

The Effect of Educators' Pedagogical Competence on the Critical Thinking Ability of Equivalency Education Learners

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Article info:

Submitted: February 12, 2024. Revised: April 13, 2024. Accepted: April 21, 2024.

Publish: May 10, 2024.

Abstract

In the 21st century, education is crucial for producing competent future generations, requiring competencies such as communication, collaboration, critical thinking, and creativity. The quality of the nation's next generation is directly proportional to their ability to survive in global competition. This study aimed to determine the effect of educators' pedagogical competence on the critical thinking skills of package C students at SKB Ungaran Semarang Regency. The quantitative research used the ex post facto method and involving 30 educators and students from package C SKB Ungaran Semarang Regency with saturated sampling techniques. The results showed a significant influence of pedagogical competence on critical thinking skills, with a coefficient of determination of 0.249, indicating that educators can positively influence students' critical thinking abilities by 24.9% meaning a positive influence on students in creating a competitive generation. The study highlights the importance of pedagogical competence in developing critical thinking skills in students and suggests that this research can serve as a reference for government and SKB managers in enhancing educators' competence.

Keywords: pedagogical competence, critical thinking skills, equivalency education

Recommended citation:

Novitasari, N. A. D., & Shofwan, I. (2024). The Effect of Educators' Pedagogical Competence on the Critical Thinking Ability of Equivalency Education Learners. *Edukasi*, 18(1), 36–44.

<https://doi.org/10.15294/edukasi.v18i1.7318>

INTRODUCTION

In the 21st century, education is crucial for producing competent future generations, requiring competencies such as communication, collaboration, critical thinking, and creativity (Rapti & Sapounidis, 2024). The quality of a nation's next generation directly correlates with its ability to survive in global competition (Alpizar et al., 2022; Ellerton, 2022; Nurhaningtyas et al., 2023). Indonesia ranks 107th out of 189 countries in the 2020 Human Development Index (HDI), with human resource development being relatively low compared to neighboring ASEAN countries like Singapore and Brunei Darussalam. This indicates that Indonesia is still far behind these countries in terms of human resource development (Taufan, 2021).

Education is crucial for individuals as it allows them to develop their potential and meet life's needs through structured learning processes regulated by government. Critical thinking is a key potential for producing quality human resources, which is possessed by every student in the education field (Setyoningsih, 2021; Suminar et al., 2021; Syafitri et al., 2021). Critical thinking involves analyzing statements and making conclusions about information that must be believed and done. It involves training cognitive abilities to explore problems and produce correct and accurate information, requiring skills to produce accurate and reliable information (Dwiyanto et al., 2024; Farkhatun, 2020; Liska et al., 2021; Sukma et al., 2022).

Based on the results of the 2018 Program for International Students Assessment (PISA) which were released on Tuesday, December 3, 2019. The results of the study ranked Indonesia's PISA ranking in 2018 at 74th with a score of 371 with a total of 79 countries participating (Tohir & Ibrahimy, 2020). In 2015, Indonesia ranked 62nd with a score of 397 with a total of 72 countries participating, while in 2012 Indonesia obtained a score of 396 (Darussyamsu et al., 2020; Nuriyah, 2023). The issues highlighted indicate that the educational objectives, particularly in teaching critical thinking skills, have not been effectively achieved. These skills enable students to analyze, assess, critique, ask questions, evaluate and reflect on the information they receive (Ridwan, 2021).

Critical thinking can help learners to be more creative in solving problems, encouraging them to look for new ways to solve problems (Jiang, 2022; Rosy, 2023; Sholikah, 2023). However, the current reality of educational activities, mostly centered on educators or teacher center as a provider of information (Muarifuddin et al., 2024; Timotius, 2023). As educators only concentrate on book guidelines, they give learners less thinking space to solve problems during the learning process (Priyanto, 2021). There are still many educators who are not right in determining the learning model that is by the material so students find it difficult to understand the material (Hidayat, 2023; Rahmawati et al., 2022; Shofwan et al., 2023). This results in not maximizing the results obtained, starting from daily tests, understanding the material, and the number of students who score below the average.

At SKB Ungaran City, students exhibit low responsiveness and critical thinking abilities, lack curiosity and are passive to their surroundings. These issues hinder the achievement of education's main objectives. To create a positive classroom atmosphere, mastering competencies that support critical thinking is crucial. Failure to address these issues will hinder the achievement of these objectives.

One of the four competencies that a teacher must have is pedagogical competence (Cahyana, 2024; Yulyani et al., 2020). The ability, expertise, or skill to convey knowledge, teach, and guide students in the teaching and learning process is known as the pedagogical competence of educators (González et al., 2024; Herut, 2024; Kärkkäinen et al., 2023; Schmitz et al., 2024). The ability of educators to identify the behavior and character of students, understand, apply the curriculum, explain in class, and evaluate learning to realize the various potentials possessed by students, starting from early critical thinking skills (Restu et al., 2021; Syarifuddin, 2020).

