



Learning Independence and Learning Motivation as Determinants of Increasing Students' Critical Thinking Ability in 21st Century Learning

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Abstrak

Penelitian ini dilatarbelakangi oleh pentingnya kemampuan berpikir kritis. Tujuan penelitian ini adalah untuk menguji dan menganalisis kemandirian belajar dan motivasi belajar sebagai determinan peningkatan berpikir kritis mahasiswa di dalam pembelajaran abad 21. Penelitian ini menggunakan pendekatan kuantitatif dengan metode survey. Teknik pengambilan sample menggunakan purposive sampling sebanyak 100 orang mahasiswa. Instrumen yang digunakan adalah tes dan angket. Teknik analisis data yang digunakan adalah asumsi klasik, analisis korelasi, dan analisis regresi linear berganda meliputi pengujian hipotesis Uji T, Uji F dan Uji R². 1) Kemandirian belajar berpengaruh secara positif dan signifikan terhadap kemampuan berpikir kritis mahasiswa dalam pembelajaran abad 21, 2) Motivasi belajar berpengaruh secara positif dan signifikan terhadap kemampuan berpikir kritis mahasiswa dalam pembelajaran abad 21, dan 3) Kemandirian belajar dan motivasi belajar berpengaruh secara positif dan signifikan terhadap kemampuan berpikir kritis mahasiswa dalam pembelajaran abad 21. Temuan penelitian ini mengisyaratkan pentingnya kemandirian belajar dan motivasi belajar dalam meningkatkan kemampuan berpikir kritis mahasiswa.

Kata Kunci : *Kemandirian Belajar, Motivasi Belajar, Kemampuan Berpikir Kritis, Pembelajaran Abad 21*

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Abstract

This research is motivated by the importance of critical thinking skills. The purpose of this study was to examine and analyze learning independence and learning motivation as determinants of increasing students' critical thinking in 21st century learning. This study used a quantitative approach with a survey method. The sampling technique used purposive sampling of 100 students. The instruments used are tests and questionnaires. The data analysis technique used is the classical assumption, correlation analysis, and multiple linear regression analysis including hypothesis testing T test, F test and R2 test. 1) Learning independence has a positive and significant effect on students' critical thinking skills in 21st century learning, 2) Learning motivation has a positive and significant effect on students' critical thinking skills in 21st century learning, and 3) Learning independence and learning motivation have a positive effect and significant effect on students' critical thinking skills in 21st century learning. The findings of this study indicate the importance of independent learning and learning motivation in improving students' critical thinking skills.

Keywords : Learning Independence, Learning Motivation, Critical Thinking Ability, 21st Century Learning

Introduction

In essence, humans are living things that develop with knowledge, gradually humans continue to learn to create a life that is much better than before. Many theories have been and are currently being developed to explain the nature of learning. One of them is (Astawan, IG 2016) which basically states that learning is a process of change in everyone's mind and intellectual character. But in the process every certain period of time many learning changes occur until 21st century learning. The 21st century is characterized by the development of information digitally and massively connected to one another. In other words, the 21st century is the birth of the industrial revolution, especially the information industry (Syahputra, E. 2018). Because basically 21st century learning is the implication of the development of society from time to time. As it is known that society has developed from a primitive society to an agrarian society, then to an industrial society, and now it is shifting towards an informative society. An informative society is marked by the development of digitalization (Rahayu, R., Iskandar, S., & Abidin, Y. 2022). The digital

literacy criteria consist of four factors which contain 12 indicators, one of the factors is (Techataweewan & Prasertsin, 2018): Thinking skills consist of analysis, evaluation, and creativity.

