DESCRIPTIVE ANALYSIS OF DIGITAL LITERACY OF UNIVERSITAS TERBUKA STUDENTS

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Abstract

Digital literacy in education is an essential skill in today's technological era, enabling students to access, utilize, and comprehend information digitally. This literacy encompasses the ability to use technological tools such as computers and the internet, as well as critical skills in evaluating and using information from digital sources. In distance education, digital literacy is crucial for supporting independent, collaborative, and effective learning using various digital resources, as well as preparing students to face the challenges of an increasingly technology-dependent workforce. This study sampled students from Universitas Terbuka (UT) participating in web-based tutorials (Tuweb) in the regencies of Maros, North Luwu, Tana Toraja, and Wajo, who were enrolled in mathematics-related courses. The research analyzed the relationship between digital literacy (X1), socioeconomic conditions (X2), and factors supporting digital literacy (X3) on academic achievement (Y) using Pearson correlation. Data were collected through a Likert scale questionnaire distributed via Google Form to 200 respondents, with 190 responses being processable, and the data were analyzed using SPSS version 25. The results of this study indicate that simultaneously, the variables: digital literacy (X1), socioeconomic conditions (X2), and factors supporting digital literacy (X3) do not significantly correlate with the learning outcome variable (Y). However, partially, each X variable significantly correlates both with the Y variable and among the X variables.

Keywords: digital literacy, mathematics, distance education, academic achievement, web tutorial

1 INTRODUCTION

Universitas Terbuka (UT) is a state university that implements an open and distance learning system with various learning support services that facilitate students and teaching staff to meet at different places and times. The services provided by UT aim to help students learn independently and manage their learning process by understanding and deepening course material through various modes. UT provides space for interaction between students and teaching materials, interaction between students and tutors, interaction among students through

various tutorial methods, and interaction between students both in study groups and tutorial groups. UT provides teaching materials designed to be studied independently. In addition to using printed and digital teaching materials prepared by UT, students can also utilize the digital library. Therefore, UT students need to have digital literacy skills to support their learning success.

Digital literacy in learning is an essential skill in today's technological era that allows students to access, utilize, and understand information digitally. This includes the ability to use technological tools such as computers and the internet, as well as critical skills in evaluating and using information obtained from digital sources. In distance education, digital literacy assists students in independent, collaborative, and effective learning using various digital resources. It is also important to prepare them to face challenges in the increasingly technology-dependent workplace. This is in line with the opinions of Maphosa & Bhebhe (2019) & Rahman et al. (2020), that the integration of digital literacy into the curriculum becomes essential, especially to prepare students for the challenges of an increasingly digital workplace.

Currently, the utilization of digital literacy in learning has become a major focus in education, as reflected in recent research in national and international journals. These studies show that digital literacy not only improves access and learning efficiency but also contributes to the development of students' critical and analytical skills. Abrosimova (2020) emphasizes the importance of digital literacy in higher education, opportunities and risks associated with the digitalization of education, and the concept of blended learning as an optimal solution. There is an increasing integration of digital technology in curricula that emphasizes the importance of teaching students how to use digital sources critically and ethically in a directed manner. This change reflects the broader educational need to prepare students for an increasingly digital world, including distance education students.

In distance education such as UT, digital literacy has proven critical in supporting academic achievement and student adaptation to dynamic learning environments, as discussed in various studies (Aruta, 2018; Wulandari, 2022; Tzifopoulos, 2020). This skill facilitates access to diverse learning resources and enhances cognitive and technical competencies that are important for academic and professional success (Yundri Akhyar, 2021; Ozdamar-Keskin et al., 2015). Therefore, the important role of digital literacy in the context of distance education is highly needed, especially amid the shift towards an increasingly digital society.

