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THE INFLUENCE OF DIGITAL LITERACY, PARENTAL AND PEER SUPPORT ON CRITICAL THINKING SKILLS IN THE AI ERA

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Abstract

Critical thinking skills are essential and must be in today's fast-paced and globalized worldconsidered. Critical thinking is necessary to evaluate information, solve problems, and make informed decisions in academic and real-world scenarios. The evolution of Artificial Intelligence (AI) technology has added a new dimension to educational technology. AI has the potential to revolutionize the world of education by personalizing learning experiences and providing real-time assessments, among other benefits. The integration of AI in the learning process is still debated regarding its pros and cons in supporting critical thinking. This research tries to examine critical thinking competencies in the AI era for students from various fields of study. The purpose of this study is to determine the positive and significant relationship between digital literacy, the role of parents, and the role of peers on students' critical thinking skills in the AI era. This study is a quantitative research with a correlational design. The sample used was 302 students of various study programs who were randomly selected from universities throughout Central Java. The data collection method used in this study is a survey using a questionnaire. The data analysis tool uses spss 26. The results of the study show that digital literacy and the role of parents have a positive and significant influence on critical thinking skills in the AI era. Peers have no effect on critical thinking skills in the AI era.

Keywords: *Critical Thinking, Digital Literacy, Parental Roles, Peers*

INTRODUCTION

The 21st century as part of the information and knowledge era has been and is undergoing a great transformation influenced by four major interrelated forces, namely the advancement of science and technology, demographic change, globalization and the environment (Lusoli, 2020). The labor market is now oriented towards quality human resources in accordance with technological developments. Educational institutions are one of the parties that are obliged to produce graduates in accordance with market demand. The complexity of change has influenced the need for new skills that must be possessed by students, one of which is critical thinking (Mujanah & Sumiati, 2020). Critical thinking is an organized mental process that plays a role in decision-making to solve various problems.

Critical thinking greatly affects a person's future (Butler et al., 2017). Building students' critical thinking in learning can improve learning achievement (Jacob, 2012; Nur'azizah et al., 2021; Taghva et al., 2014), writing skills, problem-solving skills (Han et al., 2019; Utami et al., 2019), quality of decision-making (Turan et al., 2019), Strategy in Decision Making (Helsdingen et al., 2010) and the ability to observe and analyze. Critical thinking is essential in the learning process (Bankole, 2012). This is in line with the statement of (D'Alessio et al., 2019) that critical thinking has a positive impact on students' academic performance. Students who have high critical thinking will be accompanied by qualified academic achievements.

The results of research on critical thinking skills in several regions of Indonesia, such as East Java (Nisa et al., 2020), Yogyakarta (Arti & Ikhsan, 2020), and Central Java (Saputri et al., 2019) still relatively low. This phenomenon is observed not only in Indonesia but also in other countries such as California. According to Halpern et al. (Halpern et al., 2012), students' critical thinking skills in southern California are relatively low, because that learning has not facilitated students to practice critical thinking (Suryani et al., 2020) and the learning methods used by educators have not been able to actively involve students in the learning process (Fuad et al., 2017).

Critical thinking skills will develop well if educators facilitate and encourage students' thinking potential (Wardani et al., 2017). One of the efforts to encourage this is to provide flexibility in technological exploration in the learning process that leads to a positive impact. Artificial intelligence, or AI, is a trending technology today. This technology is very sophisticated and able to answer various questions that humans input into the system. In addition, this technology helps save work time and ease the burden on the mind because just by typing commands in AI, the task will be done automatically by AI. The integration of AI in learning is still debated, because although AI is beneficial for human work, especially for academics. However, AI also poses challenges such as ethical issues related to data privacy and the risk of widening education gaps (Marzuki et al., 2023; Nguyen et al., 2023). The existence of AI is a coin that has 2 sides. On the one hand, AI will be very helpful for academics to be able to think critically because all questions in their minds can be answered so that they can increase their knowledge. However, on the other hand, it can encourage laziness in thinking by academics because they have been spoiled by technology. Therefore, the use of AI in education must be approached with caution to ensure it supports rather than diminishes critical thinking skills. Overreliance on AI to solve problems or generate content can lead to passive learning approaches, which are counterproductive to the goal of developing active and critical learners. The design and implementation of AI tools is crucial in this regard. They should be designed to encourage not only memorization learning or basic comprehension but critical inquiry, debate, and evaluation.

