REPRESENTATION OF STUDENTS' CRITICAL THINKING IN WRITING: A CRITICAL LITERACY PERSPECTIVE

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APA Citation: Efendi, N., Rahmat, A., & Lustyantie, N. (2023). Representation of students' critical thinking in writing: A critical literacy perspective. *English Review: Journal of English Education*, *11*(1), 219-228. https://doi.org/10.25134/erjee.v11i1.5896

Received: 29-10-2022 Accepted: 26-12-2022 Published: 28-02-2023

Abstract: The goal of this study is to investigate university students' representation on their critical thinking in academic writing from a critical literacy perspective, in which text is bias and it possesses ideological perspective of writer in expressing social critics, inequality, and power relations. Researchers analyzed 91 argumentative texts writing from Indonesian undergraduate English education students, which were qualitatively assessed using Facione's HCTSR and LaGuardia' s CLR rubrics, as well as NVivo 12 Plus software and an integrated theme meaning approach to qualitative content analysis. Researchers discovered that students' critical thinking skills varied in demonstrating their logical arguments, systematic thinking in reasoning, analysis and evaluation, decision-making, and problem-solving strategies in their academic writing in higher education.
Keywords: *academic writing; critical literacy; critical thinking skills; higher education.*

INTRODUCTION

The major educational objective and explicit learning outcome in higher education has grown to be well-known, warmly embraced, and universally acknowledged as critical thinking (CT) as an intellectual identity. Knowledge should be the foundation for critical thinking skills (Rahmat, 2020). In order to become a smart learner, students need to work hard in class, read, and search for information. Critical thinking aids in all of these activities. They become more successful and reach their goals as a result (Zhang, 2022). As a developed and necessary skill for university graduates and society as a whole, CT is a distinguishing quality of a graduate. The success of 21st century professional employment in the disruptive shifts of the industry 4.0 revolution has been attributed to it (Beniche *et al*., 2021; Driscoll, 2018). It has become a vital component of teaching-learning, appropriately represents the results of study experience, and contributes to the success of the generation Z workforce. Hence, the 4Cs—creativity, CT, collaboration, and communication—are essential 21st-century abilities for students to possess (Ahmed, 2022; Hayse, 2018; Nuridayanti *et al*., 2021; Zubaidah, 2018). This is in keeping with Sunendar *et al*.'s (2021) claim that one of the four 21st century abilities that the students must master is CT.

CT also incorporates scientific thinking techniques like issue identification and description, information gathering, scenario analysis, solution creation, and evaluation of suggested solutions (Warsah *et al*., 2021).

CT in the educational system, plays an important role (Aránguiz *et al*., 2020; Gilmanshina *et al*., 2021; Rahman, 2020). Students are urged to develop their thinking skills to gain comprehension and effective thinking techniques (Saputri *et al*., 2019; Supena *et al*., 2021; Teng *et al*., 2019). It encourages the development of new information while enabling learners to assess their existing knowledge (Sahoo & Mohammed, 2018). Writing abilities among students are also impacted by critical thinking abilities (Ebadi & Rahimi, 2018; Ismail *et al*., 2018). Even writing exercises can incorporate

critical thinking (Rahmat, 2020). There have also been initiatives to support students' writing-related critical thinking abilities (Maamuujav *et al*., 2020; Khazrouni, 2019; Aliyu, 2020; Rohayati *et al*., 2019). This is due to the fact that writing includes analysis of different word choices and the process of producing new ideas (Ghofur *et al*., 2019). Writing also requires critical and creative thinking. In theory, developing critical thinking abilities can help writers improve as authors (Rahmat, 2020).

