize the use of e-learning as a learning tool. Hermila and Rahmat [19] expressed that e-learning has an important position in the education era 4.0 system and has multifunction as a vessel and media in the learning process.

4. CONCLUSION

Using e-learning as a learning tool is one step in supporting accelerating digital transformation in the education sector. Based on the results of the research and discussion that have been described previously, the conclusions of this study are as follows:

1. The digital literacy competency level of UNG Informatics Engineering students is in the high category.
2. Digital literacy competence contributes to the successful use of e-learning as a learning tool. The amount of contribution given was 17.5%.

Recognizing that digital literacy competencies contribute to the successful use of e-learning, it is important to continue honing and improving students' digital abilities or digital skills. Then, because this research is limited to the digital literacy competencies of Informatics Engineering students, it would be nice to review digital literacy competencies from the point of view of educators or lecturers.

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