However, the reality is that critical thinking skills oriented to educational technology have not been a priority skill taught in schools. A mini-study on 21st century skills in Asia and Africa by the Global Partnership for Education (GPE Secretariat, 2020) shows that important skills in the 21st century need to be integrated into the educational curriculum. 21st century learning in an effort to improve critical thinking is aimed at building students' digital literacy. Digital literacy is starting to receive a lot of attention because it is the main skill needed by students today. Digital literacy provides possibilities for students to be able to process and understand diverse information to be critically analyzed. Literacy is able to provide psychological influence for individuals, motivation, and increase student achievement (Akhyar et al., 2021).

Digital literacy is important to be developed, especially by educators, as well as parents. Both teachers and parents can create a learning habit that makes it a habit. Parents become facilitators in

learning by providing technological assistance/support and educating their children. Parents are role models for children in any situation, especially in the use of technology. Parents are always guides for their children; In this context, parents can guide their children in using technology by providing suggestions on what technology devices should be learned and operated by their children (Akhyar et al., 2021).

Then another external factor that affects critical thinking is the role of peers. Peers have an impact on changing the behavior of each individual (Kurniawan et al., 2016); critical thinking occurs when individuals are able to understand the arguments expressed by others and are able to assess, construct, and defend their arguments with sincere conviction.

This research focuses on the student population segment in higher education who will soon enter the world of work, so they need skills that are in accordance with the needs of the labor industry. The main problem of this research is formulated in three questions, that is 1) Does Digital Literacy Affect Critical Thinking? 2) Does the role of parents affect critical thinking? 3) Does the role of peers affect critical thinking?

METHOD

This type of research is quantitative with a correlational research design. This study aims to determine the positive and significant relationship between digital literacy, the role of parents, and peers on the critical thinking of university students throughout Central Java. The sample was taken by proportional random sampling, namely the sample was taken randomly regardless of the level with a sample of 302 students. The research instrument used a questionnaire with a linkert scale of 1 to 5. The test used in this study is a multiple linear regression test to determine the correlation between variables which includes the t-test (partial correlation) and the determination coefficient test.

The data analysis tool used is SPSS 26. In detail, the relationship between the independent variable and the bound variable can be presented through the following figure.

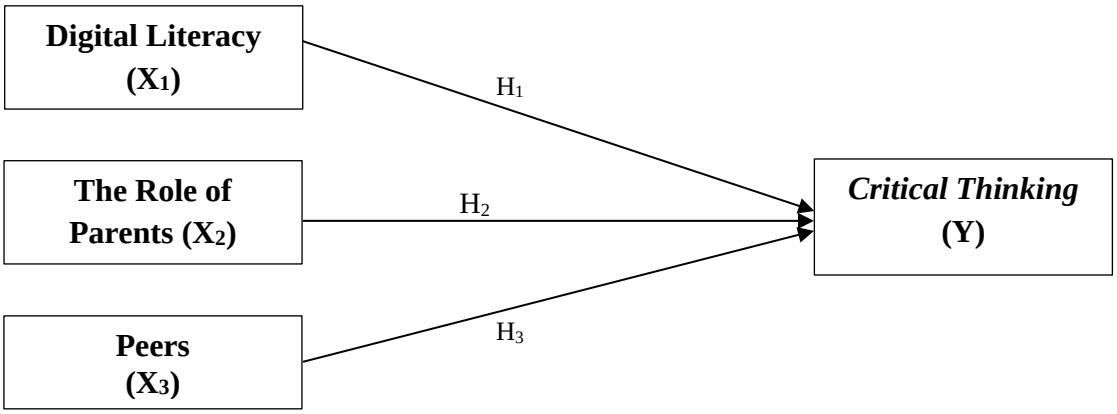

Figure 1. Thinking Framework

RESULTS AND DISCUSSION

RESULTS

Individual Parameter Significance Test (t-Test)