According to Schrum, Davis, Lund & Jacobsen in the book (Tumanggor, M. 2021) learning in the 21st century is learning that produces critical thinking skills and problem solving, as well as information and communication skills. Critical thinking is reasonable thinking that is reflective, focused on decisions about what a person should do from a situation that has indicators of basic clarity, inference and interaction (Tumanggor, M. 2021). Schrum et al explained that the focus point of 21st century learning is critical thinking skills, but according to 2018 PISA data shows that Indonesia is in the low performance quadrant with high equity. Based on data from *the Program for International Student Assessment (PISA)* in 2012 which stated that Indonesia's literacy score was ranked 64 out of 65 countries with a score of 382. PISA stated that students in Indonesia could only reach level 1 and level 2 of 6 levels of questions. So PISA concludes that students' thinking skills in Indonesia are classified as

very low. However, it shows that the results of the 2018 PISA study released by the OECD show that Indonesian students' ability to read achieves an average score of 371, with an average OECD score of 487. Then for mathematics an average score reaches 379 with an average score -the OECD average is 487. Furthermore, for science, the average score of Indonesian students reaches 389 with the OECD average score of 489 (Lidiawati K, & Aurelia T (2023).

Indonesian students' mathematical abilities earned an average score of 386 in 2015. Indonesia rose by 51 points compared to the previous test in 2012, so this made Indonesia rank up. In terms of reading ability, in 2015 Indonesian students got an average score of 397 so that they only increased by 2 points in 2012. Furthermore, the science ability of Indonesian students in 2015 was 403 with an increase of 21 points compared to 2012 (Ministry of Education and Culture 2016).

From the results of the PISA study in 2018 it can be concluded that 21st century learning has not been able to maximize the quality of students' critical thinking. This also has an impact on students' critical thinking skills in Indonesia, supported by research (Sulaiman, 2020) which states that most students in Indonesia feel that the way they are taught at universities does not allow room for critical thinking (Arista, 2020).

Due to the limited space at the University for critical thinking, independent learning and learning motivation are important factors in improving critical thinking skills. Supported by (Asmar, A., & Delyana, H. 2020) which states that student learning independence with critical thinking skills has a positive relationship.

Independent learning (*self-directed learning*) is a process in which individuals learn without the help of other people supported by digital and cellular technology, or technology applications

developed to utilize the concept of independent learning (Jaelani, AJ 2022).

According to (Saputra, 2019) one way to encourage students to increase learning independence is to give students the opportunity to complete quality group assignments and encourage them to learn from each other and develop their own ideas. One of them is by utilizing computer technology.

According to research conducted (Prosperous 2021) it shows that 18.82% of students have low learning independence, in first year students of the Agricultural Social Economics Study Program, Indonesian Catholic University. This happened because students initially experienced difficulties in adapting to changes in study habits, limited learning resources in the network, and lack of interaction between students and lecturers. It can be concluded that low learning independence is an indicator that affects the low level of students' critical thinking skills.

Apart from learning independence, learning motivation is another factor that can affect the improvement of students' critical thinking skills. This is in line with research conducted by (Anita, 2015) which says there is a unidirectional influence between student learning motivation on students' mathematical critical thinking abilities.

Another fact that is the cause is the low motivation of student learning, students are less motivated to develop their abilities, especially in terms of solving given problems and in terms of improving their abilities, especially critical thinking. According to (Sahib, 2020) the factors that influence low motivation are economic factors, the low absorption factor of alumni in employment and the educational background factors of the majority of students from public schools.

Based on the background and previous studies that have been described by the author, the writer is interested in researching " Learning Independence and Learning Motivation as Determinants of Increasing Students' Critical Thinking Ability in 21st Century Learning ". The purpose of this study was to test and analyze independent learning and learning motivation as determinants of increasing students' critical thinking in 21st century learning. The findings and results of this study are expected to be able to provide insight and knowledge to all stakeholders about the importance of independent learning and learning motivation in improving thinking skills. student critical.

Method

This research uses a quantitative approach with a survey method. The research was conducted to examine the effect of independent learning (X1) and learning motivation (X2) on critical thinking (Y). The sampling technique used purposive sampling of 100 students. The instruments used are tests and questionnaires. Indicators of independent learning variables are 1) having a sense of responsibility, & not depending on other people, 2) having great curiosity, 3) having an attitude of self-confidence (Mummy, 2013). Variable indicators of learning motivation are 1) the desire and desire to succeed, 2) the drive and need for learning, 3) the hopes and aspirations of the future, 4) the existence of rewards in learning, and 5) the existence of interesting activities in learning (Uno, 2011). While the variable indicators of critical thinking skills are Basic Clarification, The Bases for a decision, Inference, Advanced Clarification, Supposition and integration (Alfaro-LeFevre, 2016).