Critical thinking is essential for writing well reflecting a thinking process and person's abilities (Khaidruddin *et al*., 2021; Kuhn, 2019; Rahmat, 2020). In fact, students must exercise critical thinking in order to write well because the products of writing reveal a person's critical thinking (Suteja, 2022). Additionally, it aids in the development of one's own powerful arguments (Intja & Nahole, 2021). Since it develops skills like observing, analyzing, reasoning, and making decisions (Nurjanah & Trimulyono, 2022) CT skills enables students to find, analyze, and take action (Wahono *et al*., 2022) even students in higher education (Rohayati & Kosasih, 2023) are required to employ critical thinking abilities when writing academically (Aygün & Yavuz, 2020). In academic writing, critical thinking is the process by which students assess or analyze the various ways in which they can present their ideas. It is obvious that developing thinking and reasoning skills is necessary for writing effectively (Pramonojati *et al*., 2019). Critical thinking aids in producing well-informed opinions since it is based on knowledge, reasonable analysis, and reflection (Ma & Li, 2022). To ensure high-quality writing, criticality aids in evaluating the arguments and supporting data, constructing a debate, being skeptical, asking questions, spotting trends, searching for bias, spotting organizational problems, and reaching an unbiased conclusion based on the available data (Saha, 2022). Additionally, it was discovered that the writing of high critical thinkers was superior to that of low critical thinkers in both writing modes (Motallebzadeh *et al*., 2018).

This study built on previous research by Islamiyah & Al Fajri (2020), who discovered that master Indonesian students still lacked synthesis and evaluation skills. Analysis and evaluation are two of six core critical thinking skills identified by Facione (2020), where analysis identifies the intended and actual relationships between statements, questions, concepts, and descriptions, and evaluation rates the veracity of assertions and representations. Al-Mahrooqi (2020) observed in another study that the critical thinking abilities of Omani tertiary level students are still insufficient. Therefore, students need clear direction, plenty of possibilities, and multidisciplinary discussion to foster critical thinking in higher institutions (Forbes, 2018). In other words, the capacity for critical thought is not innate. The ability to critically think well should be cultivated in students (Bazhouni, 2018).

This study differs from previous research in that it examined and explored how Indonesian undergraduate students learn to think critically in writing by using logical arguments, systematic reasoning, analysis and evaluation, decision-making, and problem-solving strategies. This shows that critical thinking and writing is a trend capable of realizing a learning that is theoretically and practically interpreted not only as learning from texts, but also from other sources. In particular, thinking with mental models/mindset patterns with accompanying elements, such as: conceptual and procedural thinking mental models, with elements of critical thinking with logical arguments, in expressing ideas and critical thinking in the form of a thesis statement; think with systematic reason; is a representation of the entirety of the experience of learning to write and learning to think critically for students.

This study is very significant to be looked into because it will have pedagogical implications for future critical thinking education in Indonesia at the tertiary level by making more serious efforts to improve students' writing and critical thinking abilities for undergraduate base education. The new outcomes of this project include the pre-design of an Android application for critical thinking in writing as well as a text-based critical thinking learning model for undergraduate students to acquire critical thinking in writing.

METHOD

In this study, the researchers used qualitative content analysis (QCA) research method. Qualitative research uses scientific methods to understand human experience and behavior. As a method for analyzing data, interpreting its meaning, and articulating the meaning, QCA is a systematic and objective approach of describing and quantifying phenomena and qualitative material. To develop the theme, it examines evident, descriptive, and interpretive content (APA, 2020; Lindgren *et al*., 2020).

The research questions proposed in this study are: How do undergraduate students express their

p-ISSN 2301-7554, e-ISSN 2541-3643
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critical thinking in their academic writing? How is the description of students' critical thinking characteristics represented in their written texts? And how is the achievement level of students' critical thinking?

This study investigates the participants' CT skills in their writing. The participants are Indonesian undergraduate students from the lower semester to the upper semester who took a writing class in English department at a private university in West Java. They provide data for this study in the form of papers from ninety-one argumentative writing texts as shown in Table 1. *The participants' contributions of 91 texts*.