Recent research on digital literacy in education has highlighted the importance of these skills in distance learning, particularly for students in mathematics courses at UT. However, there are some deficiencies in the comprehensive understanding of how digital literacy affects various psychosocial aspects and student learning achievements. Furthermore, studies often do not include evaluations of the long-term effects of digital literacy on students' career success. The general objective of this research is to fill this gap by evaluating the comprehensive impact of digital literacy on academic achievement and career success for students taking mathematics courses at UT, considering various psychosocial aspects and their learning achievements.

2 METHODOLOGY

This research is a longitudinal study that aims to measure the comprehensive impact of digital literacy on academic achievement and career success of UT students taking mathematics courses. The approach in this research is descriptive quantitative, with data obtained by distributing questionnaires using a Likert scale and sent via Google Form, then processed with non-parametric statistics via SPSS-25. Before the questionnaire was distributed to respondents, its validity and reliability were tested. The results of the data processing are described using tables and figures.

The population in this study is all UT-Makassar students taking mathematics courses in the 2024.1 registration period. For respondents, there are 190 people who are in Study Groups (Pokjar) in Maros Regency, North Luwu Regency, Tana Toraja Regency, and Wajo Regency who are taking mathematics courses in the 2024.1 registration period.

There are 3 independent variables and 1 dependent variable in this study, namely: digital literacy (X_1), socio-economic conditions (X_2), and digital literacy supporting factors (X_3) on academic achievement (Y). Data is processed with SPSS version 25 and to test the relationship between independent variables and the dependent variable using Pearson correlation.

3 RESULTS AND DISCUSSION

The results of the correlation test between variables: digital literacy (X_1), socio-economic conditions (X_2), and digital literacy supporting factors (X_3) on academic achievement (Y) can be seen in Table 1 below.

Table 1. Model Summary of Correlation Test Results

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin - Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	0,162[a]	,026	0,010	0,47347	0,026	1,663	3	186	0,176	1,477

a. Predictors: (Constant), Total X_3, Total X_1, Total X_2

b. Dependent Variable: Y

To examine the correlation between variables X_1, X_2, and X_3 with Y (final course grade), it is based on the Sig. F Change value. If the Sig. F Change value < 0.05, then variables X_1, X_2, and X_3 correlate significantly with the final exam score (Y). Conversely, if Sig. F Change > 0.05, then variables X_1, X_2, and X_3 do not significantly affect variable Y. Table 1 above shows that the Sig. F Change value is 0.176 > 0.05. This means that the variables of digital literacy (X_1), socio-economic conditions (X_2), and digital literacy supporting factors (X_3) do not simultaneously affect the academic achievement variable (Y).

The correlation of X variables partially can be explained based on the results of SPSS version 25 analysis in Table 2 below.

Tabel 2. Correlations

Control Variables			Total X_1	Total X_2	Total X_3
Y	Total X_1	Correlation	1,000	,604	,596
		Significance (2-tailed)	.	,000	,000
		df	0	187	187
	Total X_2	Correlation	,604	1,000	,625
		Significance (2-tailed)	,000	.	,000
		df	187	0	187
	Total X_3	Correlation	,596	,625	1,000
		Significance (2-tailed)	,000	,000	.
		df	187	187	0

The correlation analysis results in Table 2 show the relationships between variables Total X_1, Total X_2, and Total X_3 to Y can be explained as follows:

1. Relationship of Total X_1 with other variables:
   - The correlation between Total X_1 and Y is 1.000, which means a perfect relationship
   - The correlation between Total X_1 and Total X_2 is 0.604 with a significant value of p = 0.000, indicating a moderate and statistically significant relationship
   - The correlation between Total X_1 and Total X_3 is 0.596 with a significant value of p = 0.000, indicating a moderate significant relationship
2. Relationship of Total X_2 with other variables:
   - The correlation between X_2 and Y is 0.604 with a significant value of p = 0.000, indicating a moderate and significant relationship
   - The correlation between Total X_2 and Total X_1 is 0.604 with a significant value of p = 0.000, also indicating a moderate and significant relationship
   - The correlation between Total X_2 and Total X_3 is 0.625 with a significant value of p = 0.000, also indicating a moderate and significant relationship
3. Relationship of Total X_3 with other variables:
   - The correlation between Total X_3 and Y is 0.596 with a significant value of p = 0.000, also indicating a moderate and significant relationship
   - The correlation between Total X_3 and Total X_1 is 0.596 with a significant value of p = 0.000, also indicating a moderate and significant relationship
   - The correlation between Total X_3 and Total X_2 is 0.625 with a significant value of p = 0.000, also indicating a moderate and significant relationship