The purpose of the t-test in this study is to find out whether or not there is an influence of each dependent variable and independent variable. The individual parameter significance test, or t-test, in linear regression, is used to determine whether each regression coefficient in the model is statistically significant in predicting dependent variables. The process begins by compiling a hypothesis of the calculated t-value by dividing the estimated regression coefficient by the standard error. The value of t is compared to the critical value t of the distribution table of t with the appropriate degree of freedom. If the calculated t-value is greater than the critical t-value or if the p-value is less than the significance level (e.g. 0.05), then the null hypothesis is rejected, indicating that the regression coefficient is statistically significant. Based on calculations with IBM SPSS *Statistic* 26, the results in Table 3.1 are obtained as follows.

Table 3.1 Test Results

Coefficients[a,b]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	33,742	,967		34,881	,000
	x1	,597	,089	,661	6,733	,000
	x2	,413	,167	,394	2,473	,014
	x3	,065	,205	,062	,318	,751

In Table 3.1, the first hypothesis shows that *the t-score* is 6.733 > the t-table is 1.649, with a significance level of 0.000 < 0.05. It can be interpreted that the first hypothesis is accepted, which means that the digital literacy variable (X_1) has a significant correlation with critical thinking skills in the AI era (Y). The second hypothesis suggests that the t-score is 2.473 > the t-table is 1.649, with a significance level of 0.014 < 0.05. Therefore, it can be concluded that the second hypothesis is accepted, which means that the parental role variable (X_2) has a significant correlation with critical thinking skills in the AI era (Y). The third hypothesis shows that *the t-score* is 0.318 < the t-table is 1.649, with the significance level being 0.751 > 0.05. It can be interpreted that the third hypothesis is rejected, which means that the peer variable (X3) does not have a significant correlation with critical thinking skills in the AI era (Y).

Simultaneous Determination Coefficient Test (R^2)

The determination coefficient is used to measure how much the regression model is able to explain the variation in the dependent variable (critical thinking skills in the AI era) with independent variables

(digital literacy, parental roles, peers). The results of the simultaneous determination test in this study are presented in the following Table 3.2.

Table 3.2 R^2 Test Results

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of theEstimate
1	,825[a]	,681	,677	1,237

Based on Table 3.2, it shows that the results of the calculation of the determination coefficient value at the Adjusted *R Square value* are 0.677. These results can be interpreted as a total of 67.7% of critical thinking skills variables in the AI era are able to provide explanations of digital literacy variables, the role of parents, and peers. While the remaining 32.3% is explained by other factors that are not discussed in this study.

DISCUSSION

The Influence of Digital Literacy on Critical Thinking Skills in the AI Era

Based on the results of the t-test in Table 3.1, digital literacy shows that the results of the t-test count is 6.733 and the t-table is 1.649 so that the t-count is > the table. Then the significance value obtained in this t-test is 0.00 less than the alpha value of 0.05. The coefficient value of the digital literacy variable is positive. This shows that digital literacy has a positive effect on critical thinking skills in the AI era and it can be concluded that the hypothesis is **accepted**.

The results of the data findings show that digital literacy affects the level of critical thinking of students. Digital literacy is the ability to operate technology and information using technological devices effectively and efficiently to facilitate daily tasks. Digital literacy enriches students' knowledge because it motivates students to seek information from many references. Students become more skilled at selecting references and filtering information, allowing lecturers to rearrange those knowledge and skills to be used more creatively with fun on campus (McDougall et al., 2018). The process of searching, selecting, and rearranging information collected from the Internet can train students to analyze information, especially to know which information is valid based on their needs. The habit of analyzing something when learning makes students think critically. Some of the factors that contribute to students' critical thinking skills include habit formation, problem-based learning (Aini et al., 2019), learning media, and technology-based curriculum (Terblanche & de Clercq, 2020).