The data analysis technique used is the classical assumption with the aim of understanding the data used beforehand is

in accordance with the requirements, correlation analysis is to find out how close the relationship between the independent variables and the dependent variable is. Furthermore, data analysis techniques to see the effect of independent learning and learning motivation on students' critical thinking skills using multiple linear regression analysis. Then using hypothesis testing T test, F test and R test ².

Results and Discussion

Results

Based on the results of processing the following data are presented descriptively:

Classic assumption test

Table 1. *Descriptive Statistics*

		Unstandardized Residual
N		36
Normal Parameters ^{a,b}	Mean	.0000000
	Std. Deviation	1.37400469
Most Extreme Differences	Absolute	.146
	Positive	.146
	Negative	-.118
Test Statistic		.146
Asymp. Sig. (2-tailed)		.549 ^c

Source: Data Processing, 2023

Based on table 4 above, it is known that the significance value of 0.549 is greater than 0.05. So from the table it can be concluded that the data is normally distributed.

Table 2. *Multicollinearity Test*

Model		Collinearity Statistics	
		Tolerance	VIF
1	(Constant)		
	<i>Kemandirian Belajar (X1)</i>	.833	1.201
	<i>Motivasi Belajar (X2)</i>	.653	1.533

Source: Data Processing, 2023

The results of testing the regression model for the accrual measure show no multicollinearity symptoms in the regression model. This means that all the independent variables are feasible to be used as predictors.

Table 3. *Autocorrelation Test*

Model	Durbin-Watson
1	2.033 ^a

Source: Data Processing, 2023

Value $d > d_U$ and value $(4-d) > d_U$. Therefore, it can be concluded that this study is free from autocorrelation assumptions.

Table 4. *Multiple Regression Analysis*

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.129	.507		5.404	.000
	Kemandirian Belajar (X1)	.928	.239	.249	3.451	.000
	Motivasi Belajar (X2)	.845	.139	.257	2.043	.015

Source: Data Processing, 2023

Based on Table 4 of the multiple linear regression analysis above, it can be seen that the regression equation model formula is as follows:

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	20.685	4	5.171	22.426	.000 ^b
	Residual	66.076	31	2.131		
	Total	86.761	35			

Source: Data Processing, 2023

Based on the results of SPSS processing, it can be seen that Fcount is 22.426 with a Ftable value of 2.6786671. This shows that the Fcount value is $22.426 > F_{table} 2.6786671$ while the significance value is $0.000 < 0.05$. So it can be concluded

that learning independence (X1), learning motivation (X2), influences simultaneously (together) towards critical thinking (Y).

Discussion**The Effect of Independent Learning on Students' Critical Thinking Ability in 21st Century Learning**

Based on the results of the partial test through multiple regression, Learning Independence (X1) has a significant positive effect on Students' Critical Thinking Ability in 21st Century Learning. This can be seen from the results of Tcount $3.451 > T_{table}$ value 2.03951 and a significance value of $0.000 < 0.05$; 2). This means that the higher the student's learning independence, the higher the student's critical thinking ability, conversely the lower the student's learning independence, the lower the student's critical thinking ability.

Learning independence certainly affects students' critical thinking skills. Independent learning involves the ability to identify, analyze, and solve problems independently. This process encourages students to think critically in facing academic challenges. By honing problem solving skills, students can develop better critical thinking skills (Janah, SR, Suyitno, H., & Rosyida, 2019).

Learning independence involves initiative and personal responsibility in managing the learning process. Independent students will tend to take an active role in finding information, analyzing content, and asking critical questions. This helps them develop critical thinking skills naturally (Kidjab, MR, Ismail, S., & Abdullah, 2019). Learning independence allows students to carry out a more in-depth evaluation of the information they encounter. They can develop critical habits of gathering evidence, evaluating arguments, and distinguishing between valid and invalid information. Learning independence encourages students to be

more critical of the resources and information they encounter (Asmar, A., & Delyana, 2020).