Table 1. *The participants' contributions of 91 texts*

Second Semester	Third Semester	Fourth Semester
Thirty Students' texts	Thirty-Six Students' Texts	Twenty-Five Students' Texts
TB (30) blog-texts .html	AR+TA (9+27=36) .doc texts	PP (25) .pdf
(Four male; twenty-six female)	(Seven-male; twenty-nine-female)	(Two-male; twenty-three-female)

There are 13 male and 78 female students among the 91 (ninety-one) participants in this study, who are split throughout three-semester classes. The participants are English department undergraduate students in their second, third, and fourth semesters who provide writing documents.

The research tools employed in this study were a combination rubric assessment based on Facione's HCTSR and LaGuardia's CLR rubrics, with NVivo12 Plus assisting the integrated theme meaning approach of qualitative content analysis.

Texts were analysed by researchers using a simple, communicative, and coherent analysis technique that ensures that reliability and validity are equal. Researchers first read the texts to acquire a general sense of the plot, then review them page by page, looking for representations, beliefs, and the assumptions. In this study, researchers employed NVivo research tools in assessing written texts analysis.

Figure 1. *Theme Procedure of Analysis* shows the QCA method, which applied Schreier's employing categorization, coding as process analysing qualitative data in meaningful way (Elliot, 2018), and theme for unit code analysis descriptions for data interpretations to obtain the results.

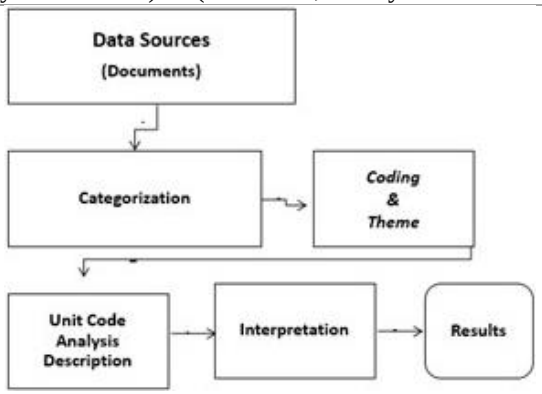

Figure 1. *Theme procedure of analysis*

RESULTS AND DISCUSSION

Logical arguments and opinions

Logical arguments must begin with premises that lead to a logical conclusion. An argument is a collection of statements composed of three parts: a conclusion, premises, and an inference from the premises to the conclusion. It is distinct from opinion, which is formed based on faith, intuition, or emotion.

The data bit snippets below show the student's critical thinking in writing, which demonstrates the development of logical argument in discussing teacher welfare issue in Indonesia as shown in Table 2. *Generic Arguments.*

Table 2. *Generic arguments*

Data Bit Excerpt	Developing Order Thinking Level 2
Teacher welfare issues are a major concern, with low payment and challenges to improve students' progress in learning making many people reluctant to become teachers. Indonesia's government lacks appreciation for teachers. (TSL).	Generic thesis statement supported by data, evidence, and systematic thinking. Analyze information, assumptions, and arguments from multiple perspectives. Fair appreciation of social critic, freedom, and reform.

As stated in TSL, students struggle to convey logical arguments in writing due to a lack of facts and reasonable proof. The author, on the other hand, does not provide any clear facts or supporting evidence to back up her logical arguments in written language. Showing evidence in supporting arguments becomes difficult for students to demonstrate critical thinking in writing. However, from the perspective of critical literacy, the TSL's arguments apply to explanations for the inequality in teacher welfare guarantee in Indonesia.

In order to reflect their critical thinking in written text, students must understand the "inductive and deductive reasoning" implied in critical thinking (Wechsler, 2018), as deductive, the process of arriving at a specific conclusion follows or contradicts an argument (Tarchi, 2020), that are based on premises and evidence to the conclusion (deductive process).

The manner, in which they concluded that what they regarded as representation on her knowledge experience, intuition, belief, and feeling regarding civil servant teacher and part time teacher as her opinion rather than her argument, even though from a critical literacy perspective, social and CT are intertwined through the use of thinking skills (Valencia, 2018) as shown in Table 3. *Regular Thinking.* Nonetheless, students struggle to write logical arguments in their argumentative texts, where argumentative writing described as a critical thinking activity (Ngajie, 2018), in other words, critical thinking as skills of argument (Kuhn, 2019).

