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Deep Learning Approach in Argumentative Writing to Improve Critical Thinking and Rhetorical Structure

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Abstract

This study aims to analyze the effect of the application of a deep learning approach in a argumentative writing instruction on the critical thinking skills and the quality of the rhetorical structure of students' writing in the Indonesian Language and Literature Education Study Program at Universitas Negeri Makassar. This study used a quantitative approach with a quasi-experimental design involving two groups, namely the experimental class and the control class. The research sample consisted of 70 students consisting of 35 students in the experimental class and 35 students in the control class. Data collection techniques were carried out through argumentative writing tests and critical thinking ability tests carried out at the pretest and posttest stages. The data obtained were analyzed using inferential statistical analysis through an independent sample t-test. The results of the study showed that the application of the deep learning approach had a significant effect on improving students' argumentative writing skills. This was indicated by an increase in the average score in the experimental class which was higher than the control class. In addition, students in the experimental class showed better abilities in compiling the rhetorical structure of the text, which includes claims, reasons, evidence, and conclusions more systematically. The findings of this study indicate that the deep learning approach can encourage students to think more critically and develop arguments more logically and structured in academic writing. Thus, this approach can be an effective learning strategy to improve the quality of writing learning in higher education.

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INTRODUCTION

Writing skills are a crucial academic competency in higher education, particularly in the Indonesian Language and Literature Education study program (Alfarezi et al., 2024). Through the writing process, students not only express their ideas but also hone their critical, analytical, and reflective thinking skills. In the academic realm, argumentative writing plays a crucial role because it requires students to convey claims, provide logical reasons, and support arguments with relevant and accountable evidence. Therefore, teaching argumentative writing focuses not only on linguistic aspects but also on developing critical thinking skills and organizing ideas systematically (Pradana et al., 2025).

Several studies have shown that argumentative writing skills among university students still face various challenges. Many students struggle to develop solid arguments, logically connect ideas, and construct a clear rhetorical structure in academic writing. The writing produced is often descriptive, lacks a clear argumentative position, and fails to effectively integrate evidence and reference sources. This situation indicates that the writing learning process in higher education

has not fully optimized the development of students' critical thinking skills and argumentative abilities (Latifah & Kiranawati, 2024).

One contributing factor to this problem is a learning model that is still oriented toward the final written product (Dewi, 2026). In practice, students are often asked to produce written work without undergoing the process of exploring ideas, critical analysis, and in-depth reflection on the arguments presented. This approach tends to position students as recipients of knowledge, rather than as active participants in the process of knowledge formation. As a result, the thought processes that underlie writing activities are underdeveloped. Therefore, a learning method is needed that can encourage students to understand concepts comprehensively and develop arguments critically (Ilmudinulloh, 2022).

One relevant method for addressing these issues is the application of deep learning in the learning process (Adnyana, 2024). This method emphasizes a learning process focused on in-depth understanding, the relationships between concepts, and the ability to analyze and critically evaluate information. According to Biggs & Tang (2011), deep learning occurs when students strive to grasp the meaning of a concept comprehensively and connect it to their prior knowledge. In the context of writing instruction, this approach can contribute to the development of students' ideas in a more reflective and systematic manner, resulting in more argumentative and structured written work (Santiani, 2025).

Furthermore, research on rhetoric in academic writing also emphasizes the importance of a clear argumentative structure within a text. Hyland (2019) explains that effective academic writing is characterized by the writer's ability to construct a logical rhetorical structure, such as conveying claims, stating reasons, utilizing evidence, and drawing argumentative conclusions. This rhetorical structure serves as a framework that supports readers in systematically understanding the author's train of thought (Resticka & Nurdiyanto, 2025). Therefore, argumentative writing instruction needs to be carefully designed to help students develop critical thinking skills and organize ideas rhetorically (Resticka & Nurdiyanto, 2025).

Various previous studies have shown that a learning process that emphasizes in-depth understanding and the development of critical thinking skills can contribute to improving the quality of writing produced by students (Rahmah & Ramli, 2025). Research conducted by Wingate (2012) shows that an approach to writing learning that focuses on developing arguments has the potential to improve students' ability to compose more structured academic work. Furthermore, a study conducted by Andrews (2015) revealed that argument analysis and evaluation activities in the writing learning process can strengthen critical thinking skills and improve the quality of arguments presented by students (Dewi et al., 2025).