Independent learning also involves the ability to reflect on one's own learning process. Students are invited to consider effective learning strategies, identify their strengths and weaknesses, and ask critical questions about what they are learning. By doing this reflection, students can improve their overall critical thinking skills (Rachamatika et al, 2021). It is important for educational institutions and teaching staff to encourage and support student learning independence, because this can contribute significantly to the development of their critical thinking skills (Siagian, Marliani & Lubis, 2021).

The Effect of Learning Motivation on Students' Critical Thinking Ability in 21st Century Learning

Based on the results of the partial test through linear regression Learning Motivation (X2) has a significant positive effect on students in 21st Century Learning. This can be seen from $T_{count} 2.043 > T_{table}$ value 2.03951 and a significance value of $0.015 < 0.05$. This means that the higher the student's learning motivation, the higher the student's critical thinking ability, conversely the lower the student's learning motivation, the lower the student's critical thinking ability.

Learning motivation certainly influences students' critical thinking skills. High motivation encourages students to actively seek knowledge, seek information, and be involved in the learning process. Strong motivation to learn intrinsically (internal drive) will influence students' willingness to do critical thinking to gain a deeper understanding of the topic being studied (Anita, 2015).

Strong motivation will encourage students to think more deeply about the material being studied. Motivated students

tend to be more cognitively engaged and seek to fully understand content, relate concepts, and explore multiple perspectives. This can improve their critical thinking skills (Sulistianingsih, 2017).

High motivation also affects student persistence in facing academic challenges. Critical thinking skills often involve dealing with complexity and solving challenging problems. Students who have high motivation will be better able to overcome obstacles and continue to strive in critical thinking processes (Zanthy, 2016). In addition, strong motivation can promote the development of metacognitive skills, namely the ability to understand and regulate one's own thinking processes. Motivated students will be more inclined to monitor their understanding, reflect on the strategies used, and make adjustments if necessary. This allows them to engage themselves in more effective critical thinking (Safna, & Wulandari, 2022).

The Effect of Learning Independence and Learning Motivation on Students' Critical Thinking Ability in 21st Century Learning

Simultaneous test results stated that learning independence and learning motivation had a positive and significant effect on critical thinking skills together. With an F_{count} value of 22.426 with a F_{table} value of 2.6786671, a significance value of $0.000 < 0.05$. This means that the higher the learning independence and student learning motivation, the higher the students' critical thinking skills, conversely the lower the learning independence and student learning motivation, the lower the students' critical thinking skills.

The results of this study are consistent with the results of previous studies (Setiaji, Muktiningsih, S., & Farliana, 2021; Lidawa, UM, Rahman, MH, & Salim, A. 2021; Daulay, 2021; Sumartono, S., & Mardiana, 2022) which states that learning independence and learning motivation have a jointly and

significantly positive effect on critical thinking skills.

The combination of learning independence and high learning motivation can create an environment that supports the development of critical thinking skills. Teachers and educational institutions can encourage independent learning by providing opportunities to take initiative and manage their own learning. In addition, learning motivation can be increased by providing interesting challenges, providing constructive feedback, and creating an environment that supports student involvement (Lidawa, Rahman, & Salim, 2021).

Conclusion

Based on research problems, theoretical studies, research results, and discussion of learning independence and learning motivation as determinants of improving students' critical thinking skills in 21st century learning, it can be concluded as follows: 1) Learning independence has a positive and significant effect on students' critical thinking skills in 21st century learning, 2) Learning motivation has a positive and significant effect on students' critical thinking skills in 21st century learning, and 3) Learning independence and learning motivation have a positive and significant effect on students' critical thinking skills in 21st century learning.

Based on the conclusions about learning independence and learning motivation as determinants of increasing students' critical thinking skills in 21st century learning that have been explained by the authors above, the authors' recommendations are 1) **For educational institutions**, it is best to encourage students to be involved in teaching activities that involve collaboration and group discussion. In a mutually supportive environment, students can share thoughts, question

ideas, and gain different perspectives from their peers, 2) **For teaching staff**, it should be a good example of critical thinking. Show students how you analyze information, evaluate arguments, and look for evidence for or against ideas. Through good examples, students can learn how to apply critical thinking in problem solving, and 3) **For future researchers**, it is best to conduct research by adding other variables that are thought to influence critical thinking and add mediating or moderating variables that are thought to be able to strengthen or weaken this effect. roar.

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