Table 3. *Regular thinking*

Data Bit Excerpt	Low Order Thinking Level 1
"Nowadays, the teachers' welfare is one of the educational problems, which is being solved by Indonesian government" [Premise-1]. (SNW). [no assumption]	Poor thesis statement based on self-interest and preconception. Misunderstanding of grammar, language style, and vocabulary leads to incoherent writing. Lack of understanding of social critics, reform, and originality.

Systematic thinking in reasoning

Research suggests that students need to improve their CT skills in order to use sophisticated reasoning skills at the HE level. Critical thinking skills are essential for successful participation in modern society, and help students develop an understanding of the world around them (Hatim & Munday, 2019).

Table 4. *Systematic thinking in reasoning*

Data Bit Excerpt	High Order Thinking Level 3
Honorary teachers in Indonesia are still in high positions due to their low welfare and higher risk than civil servants due to their guaranteed welfare and different salaries. (KKI)	Strong thesis statement, logical reasoning, reliable sources, effective decision making.

As shown in Table 4, data bit excerpts KKI. In *Systematic Thinking in Reasoning*, the author attempts to provide reasons for why honorary teachers continue to hold high positions. Power relations are important in critical literacy, just as they are in KKI's reasoning. In this case, the social problem of civil servants having more power relationships with the government than honorary teachers.

Analysis and evaluation

Evaluating a text involves determining its success, such as how well a conclusion is supported by an argument, or how strong the evidence for a claim is. Students can respond to the text by presenting a reasoned case for or against the claims.

Table 5. *Analysis and evaluation*

Data Bit Excerpt	Developing Order Thinking Level 2
"The National Film industry in Indonesia is struggling to promote its local film industry, with filmmakers using market tastes as a scapegoat" (EKY). [Analysis and Evaluation: Judgment]	Demonstrate systematic thinking, proper grammar and language style, fair appreciation of social critics, and self-awareness of other perspectives.

Table 5 shows an excerpt of the data bit EKY. *Evaluation and Analysis.* The term judgment refers to the author's judgement in analyzing Indonesian national films. In data bit EKY, the author attempts to identify the fundamental problems of the national film. Undergraduate students still lack evidence to back up and respond to their claims and arguments when it comes to analyzing and evaluating arguments. As a result, students in higher education institutions should be encouraged to learn how to analyze and evaluate arguments. In a critical literacy perspective, this demonstrates the author's ideological identity as someone who expects the highest quality for a national film.

p-ISSN 2301-7554, e-ISSN 2541-3643
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Effective problem-solving strategies

Evaluation of alternatives is essential for effective problem solving, regardless of size, assumptions, or lack of information.

As shown in Table 6. *Problem Solving Strategies*, data bit AMD indicates that the student, in this study, demonstrates problem-solving strategy for writing. From a critical literacy perspective, AMD's problem-solving strategy is linked to power relations in which corruption problems are always connected to the power of the government. To develop an effective assessment of student problem solving skills, however, knowledge of the process involved in solving such problems is required (Shanta, 2022).

Table 6. *Problem solving strategies*

Data Bit Excerpt	Developing Order Thinking Level 2
"In the era of democracy, the Corruption Eradication Commission, the Police, Indonesian Corruption Watch (ICW), and the Attorney must work together to eradicate corruption and prevent it." (AMD).	Demonstrate systematic thinking, proper grammar and language style, fair appreciation of social criticism, and self-awareness of other points of view.