In line with this, research specifically examining the application of the deep learning approach in teaching argumentative writing for students of the Indonesian Language and Literature Study Program at UNM is still very limited and has not been widely explored (Adnyana, 2024). In this context, the research has a very high significance to be carried out, with the main objective to in-depth analyze how the application of the deep learning approach can effectively improve students' critical thinking skills and the quality of the rhetorical structures contained in their argumentative writing. This research is expected to make a significant contribution to the development of teaching methods and improve the quality of education in the field of Indonesian language and literature as a whole (Dewi, 2026). What significantly distinguishes this research from previous studies conducted by researchers is that this research raises a topic that specifically examines the relationship between students' rhetorical structures and aspects of deep learning. This indicates a gap or void in existing research. In addition, researchers also often conduct research on the effective teaching of writing skills to students, both at the elementary and secondary school levels, as well as in universities. The focus and approach taken by the researchers in this study provide new insights and can stimulate discussion regarding the development of more innovative teaching techniques in writing learning (Kartini et al., 2025). Therefore, this study has novelty related to deep learning in writing learning, particularly in improving rhetorical structure.

Based on the description presented previously, the purpose of this study is to analyze and understand the application of an innovative deep learning approach in the context of argumentative writing, which is crucial for the development of students' academic competencies.

This study also aims to critically evaluate the significant influence of this approach on students' critical thinking skills, as well as on the quality of the structure of the written works they produce. The main focus of this study is directed at students enrolled in the Indonesian Language and Literature Education study program at Universitas Negeri Makassar, which is a very important group in the development and implementation of modern learning methods in higher education. Through this in-depth study, it is hoped that strong and significant evidence will be obtained regarding the effectiveness of this approach in improving students' academic abilities, as well as its positive impact on the quality of education in the field of language and literature, which is very relevant and important for the advancement of science.

METHOD

The research used a quantitative approach with a quasi-experimental design to examine the effect of applying a deep learning approach in argumentative writing instruction on the critical thinking skills and rhetorical structure of students' writing. The research design used was a nonequivalent control group design, involving two groups consisting of an experimental class and a control class. The experimental class received argumentative writing instruction using a deep learning approach, while the control class used conventional writing instruction commonly applied in lectures. The study population was all students of the Indonesian Language and Literature Education Study Program at Universitas Negeri Makassar who were taking academic writing courses in the current semester. The research sample was taken using a purposive sampling technique, namely by selecting two classes with relatively equal academic ability characteristics. Each class consisted of 35 students, resulting in a total sample of 70 students. The first class was designated as the experimental class with 35 students, while the second class was designated as the control class with 35 students.

The research data consisted of critical thinking skills and the quality of rhetorical structure in students' argumentative writing. The data sources were the students who served as the research sample and the argumentative writing they produced during the learning process. The research instruments used included an argumentative writing test, a rubric for assessing the rhetorical structure of the text, and a critical thinking skills test. The writing test was used to obtain data on students' ability to construct argumentative writing, while the assessment rubric was used to assess aspects of rhetorical structure, including stating claims, developing reasons, using evidence, and drawing conclusions. The critical thinking test was used to measure students' ability to analyze and evaluate ideas.

The data collection technique was carried out through several stages: a pretest, learning implementation, and a posttest. Initially, students from both classes were given a pretest to determine their initial abilities. Next, the experimental class participated in argumentative writing instruction using a deep learning approach for several meetings, while the control class participated in conventional writing lessons. After the learning process was completed, both classes were given a posttest. The data obtained were analyzed using inferential statistical analysis. The analysis stages included normality tests, homogeneity tests, and independent sample t-tests to determine differences in results between the experimental and control classes. The results of this analysis were used to determine the effect of the deep learning approach on improving students' critical thinking skills and rhetorical structure in argumentative writing.

RESULTS AND DISCUSSION

This study aims to analyze the effect of implementing a deep learning approach in argumentative writing instruction on the critical thinking skills and rhetorical structure quality of students' writing in the Indonesian Language and Literature Education Study Program. The study involved two classes, each consisting of 35 students. The experimental class received argumentative writing instruction using a deep learning approach, while the control class received conventional learning.

The initial stage of the study involved a pretest to determine the initial abilities of students in both groups. The analysis showed that the average argumentative writing abilities of students in the experimental and control classes did not differ significantly. This indicates that both groups

had relatively equal initial abilities, which can be used as a basis for assessing the effects of the treatment provided during the learning process.

Table 1. Average Pretest Score for Argumentative Writing Ability

Group	N	Average	Standard Deviation
Experimental Class	35	64,28	6,12
Control Class	35	63,91	6,45

Based on the data in Table 1, it can be seen that the average scores of the two classes do not show a significant difference. This data is also supported by the distribution of pretest scores in the argumentative writing ability category.

