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The Effectiveness of Problem-Based Learning Method Towards Student's Critical Thinking Skills in Argumentative Essay Writing

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Abstrak

Penelitian ini bertujuan untuk menyelidiki keefektifan Problem-Based Learning (PBL) terhadap keterampilan Berpikir Kritis serta kemampuan Menulis Esai Argumentatif siswa. Hal ini didasarkan pada analisis data yang dikumpulkan dari siswa yang berkaitan dengan pengajaran menulis. Penelitian ini menggunakan metodologi kuantitatif. Instrumen yang digunakan untuk mengumpulkan data adalah tes. Tes digunakan untuk mengetahui kompetensi siswa sebelum dan sesudah penelitian dilaksanakan. Siswa menerima dua jenis tes, pra-dan pasca-tes. Hasil penelitian menunjukkan bahwa penggunaan metode Problem-Based Learning (PBL) dalam pengajaran menulis mempunyai dampak yang signifikan terhadap Berpikir Kritis dan Menulis Esai Argumentatif siswa. Korelasi antara keterampilan Berpikir Kritis dan penulisan esai argumentatif menunjukkan bahwa kedua variabel tersebut berhubungan secara positif dan signifikan. Artinya semakin tinggi kemampuan berpikir kritis siswa, maka ia akan semakin baik dalam menulis Esai argumentatif.

Kata Kunci: *Argumentatif Esai, Keterampilan Berfikir Kritis, Problem-Based Learning (PBL)*

Abstract

This research aim on investigating the effectiveness of Problem-Based Learning towards students' Critical Thinking skills of Argumentative Essay Writing ability. It is based on analysis of data collected from students related to teaching writing. The research used a quantitative methodology. The instrument used to collect data was a test. The test was used to know students' competences before and after the research was carried out. Students receive two types of tests, pre-and post-test. The results showed that by using Problem-Based Learning methods in teaching writing have significant impact on students' Critical Thinking and Argumentative Essay writing. The correlation between Critical Thinking skills and the writing of argumentative essays has shown that the two variables are positively and significantly related. This means that the higher the student's critical thinking, the better he can write an argumentative essay.

Keywords: *Argumentative Writing, Critical Thinking, Problem-Based Learning*

INTRODUCTION

Critical thinking is an essential skill of life, and current literature suggests that explicit teaching and practice overcritical thinking strategies in high school classrooms can improve students' academic achievement (Bray et al., 2023; O'Connor et al., 2019). Developing a critical thinking strategy will prepare students for university rigors and help them develop the skills they need to compete economically in a global environment. Critical thinking is the ability to analyze and evaluate information (Putri & Putri, 2020; Saha, 2023). Thus, critical thinking is important for the writer. If critical thinkers face these issues, they will not only receive and analyze the message first. Critical thinking is closely linked to the way writers present their perceptions and arguments about certain questions. An argumentative essay requires the writer to develop arguments by conducting research into the subject, collecting and selecting and then presenting the position of the writer towards the subject (Mogale & Malatji, 2022); (Ma & Li, 2022).

In this research, researchers will combine critical thinking skills and problem-based learning (PBL). Problem-based learning (PBL) is a method of teaching that uses complex real-world problems as a means of promoting student knowledge of concepts and principles rather than direct presentation of facts and concepts (Ardiyanti et al., 2021); (Abdurahman et al., 2023). In addition to the contents of the courses, the Problem-based learning PBL can promote the development of critical thinking skills, problem-solving skills and communication skills. It also provides opportunities for working in groups, finding and evaluating research materials, and continuing learning (Allen et al., 1996); (Indah Sari et al., 2020).

The problem will be discussed here through argumentative essay writing. Argumentative essay is a type of writing in which students must study a subject, produce and evaluate evidence, and present a concise position on the subject (Mustafa, 2022) (Ma & Li, 2022). Research into argumentative writing is really necessary in all aspects of life, including education. Therefore, if there is a problem and some advantages and disadvantages, you need to use good and appropriate argument concepts so that you can understand the objective of your thought clearly (Judijanto et al., 2022; Putri & Putri, 2020).

Based on the above problem, the researcher is interested in examining the title because students lack critical thinking skills when writing through Problem-based learning (PBL). Students can write based on detailed observations and evaluations in all respects. So, this research aim on investigating the effectiveness of Problem-Based Learning towards students' Critical Thinking skills of Argumentative Essay Writing ability.

RESEARCH METHOD

In this research, the researchers divided the object into two groups: one is the experimental class, which uses problem-based learning methods in argumentative essay writing, and the other is the control group, which uses conventional methods (Akinwamide & Oguntade, 2023). Both classes use pre-treatment writing tests to measure students' critical thinking abilities and use post-treatment writing tests to know the results of treatment using each of the methods as arguments as a strategy. The treatment results are compared between the pre-and post-test scores and the final results.