Educative learning supported by an understanding of learner psychology requires skills from pedagogical competence (Setyawan, 2021; Shofwan et al., 2022). Pedagogical knowledge, emotional intelligence, reflective ability, and ways of communicating with educators can be used to implement pedagogical competence (Susanto et al., 2020).

Educators' pedagogical competence plays an important role in shaping students' critical thinking skills in the context of equivalency education. Educators who have strong pedagogical competence will be better able to foster critical thinking skills in their students (Sinaga, 2022). As the main controller, educators must be able to master pedagogical competencies that are available in other supporting fields. Educators must also have soft skills and hard skills that help educators in directing the class (Herwina et al., 2020). Therefore, it is hoped that educators can function as examples that can have a positive influence on students and can create a competitive generation of nations.

Based on the findings of previous research, which was able to determine the impact of Educators' Pedagogical Competence on Critical Thinking Ability in students. This means that the higher the pedagogical competence of educators, the greater the critical thinking skills possessed by students (Sum & Taran, 2020). The magnitude of the influence of pedagogical competence on critical thinking skills is 82.3% (Nuzulaeni, 2022). Therefore, learning must have pedagogical competence in order to foster critical thinking skills and, educators can have a positive influence on students in creating a competitive generation.

METHOD

This study uses quantitative research methods with ex post facto research design. The population used in the pedagogical competence variable is educators in equivalency education as many as 30 people, while the population used in the critical thinking ability variable is 75 students who take part in equivalency education at the Ungaran Learning Activity Center. The samples used in this study were educators and package C students, each of which amounted to 30 people, using the sampling technique is Saturated Sampling. The independent variable in this study is pedagogical competence while the dependent variable is the ability to think critically.

The data collection method in this study used a questionnaire. Previously, the questionnaire had been tested for data validity using the validity test and expert reliability test to determine the feasibility of the assessment sheet in showing the feasibility level of the instrument to be used in the study using the help of SPSS (Statistical Program for Social Science) v.23 for Windows software. Based on the results of the validity test and reliability test, it is stated that the instrument to be used in this study is valid and feasible.

The questionnaire in this study consisted of 40 questions using a five-option Likert scale, namely: Always (SL) = 5, Often (SR) = 4, Sometimes (KD) = 3, Rarely (JR) = 2, and Never (TD) = 1. To be distributed in the form of a Google form to facilitate the process of filling out the questionnaire. The results of the data that has been distributed will be analyzed using a simple linear regression test to determine the effect of pedagogical competence on the critical thinking skills of students pursuing package C. The questionnaire grid statements are outlined in Tables 1 and 2.

Table 1. Pedagogical Competence Grid (Herbert, 2002)

Indicator
1. Recognition ability learner characteristics
2. Learner comprehension ability
3. Ability to implement the curriculum
4. Learning implementation
5. Learning evaluation

Table 2. Critical Thinking Ability Grid (Ennis, 1991)

Indicator
1. Focus (attention on one goal)
2. Reason (able to give an opinion)
3. Inference (thinking logically)
4. Situation (being able to use the subject matter for problem-solving)
5. Clarity (able to explain correctly)
6. Overtime (rechecking)

RESULTS AND DISCUSSION

This research was conducted at SKB Ungaran, Semarang Regency. In this study, the independent variable (X) is the pedagogical competence of educators and the dependent variable (Y) is the critical thinking ability of students. This study uses simple linear regression data analysis to determine how much influence the independent variable, namely the pedagogical competence of educators (X) on the dependent variable, namely the critical thinking skills of students (Y). The results of the simple linear regression analysis test in this study are as follows:

Table 3. Simple Linear Regression Test Results
Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	68.865	21.667		3.178	.004
Pedagogical Competence	.491	.161	.499	3.045	.005

a. Dependent Variable: Critical Thinking Ability

Based on Table 3, the simple linear regression test results produce a simple linear regression test equation as follows:

$$Y = a + bX$$

$$Y = 68,865 + 0,491$$

Based on the above formula equation, it can be concluded as follows:

1. Constant (a) = 68.865
If the pedagogical competence variable (X) is considered equal to 0, the critical thinking ability variable (Y) has a value of 68.865.
2. Coefficient X = 0.491
If the pedagogical competence variable (X) increases by 1 point or 1%, it causes an increase in critical thinking ability (Y) by 0.491.

Table 4. Partial Test (T Test)
Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	68.865	21.667		3.178	.004
Pedagogical Competence	.491	.161	.499	3.045	.005

a. Dependent Variable: Critical Thinking Ability

Partial test (t-test) shows how far the influence of an independent variable (independent) individually explains the variation in the dependent variable (dependent). Partial test results (t test) using the help of SPSS (Statistical Program for Social Science) v.23 for Windows software.