Table 2. Distribution of Argumentative Writing Ability Pretest Scores

Score Interval	Category	Experiment (f)	Control (f)
85–100	Very Good	2	1
70–84	Good	10	9
55–69	Fair	15	16
40–54	Poor	8	9
<40	Very Poor	0	0

The distribution of scores shows that the majority of students fall into the "fair" and "good" categories, indicating that their initial argumentative writing skills are still suboptimal. Students still struggle to formulate clear claims, develop logical arguments, and present relevant evidence. To obtain a more detailed picture, an analysis of the rhetorical structure of the writing was conducted: claims, reasons, and evidence.

Table 3. Percentage of Completion of Rhetorical Structure Aspects (Pretest)

Aspect	Experiment (%)	Control (%)
Claims	62,8	61,4
Reasons	59,3	58,7
Evidence	54,7	53,9

Table 3 shows that the evidence aspect was the weakest component, followed by the reasoning aspect. This indicates that students tend to be able to express opinions but are unable to support them with strong reasons and evidence. Furthermore, the results of the pretest for critical thinking skills also showed relatively equal conditions.

Table 4. Average Pretest Score of Critical Thinking Skills

Group	N	Average	Standard Deviation
Experimental Class	35	65,11	5,87
Control Class	35	64,76	6,02

Following the pretest, the learning process was carried out over several meetings. In the experimental class, argumentative writing instruction was implemented through a deep learning approach that emphasized idea exploration, argumentative text analysis, critical discussion, and reflection on the writing process. Students were actively involved in analyzing various examples of argumentative texts to identify the rhetorical structural patterns used by the authors. Furthermore, students were encouraged to critically discuss specific issues before expressing them in writing. Meanwhile, in the control class, learning focused more on material explanations and writing assignments without in-depth idea exploration and reflection.

After the learning process was completed, both groups were given a posttest to assess changes in students' argumentative writing skills. The analysis showed an improvement in

writing skills in both groups, but the improvement in the experimental class was greater than in the control class.

Table 5. Posttest Results of Argumentative Writing Ability

Group	N	Average	Standard Deviation
Experimental Class	35	82,57	5,48
Control Class	35	73,14	6,02

The data in the table shows that the average score of students in the experimental class increased significantly compared to the control class.

Table 6. Distribution of Posttest Scores for Argumentative Writing Ability

Score Interval	Category	Experiment (f)	Control (f)
85–100	Very Good	14	6
70–84	Good	15	12
55–69	Fair	6	11
40–54	Poor	0	6
<40	Very Poor	0	0

Table 6, which shows the distribution of post-test scores for argumentative writing skills, shows significant improvement in the experimental class, with most students achieving the "good" and "very good" categories. Meanwhile, improvement occurred in the control class, but not as significant as in the experimental class.

Further analysis was conducted on the rhetorical structure aspects of the post-test results.

Table 7. Percentage of Completion of Rhetorical Structure Aspects (Posttest)

Aspect	Experiment (%)	Control (%)
Claims	88,6	76,2
Reasons	85,1	72,8
Evidence	82,4	69,5

The data in Table 7 shows that all aspects improved, but the most significant improvement occurred in the experimental class. The previously weakest aspect of evidence showed significant improvement, indicating that students were beginning to be able to integrate data or references to support their arguments.

This improvement was particularly evident in the aspects of argument development and the rhetorical structure of their writing. Students in the experimental class were able to formulate clearer claims, develop logical reasons, and present relevant evidence to support their arguments. In contrast, students in the control class still tended to write descriptively and were not yet fully able to construct a systematic argumentative structure. To determine the significance of these differences, statistical tests were conducted using an independent sample t-test.

Table 8. Results of the t-Test for Differences in Learning Outcomes

Variables	t count	Sig. (p)	Information
Argumentative Writing Skills	4,27	0,000	Significant

The statistical analysis showed a significance value of 0.000 ($p < 0.05$). This result indicates a significant difference between student learning outcomes in the experimental and control classes. Thus, the implementation of the deep learning approach has been shown to have a positive impact on improving students' argumentative writing skills. Furthermore, the post-test results for critical thinking skills also showed significant improvement.

Table 9. Average Posttest Score of Critical Thinking Skills

Group	N	Average	Standard Deviation
Experimental Class	35	83,26	5,12
Control Class	35	74,03	5,76

In addition to argumentative writing skills, this study also examined the improvement in students' critical thinking skills as a result of implementing a deep learning approach. Measurements were conducted using critical thinking tests at the pretest and posttest stages for both groups. The pretest results indicated that the initial critical thinking skills of students in the experimental and control classes were relatively equivalent. This was evident from the lack of significant differences in mean scores, allowing objective comparisons between the two groups to assess the impact of the learning treatment.