The influence of the role of parents on critical thinking skills in the AI era

Based on the results of the t-test in Table 3.1, the role of parents shows that the results of the t-test count is 2.473 and the t-table is 1.649 so that the t-count is > the table. Then the significance value obtained of 0.01 is less than the alpha value of 0.05. The coefficient value of the parental role variable was positive. This shows that the role of parents has a positive effect on critical thinking skills in the AI

era and it can be concluded that the hypothesis is **accepted**.

Based on the findings of the research and data analysis, it is proven that the role of variable parents has a positive and significant correlation with students' critical thinking. Parental involvement is very important for a person in various aspects, one of which is education (Sujarwo et al., 2021). The attention and concern of parents at home affects the way children think and learn, especially in this era of online learning at home. The role of parents in Indonesia during online learning is to be facilitators in learning, assistants in learning, motivators in learning and supervisors in learning. Parents are role models for their children both for their attitudes and the way they use technology. Parents will always be directors for their children; in this case, they can control what information content their children will learn and what applications their children can operate (Asmawati, 2021). Parents play an important role in managing their children's education; They must ensure that their children follow the right steps in education. In addition, parents also play an important role in children's growth. Children need guidance from parents in understanding the digital world so they will have plenty of resources to learn. Parental guidance will make children critical in responding to arguments; Students can evaluate their claims.

The influence of peers on critical thinking skills in the AI era

Based on the results of the t-test in Table 3.1, peers showed that the results of the t-test were calculated at 0.318 and the t-table was 1.649 so that the t-count was < the table. Then the significance value obtained in this t-test is 0.751 more than the alpha value of 0.05. The coefficient value of the peer variable is positive. This shows that peers have no effect on critical thinking skills in the AI era and it can be concluded that the hypothesis is **rejected**.

The role of peers is an equally important factor but often goes unnoticed by parents and teachers. Peers in the school environment and in the residential environment can influence student behavior, students' perception of learning and the future, and most importantly, can influence critical thinking in looking at things. The role of peers does not always support students to be able to think critically, which has an impact on poor academic achievement. Peer relationships do not always motivate students to achieve achievements so that individuals are not able to think critically, because in this case the influence of peers is only in friendships, not in matters related to academics on campus.

In addition, peer pressure to achieve success or to stay competitive in a competitive academic environment can also encourage students to take shortcuts, including using shortcuts in completing assignments using AI features. This will cause students to not have a critical character because they prefer to take instant shortcuts. Sometimes the feeling of wanting to be accepted and not wanting to look inferior among peers can be a strong motivation for some students to engage in cheating behavior. The importance of the role of peers in influencing academic behavior shows that efforts to prevent academic cheating not only need to be focused on individuals directly, but also take into account social dynamics within the academic environment. To form a culture of critical thinking, it is necessary to

build an academic culture that emphasizes integrity and values openness and hard work can help reduce peer pressure that encourages cheating behavior. We must use convenience in this era of artificial intelligence wisely. AI can be very helpful in many aspects of our lives, including education, but we must also be aware of its potential risks and need to use it wisely.

CONCLUSION

Based on the findings and data analysis, it can be concluded that digital literacy and the role of parents have a positive and significant influence on critical thinking skills in the AI era. Peers have no effect on critical thinking skills in the AI era. Digital literacy can be defined as the ability to select, decide, filter, and organize information collected from digital learning resources. The benefit of digital literacy for the development of students' critical thinking is that digital literacy forms students' habits to scan and analyze the information they need from various references. In addition, the way parents teach and guide their children in learning at home affects students' critical thinking skills. The role of parents and digital literacy influence students' critical thinking. It is important to note that developing students' digital literacy must be under parental supervision to develop students' critical thinking in order to succeed. Peers in the campus environment and in the residential environment can influence student behavior, student perception of learning and the future, and most importantly, can influence critical thinking in looking at things.

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