The data collection is the identification and selection of a group of subjects for study, the recognition of the consent of the subject to be studied, and the collection of data through questions and observation of their behavior (Febriani et al., 2023). The researchers used writing tests and documentation as the data collection method of the study, which explained below.

1. Pre-test

The researchers conducted a pre-test to collect data in both classes. It is subjected to tests with students before treatment, and pre-tests are used to determine students' understanding of the writing of argumentative essays. This test included writing tests.

2. Treatment

The researchers uses Problem-Based Learning (PBL) methods to teach students in experimental groups and gives treatments previously used by control groups (De Graaff & Kolmos, 2003).

3. Post-test

After following the treatment, the students receive a post-test to complete. The test is similar to the pre-test. After this post-test treatment, the researchers observed improvements in the student's treatment.

To acquire the data the research began by conducting the test which included a pre-test and a post-test. These tests are including writing test that contains some aspects to be able to prove students' critical thinking skills in argumentative essay writing, those include as follows:

Table 1. Instrument and Achievement of the Research

Achievement	Kind of Test	Instrument
Able to explain the students' opinion clearly with relevant argument and accurate evidence.	Written test	Asking students opinion about the TV channels that cut the news program and replace it with tv shows.

Table 2. Holistic Scoring Rubric of Critical Thinking

4	Strong	<p>Consistently does all or almost all of the following:</p> <ul style="list-style-type: none"> • Accurately interprets evidence, statements, graphics, questions, etc. • Identifies the most important arguments (reasons and claims) pro and con. • Thoughtfully analyzes and evaluates major alternative points of view. • Draws warranted judicious, non-fallacious conclusions. • Justifies key results and procedures, explains assumptions and reasons. • Fair-mindedly follows where evidence and reasons lead
3	Acceptable	<p>Does most or many of the following:</p> <ul style="list-style-type: none"> • Accurately interprets evidence, statements, graphics, questions, etc. • Identifies relevant arguments (reasons and claims) pro and con. • Offers analyses and evaluations of obvious alternative points of view. • Draws warranted non-fallacious conclusions. • Justifies some results or procedures, explains reasons. • Fair-mindedly follows where evidence and reasons lead.
2	Unacceptable	<p>Does most or many of the following:</p> <ul style="list-style-type: none"> • Misinterprets evidence, statements, graphics, questions, etc. • Fails to identify strong, relevant counter-arguments. • Ignores or superficially evaluates obvious alternative points of view. • Draws unwarranted or fallacious conclusions. • Justifies few results or procedures, seldom explains reasons. • Regardless of the evidence or reasons, maintains or defends views

based on self-interest or preconceptions.

- 1 Significantly weak Consistently does all or almost all of the following:
- Offers biased interpretations of evidence, statements, graphics, questions, information, or the points of view of others.
 - Fails to identify or hastily dismisses strong, relevant counter-arguments.
 - Ignores or superficially evaluates obvious alternative points of view.
 - Argues using fallacious or irrelevant reasons, and unwarranted claims.
 - Does not justify results or procedures, nor explain reasons. Regardless of the evidence or reasons, maintains or defends views based on self-interest or preconceptions.
 - Exhibits close-mindedness or hostility to reason.
-

Table 3. Range of the qualities

Test Scores	Probably Class Performance
80 – 100	Good to Excellent
60 – 79	Average to Good
50 – 59	Poor to Average
0 – 49	Poor

The result of experiments and control groups is compared to determine the difference in learning results between the two groups, and all results are calculated using manual calculation.

RESULT AND DISCUSSION

The results of the statistical analysis and the pre-and post-test results were included in the data. The pre-test was designed to determine the student's critical thinking ability in writing argumentative essays prior to treatment, while the post-test was designed to determine whether the student's critical thinking ability in writing argumentative essays improved after treatment, which was a problem-based learning method.

Table 4. The Classification of Pre-test and Post-test Score in Experimental group

No	Nama	Critical Thinking		Argumentative Essay Writing	
		Pre-test	Pre test	Pre test	Pos test
1	Zuni	58	50	50	86
2	Via	67	62	62	95
3	Shofi	52	52	52	81
4	Sherly	72	67	67	90
5	Richatus	62	57	57	82
6	Putri	50	50	50	92
7	Nur	52	52	52	85
8	Abidatul	65	60	60	79
9	Alfiyah	72	62	62	93
10	Ade	52	52	52	87
11	Alya	65	60	60	97
12	Amanda	58	53	53	90
13	Aula	75	70	70	85
14	Bella	58	53	53	85
15	Darrotun	63	58	58	89
16	Ilzam	52	52	52	75
17	Indah	76	71	71	87
18	Ihsan	75	50	50	85
19	Isma	52	52	52	87
20	Marzuqotul	65	60	60	72
Total		1241	1143	1143	1722
Mean		62,05	57,15	57,15	86,1
Maximum		76	95	71	97
Minimum		50	63	50	72
St. Deviation		16,1	19,4	14,1	5,44

The description in the table above shows that of the 20 students (N) who conducted the preliminary test using the critical thinking scoring scale in the experimental group, the average score 62,05 is the lowest or lowest score of 50 (poor to average), the highest or highest score of 76 (average to good) and the highest score of 90 (good to excellent), while the post-test score of 80,85 is the lowest or lowest score of 63 (poor on average).