Negative sentiments

NVivo software is the most frequently mentioned software for qualitative data analysis and widely used by researchers all over the world (QSR International, 2022). The use of NVivo in this study is to assist the researchers in discovering and analyzing sentences that contained *negative sentiments*. NVivo 12 Plus software processes 30% of all text document data to determine students' negative sentiments in the texts. In students' written texts, those negative sentences express emotional feelings as Clark (2021) mentioned the non-rational biases that teachers should devoted attention. Sentiment nodes in NVivo indicate that students' thinking patterns are being disrupted by emotions or feelings, negative thinking, positive thinking, or neutral thinking. NVivo is used in this study to find the negative sentiments node.

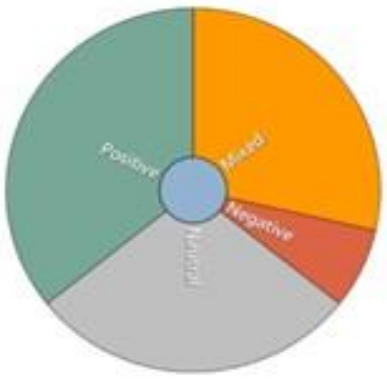

Figure 2. *Negative sentiments*

As shown in Figure 2. *Negative Sentiments*, the results indicate positive sentiment by the dominance of green color, mixed sentiment by the domination of orange color, neutral sentiment by the domination of grey color, and negative sentiment by the dominance of the red color. Figure 3. shows that students have fewer negative sentiments than other components (positive, neutral, or mixed) when it comes to expressing their critical thinking in writing. Furthermore, when they express their thoughts in the form of sentences of written texts about the topic they discuss, they feel positive thinking in viewing phenomena in the world. Based on the NVivo analysis results, this means that the students exhibit positive critical thinking toward the topic under discussion.

Undergraduate students in this study encountered difficulties communicating their critical thinking in writing, but it does not mean that they failed. Most students continue to be weak (though some are strong) in exploring their logical arguments in criticizing, analyzing, and evaluating written information and arguments. These difficulties are not limited to psychological issues and emotions. Critical thinkers recognize their emotions and understand how they can influence decisions and take control of when and where they should become part of the process; A critical attitude requires the ability to seek reasons, and willingness to judge impartially, even when impartial judgement is not in one's self-interest.

Furthermore, many students are still unfamiliar with research knowledge and skills, particularly the ability to analyze and evaluate arguments systematically using analytical and evaluative thinking patterns. In fact, students in the English department also complain about the limitations of their English language skills, particularly in Academic Writing, where they still struggle to demonstrate critical ideas into written text in English with grammar proficiency. Thus, students' critical thinking in writing includes the ability to express critical thinking ideas effectively through

good written language, appropriate question issues related to a problem's topic, analyze and solve a problem or contemporary topic that requires logical argument, systematic thinking in reasoning, well-founded analysis and evaluation, and effective problem-solving strategies represented in written text. Figure 3 depicts descriptive characteristics of CT in writing as proposed in this study.

Figure 3. *Descriptive characteristics of critical thinking in writing*

Figure 3 depicts complex components that build critical thinking. Critical thinking in writing is supported by logical thinking, systematic thinking, analysis and evaluation, decision making, and problem-solving strategy.