Overall, all correlations between these variables show statistically significant relationships with p = values below 0.05, meaning that these relationships did not occur by chance. The strength of the correlations is in the moderate category because the correlation values range from 0.5 to 0.7. Based on these correlation results, UT students very much need to have digital literacy skills for their learning success.

Several researchers have begun to research and study digital literacy for academic purposes. In 2016, Ukwoma, Iwundu, and Iwundu examined the digital literacy skills possessed and used by

students at the University of Nigeria Nsukka (UNN) to complete academic work. The results showed that good digital literacy skills can improve academic performance. Four years earlier, Shariman et al. (2012) had already studied digital literacy competence for academic needs among students from three universities in Malaysia. Based on this research, it was found that students already had good digital literacy competencies for daily needs, but digital literacy competencies for academic purposes were still limited, such as students still having difficulty evaluating the truth of information obtained for use as learning references. Several existing studies show that digital literacy for academic purposes is important and needs to be studied more comprehensively and in-depth.

The research results of Yustika & Iswati (2020) found that a high level of literacy has a positive effect on students' academic achievement. Similarly, Rahmadi & Hayati (2020), one of their research results shows that digital literacy for academic purposes is very much needed because almost all information used as learning resources and learning processes in higher education is already largely carried out in a digital environment. However, the results of this study found that simultaneously the variables: digital literacy (X_1) with socio-economic conditions (X_2), and with digital literacy supporting factors (X_3) do not correlate significantly with the learning outcome variable (Y), but partially each X variable correlates significantly both with variable Y and between X variables.

One of the things that contribute to maximizing the thesis completion process is Digital Literacy competence, which is the ability to understand and operate digital technology optimally. This study uses a digital literacy scale based on aspects of digital literacy and a self-directed learning scale based on aspects of self-directed learning. The analysis results show a significant relationship between digital literacy and self-directed learning in student theses (Akbar & Anggraeni, 2017). Similarly, Juliana (2016) states that the development of digital literacy has become an academic demand at each level of education in Indonesia, especially in higher education. Students nowadays are addicted because they more often search Google than open books as references. This shows that the internet offers various needs in seeking information. Digital literacy is not just using the internet to find information or entertainment. Literacy should be a means to shape students' ability to think analytically, synthetically, evaluatively, critically, imaginatively, and creatively.

According to Abrosimova (2020), digitalization has led to a significant increase in the selection of study programs and disciplines available for study and international and interdisciplinary collaboration in science and research. Even education is more accessible and individualized, and provides freedom to conduct research and enhance independent learning. Similarly, UT students who attend online and independent lectures are very much demanded to have maximum digital literacy skills because most of their learning must be accessed online. However, according to data on the modern digital education environment in the Russian Federation, there is a less optimistic side to these changes. Like other transformations, the digitalization process in education has several risks, including: (1) low levels of trust and determination of students and academics to use digital content; (2) low efficiency in applying digitalization teaching methods; (3) low activity of entrepreneurs and investors in supporting the development of high-quality digital content. (Abrosimova, 2020).

Based on the results of this study, UT students who are already accustomed to using digital literacy, however, good digital literacy and digital supporting factors do not affect their academic achievement because UT student exam materials focus on course teaching materials, both digital and printed.

4 CONCLUSION

The results of this study indicate that simultaneously the variables: digital literacy (X_1) with socio-economic conditions (X_2), and with digital literacy supporting factors (X_3) do not correlate significantly with the learning outcome variable (Y), but partially each X variable correlates significantly both with variable Y and between X variables.

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