To test the significance of these differences, a statistical test using an independent sample t-test was conducted.

Table 10. Results of the t-Test for Critical Thinking Skills

Variables	t count	Sig. (p)	Information
Critical Thinking Skills	4,58	0,000	Significant

The statistical test results showed a significance value of 0.000 ($p < 0.05$), indicating a significant difference between the critical thinking skills of students in the experimental and control classes. Thus, the deep learning approach proved effective in improving students' critical thinking skills.

The results of this study clearly demonstrate that the application of the deep learning method has a substantial and significant impact on the quality of instruction in argumentative writing, especially among university students. This improvement was not only identified through improved quantitative scores but also evident in the quality of the rhetorical structure of the students' writings. Students in the experimental class demonstrated significantly superior abilities in formulating clear and focused claims, developing logical arguments, and presenting relevant and supporting evidence. This indicates that the use of the deep learning method can be a highly effective strategy in improving students' argumentative writing skills, and aligns with Hyland's (2019) opinion, which states that effective academic writing is characterized by the writer's ability to construct a logical rhetorical structure, such as conveying claims, presenting reasons, utilizing evidence, and drawing argumentative conclusions.

Conceptually, the results of this study clearly indicate that successful and effective writing instruction must intensively integrate the development of critical thinking skills, which is crucial. An immersive learning approach provides ample opportunities for students to understand concepts more deeply through careful analysis and reflection. Thus, students are able not only to establish connections between the ideas they learn but also to process information more systematically and constructively, ultimately encouraging them to actively participate in academic activities and improving their writing skills. Furthermore, significant improvements in the evidence aspect indicate that students are beginning to develop arguments that are strongly grounded in relevant data. This is a crucial and crucial indicator in academic writing, as it demonstrates that students are not merely expressing their personal views but are also able to provide strong and valid justification for each argument they clearly state. In this context, the ability to connect collected data with the arguments presented is vital to demonstrating the depth of students' understanding of the material being studied.

These findings clearly demonstrate that a deep learning approach can effectively address the limitations of writing instruction, which has traditionally focused too much on the final product and underemphasized the writing process itself. By emphasizing the writing process, students tend to be more active and engaged in constructing their knowledge and formulating creative ideas. The consequence of implementing this approach is a significant improvement in

the quality of their writing, which becomes more structured and based on strong arguments. This not only benefits students academically but can also positively impact their future communication skills. From a novel perspective, this study clearly indicates that the application of a deep learning approach to teaching argumentative writing contributes invaluable insights to the development of writing pedagogy at the university level. This approach not only contributes to significant improvements in learning outcomes but also substantially enriches the process of deep and critical thinking. Therefore, implementing these techniques is essential for creating a more interactive and innovative learning environment for students.

The implications of this research indicate that it is crucial for lecturers to formulate and develop learning strategies that emphasize not only the achievement of final results but also the complex and in-depth thought processes experienced by students. The implementation of a deep learning approach can be carried out through a variety of activities, such as more intensive text analysis, constructive critical discussions, and in-depth writing reflections, all of which provide valuable opportunities for students to develop their ideas and thoughts more deeply and comprehensively. Therefore, it can be clearly concluded that the deep learning approach is highly effective in improving students' overall abilities, particularly in argumentative writing and the essential critical thinking skills. This approach not only helps students master good writing techniques but also encourages them to think critically and analytically. Thus, deep learning makes a significant contribution to the development of the quality of writing instruction in higher education institutions, creating an environment that supports effective and innovative learning for students.

CONCLUSION

Based on the research results and discussion, it can be concluded that the application of a deep learning approach in argumentative writing instruction significantly improves the critical thinking skills and the quality of the rhetorical structure of writing in students of the Indonesian Language and Literature Education Study Program. This approach encourages active student involvement through idea exploration, text analysis, critical discussion, and reflection, so that the writing process is not only oriented towards the product, but also on the development of in-depth and systematic thinking. Students become better able to understand, evaluate, and construct arguments logically, while organizing their writing with a clearer rhetorical structure, including formulating claims, developing reasons, using evidence, and drawing conclusions. Furthermore, deep learning-based learning has also been shown to improve students' ability to link ideas coherently and present arguments in a more structured manner compared to conventional learning. These findings indicate that writing learning that emphasizes in-depth understanding and critical thinking processes has a significant contribution to improving the quality of academic writing. Therefore, the deep learning approach can be used as an effective and relevant learning strategy to be implemented in writing learning in higher education to strengthen students' academic competencies comprehensively.

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