Based on Table 4, the partial test results (t test) on the pedagogical competence variable obtained t count 3.045 > 1.697 with a significance value of 0.005 < 0.05, so Ho is rejected and Ha states that there is an influence between Pedagogical Competence on Critical Thinking Ability is accepted. To determine the t table using the calculation of t table = ($\alpha / 2$: n - k (independent variables) - 1) after the results appear the results are sought using the t table.

Based on this research from the answers of existing respondents collected as many as 30 samples of respondents consisting of each variable, the pedagogical competence variable has a t value obtained, namely t count $3.045 > 1.697$ with a significance value of $0.005 < 0.05$, which can be concluded that pedagogical competence has a significant effect on the critical thinking ability variable. That is, in this study H_a is accepted. Based on the results of simple linear regression analysis, the equation $Y = 68.865 + 0.491$ explains that the pedagogical competence of educators has a significant effect on the critical thinking skills of package C students at SKB Ungaran. Through this equation, a constant value of 68.865 is obtained, which means that if the pedagogical competence is worth 0, the result of critical thinking ability is worth 68.865.

In theory, the pedagogical competence of educators affects the critical thinking skills of students by increasing the soft and hard skills of educators which will have an impact on the ability of students to think critically (Abbassyakhrin et al., 2024; Adelani Adewusi et al., 2023; Apriliani et al., 2023). The results of descriptive analysis of pedagogical competence variables show that the highest value is allowed at a moderate frequency of 60% and is in the 55-69 interval category. This explains that pedagogical competence is in the medium category so that it can be concluded that the ability to think critically in students is very important. There are three frequencies, namely in the high category with a percentage of 37%, a frequency of 11 people in the interval 70-84%, while a small percentage is in the low frequency with a percentage of 3%, a frequency of 1 person, in the interval 40-54. This study also emphasizes that the effect of pedagogical competence scores on students' critical thinking skills is very high (Nurhayati et al., 2023; Nuzulaeni, 2022).

Table 5. Simultaneous Test Results (F Test)

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1712.515	1	1712.515	9.270	.005 ^b
	Residuals	5172.685	28	184.739		
	Total	6885.200	29			

a. Dependent Variable: Critical Thinking Ability

b. Predictors: (Constant), Pedagogical Competence

This simultaneous test or F test is used to determine the influence between the independent variable, namely pedagogical competence with the dependent variable, namely the ability to think critically. This research was carried out simultaneous test calculations using the help of SPSS (Statistical Program for Social Science) v.23 for Windows software by looking at the results of the significance value. If the significance value or sig. < 0.05 or F count $> F$ table then the alternative hypothesis (H_a) is accepted, whereas if the sig value. > 0.05 or F count $< F$ table then the alternative hypothesis (H_a) is rejected.

Based on Table 5, the results of the simultaneous test (F test) obtained the calculated F value of $9.270 > 4.18$ with a sig value. $0.005 < 0.05$ so that the alternative hypothesis (H_a) which states that pedagogical competence has a positive and significant impact on critical thinking skills can be accepted. This means that the pedagogical competence of educators can improve the critical thinking skills of package C students.

Table 6. Results of the Determinant Coefficient (R Square)

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.499 ^a	.249	.222	13.592

a. Predictors: (Constant), Pedagogical Competence

The following are the research results from the calculation of the coefficient of determination (R Square) in tabular form using the help of SPSS (Statistical Program for Social Science) v.23 for Windows software. Model Summary R Square is a coefficient of determination which has the aim of measuring the percentage of the influence of the variables studied in the regression model.

Based on table 6, the results of the coefficient of determination test (R Square) show that the coefficient of determination in this study is 0.249 or equal to 24.9%. This figure shows that the pedagogical competence variable (X) as an independent variable affects the critical thinking ability variable (Y) as the dependent variable, while the remaining 75.1% is influenced by other variables not examined in this study. Pedagogical competence has a t value of 3.045 > t table 1.697 with a sig value. $0.005 < 0.05$ so it can be stated that the pedagogical competence of educators has a positive effect on the critical thinking skills of package C students at SKB Ungaran.

Previous findings state that pedagogical competence has a very important influence and contribution in developing students' abilities (Ammar et al., 2024; Falloon, 2024; Wahyunningsih, 2021). It is directly proportional to the findings of other studies which show the results that there is a positive influence of educators' pedagogical competence on students' critical thinking skills. This can be shown from the results of t count 3.739 > t table 1.66 and sig value. $0,000 < 0,05$ (Maulidah et al., 2021). Therefore, educators must continue to develop and improve their pedagogical competence abilities with ongoing updates so that students can have and apply critical thinking skills in future life.

CONCLUSION

The study found that pedagogical competence significantly influences the critical thinking skills of package C students. The higher the pedagogical competence of educators, the higher the students' critical thinking skills. The percentage of educators' pedagogical competence influencing students' critical thinking skills is 24.9%. This suggests that pedagogical competence is crucial for the development of critical thinking skills in students. The research can serve as a reference for governments and SKB managers in improving the pedagogical competence of educators the ability, expertise, or skill to convey knowledge, teach, and guide students in the teaching and learning process.

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