According to the above table description, from 20 students(N), based on argumentative essay writing, the score in the experimental group is 50% (good to average),

with an average score of 57,15, and a maximum score of 71 (good to good), compared to the average score in the post-test of 86,1, with a minimum score of 72 (good to good), and a maximum score of 97 (good to excellent), i.e. after the researcher is treating using Problem-based learning.

Table 5. The Classification of Pre-test and Post-test Score in Control group

No	Nama	Critical Thinking		Argumentative Essay Writing	
		Pre test	Post-test	Pre test	Post-test
1	Afandi	65	75	50	62
2	Ahmad	64	63	51	61
3	Syafiul	65	69	60	64
4	Badri	62	72	57	67
5	Dina	68	72	63	67
6	Elin	63	74	58	69
7	Fery	78	80	73	75
8	Hani	55	64	50	59
9	Logistasany	62	84	57	79
10	Alif	75	78	70	73
11	Nayla	72	75	67	70
12	Nazhril	67	76	62	71
13	Nikmatus	56	58	51	53
14	Okky	70	85	65	79
15	Rofiah	62	70	57	65
16	Lukman	60	65	55	60
17	Sayla	58	60	53	62
18	Widyawati	74	74	69	69
19	Zunita	70	70	65	65
20	Ibrahim	80	90	75	85
Total		1326	1454	1208	1355
Mean		66,3	72,7	60,4	67,75
Maximum		80	90	75	85
Minimum		55	58	50	53
St. Deviation		20,6	17,8	15,2	16,6

According to the above-mentioned table, from the 20 students (N) who made the pre-test scoring criteria based on critical thinking, the average result was 66,3, with a minimum

or lowest score of 55 (poor to average), with a maximum score of 80 (good to excellent), and a maximum or highest score of 72,7 (good to excellent), having minimum or lowest score 58 (poor to average), and with a maximum score of 90 (good to excellent). The description of the table above shows that from 20 students (N) who have conducted a pre-test scoring procedure based on argumentative essay writing in the experimental group, the average score obtained in 60,4 has a minimum or low score of 50 (poor to average), a maximum or high score of 75 (average to good) and a post-test score of 67,75, a minimum or low score of 53 (poor to average), and a maximum or high score of 85 (good to excellent).

The research provides a detailed analysis of the experimental group's performance in critical thinking and argumentative essay writing before and after receiving treatment through Problem-Based Learning (Nursalim et al., 2022); (Asfahani et al., 2023; Mulyanto et al., 2018). It presents the results of pre-test and post-test scores for 20 students in each category, highlighting the mean, minimum, and maximum scores. The findings indicate a significant improvement in both critical thinking and essay writing skills following the treatment, as evidenced by higher mean scores and an increase in the range of scores from pre-test to post-test (Damayanti et al., 2024; Febriani et al., 2023).

Overall, the research provides a comprehensive overview of the experimental group's progress, supported by quantitative data and statistical analysis. It offers valuable insights into the impact of Problem-Based Learning on students' critical thinking and essay writing abilities, emphasizing the significance of the treatment in enhancing their academic performance.

The research provided a detailed analysis of the impact of Problem-Based Learning (PBL) as a teaching method on students' critical thinking and argumentative essay writing skills (Lascano Pérez & Altamirano Carvajal, 2023; Sinulingga et al., 2021). The study involved an experimental group of 20 students, with pre-test and post-test assessments conducted using scoring rubrics. For critical thinking, the pre-test mean score was 62.05, with a minimum score of 50 and a maximum score of 76. In the post-test, the mean score increased to 80.85, with a minimum score of 63 and a maximum score of 90. Similarly, for argumentative essay writing, the pre-test mean score was 57.15, with a minimum score of 50 and a maximum score of 71. In the post-test, the mean score significantly increased to 86.1, with a minimum score of 72 and a maximum score of 97. The findings indicate that PBL positively impacted students' scores, leading to higher post-test scores compared to pre-test scores.

CONCLUSION

The research discusses the impact of Problem-Based Learning (PBL) methods on students' critical thinking skills and argumentative essay writing ability. It presents the results of pre-test and post-test mean scores for both experimental and control groups, highlighting the significant effect of PBL on students' abilities. The study concludes that PBL has a positive influence on students' critical thinking skills and argumentative essay writing, as evidenced by the higher post-test mean scores in the experimental group compared to the control group. The study emphasizes the unique learning experience provided by PBL, which encourages students to critically evaluate their writing context and motivates collaborative learning.

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