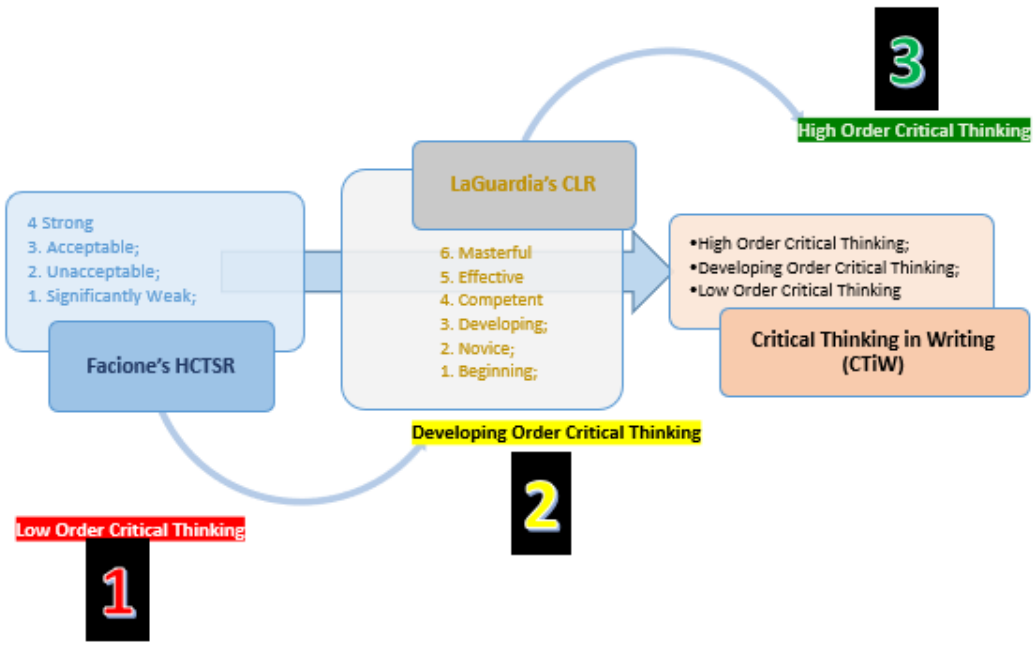

Figure 4. *Achievement levels of students' critical thinking*

In addition, students' achievement levels of critical thinking are shown in Figure 4 that the analysis using the HCTSR rubric produces critical thinking levels: acceptable level Acceptable (Level 3); unacceptable level Unacceptable (Level 2); and a very weak level of Significantly Weak (Level 1). Meanwhile, Strong's level of critical thinking (Level 4) was found to be less significant in this study. This shows that there are only a small number of students who are at a higher level of thinking. Meanwhile, text analysis using the CLR LaGuardia's rubric resulted in critical literacy levels: Developing intermediate level (Level 3); novice entry level (Level 2); and Early Beginning level (Level 1). This shows that only a small proportion of students have a high level of critical literacy. Meanwhile, in the combined analysis of critical thinking, it indicates that the level of critical thinking is divided into three levels, namely: Level 3, high-level critical thinking; Level 2, developing critical thinking level; and Level 1, low-level critical thinking with a composition of fewer students at low and high levels. The rest are almost mostly at the

developing level. This shows that most students are at a developing level as a representation of the level of achievement of critical thinking in writing.

Several detailed analysis discussions on critical thinking in writing are centered on undergraduate critical thinking for tertiary degree research writing. In addition, this new concept is completing theory of critical thinking in writing from critical literacy perspective, as representation of critical thinking in writing, as the combination of thinking theory, critical thinking theory, and writing theory.

This study examined students' critical thinking in writing at the undergraduate level of higher education, finding that the text is biased from critical literacy perspective and has close relations to the writer's ideological perspective in expressing inequality, social critics, and power relations.

CONCLUSION

We define critical thinking as logical and systematic reasoning about truth and fact from a discernible mind, supported by strong arguments, data, and evidence. As findings demonstrated students' challenges of various development, critical thinking is necessary to improve students' logical argument, systematic reasoning, analysis and evaluation, decision making, and problem-solving strategies in written texts, particularly in Indonesian higher education. This study illustrated students' critical thinking representations in academic writing.

This study's pedagogical implications suggest that higher education should provide undergraduate students with conceptual knowledge and understanding of critical thinking. Furthermore, higher education institutions should facilitate students critical thinking learning experiences and awareness through a variety of methods of teaching learning critical thinking, such as teaching learning writing process from early grades to the upper-level semester students for better abilities in logical argument and systematic thinking in reasoning, how to write thesis statements, premises, claims, reasoning, and drawing conclusion (deduction process) in their written texts.

ACKNOWLEDGEMENT

I wish to express my sincere gratitude to Rector of Universitas Wiralodra for providing internal university research grand for lecturers.

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p-ISSN 2301-7554, e-ISSN 2541-3643
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