

Critical Thinking in Authentic Assessment: An Exploration into Argumentative Writing Non-English Department in Higher Education

Erwin Akib

Universitas Muhammadiyah Makassar, Indonesia
Email: erwin@unismuh.ac.id

Muh. Arief Muhsin

Universitas Muhammadiyah Makassar, Indonesia
Email: arief.m@unismuh.ac.id

Sitti Maryam Hamid

Universitas Muhammadiyah Makassar, Indonesia
Email: st.maryamhamid@unismuh.ac.id

Nico Irawan

Thai Global Business Administration Technological College, Thailand
Email: dr.nico@tgbc.ac.th

Received: 3 January 2023
Reviewed: 2 June 2024-25 October 2024
Accepted: 15 November 2024
Published: 30 December 2024

Abstract

This research aims to thoroughly explore how authentic assessment methods, designed to emulate real-life challenges, contribute to enhancing the abilities of students to construct logical arguments, critically evaluate evidence, and articulate thoughts coherently in writing. In order to achieve the stated objective, a qualitative research design was adopted, and content analysis was utilized systematically for the examination of the quality of argument, evaluation of evidence, and logical reasoning in the argumentative writings of the observed students. The results obtained from the data analysis conducted showed that all the arguments were relevant in general discussions and added precision through the use of examples. Accordingly, the examples given provided clear insight into how each application related to the general discussions, hence each example was considered relevant in improving the understanding of the topic in question. In an effort to ensure the conducted analysis was carried out thoroughly, deep essays in the expansive coverage of the details relevant to the different aspects of the research were reviewed. Each of the essays threw forward the central contention or stance taken with strength and the support of quality evidence including concrete examples from life, findings from previous research, and case studies. As a recommendation, future research should be conducted with a specific focus on analyzing critical thinking and argumentation skill development in the students along longitudinal lines, with the primary aim of

observing how the skills change with different teaching methodologies, curriculum structures, and educational interventions.

Keywords: Argumentation; authentic assessment; critical thinking; and writing

Introduction

Research into critical thinking is significantly imperative because it typically represents a very important competency for students navigating the age of information (Muhsin et al., 2024). According to previous research, critical thinking refers to a structured process of analysis, evaluation, and reasoning that enables students to construct sound arguments and make decisions based on thorough assessments (Simonovic et al., 2023). Despite its importance, the development of critical thinking skills in higher education has often been a secondary focus, particularly in non-English-medium instruction departments (Double et al., 2023a; Sokhanvar et al., 2021). Therefore, this area of research holds significant relevance for enhancing the success of educational systems, particularly in Indonesia (Fernandes et al., 2024). The research area is also significant because by understanding how authentic assessment can be effectively applied across diverse disciplines, educational institutions can design more comprehensive and impactful learning programs (Singh et al., 2023). As a result, it is very important to thoroughly evaluate the effectiveness of authentic assessment in enhancing critical thinking, particularly in the domain of argumentative writing (Bayley, 2023).

Students in the contemporary world can easily access information to construct arguments, however, the ability of the demographic to accurately develop critical thinking skills remains limited (Bağ & Gürsoy, 2021). This issue has been observed and primarily attributed to the fact that students often lack the ability to conduct content analysis of the extensive literature available (Hyytinen et al., 2021). The majority of the demographic tends to accept information at face value without critically evaluating its credibility or relevance, which undermines the inherent ability to write coherent and persuasive arguments (Yilmaz-Na & Sönmez, 2023a). In order to effectively address this issue, lecturers have introduced authentic assessment as a tool to train students in critical thinking, particularly in argumentative writing, which is a genre that necessitates logical reasoning and evidence-based construction.

Beyond Indonesia, critical thinking in language learning is also gaining prominence in Thailand. This competence is increasingly being viewed as an essential pathway for cultivating discerning students (Tungkasamit & Junpeng, 2012). Research conducted in Thailand highlights the critical role of fostering critical thinking in shaping students into wise decision-makers (Le et al., 2024; Tungkasamit & Junpeng, 2012; Hossain, 2024). As previously noted, critical thinkers tend to have a broad and deep knowledge base, cultivated through regular reading and the exploration of reliable online sources. This process strengthens literacy, which serves as a key foundation for intellectual growth (Tungkasamit & Junpeng, 2012).

Recent research by Luquin & Mayo (2024) gave strong evidence supporting how effective integrated authentic assessment methods, like collaborative online debates and real-world case studies, can be in improving critical thinking in argumentative writing. The experiments they conducted showed that the interactive assessment activities didn't just assess the logical argumentation skills of students, but also helped them get more engaged and understand complex topics better. What's more, the study pointed out the crucial role that authenticity and constructive feedback play in helping students develop their critical thinking skills in argumentative writing (Kuyyogsuy, 2019; Salafia, 2021). It was clear that timely and constructive feedback was especially good at promoting reflective thinking, encouraging

students to improve step by step, and giving instructors a solid framework to guide students in refining their reasoning and crafting stronger arguments. Then, Zhao et al. (2024) conducted their own study aimed at investigating how multimedia for example videos, infographics, and interactive slides can be used in authentic assessment tasks for argumentative writing. They found that multimedia-driven assessments did a great job grabbing students' attention and motivated them to stay more focused, which led to more sophisticated and well-rounded arguments. This approach really seems to reflect the dynamics of live interaction, allowing students to better use multimedia tools in academic and professional settings (Wilson, 2016).

The integration of critical thinking and authenticity in multimedia-based assessments, especially in non-English higher education settings, has been drawing increasing attention from scholars. Many academics, both at the university and pre-university levels, have argued that assessments in higher education should align with real-life situations in order to nurture the creative aspects of critical thinking (Beresova, 2015; Tumilty et al., 2022). These scholars have stressed the importance of authentic assessments that do more than just enhance critical thinking skills across various disciplines. They also pointed out how these assessments should be designed to fit naturally into other activities within the curriculum.

A notable study was conducted by Burton (2020) to explore how authentic assessments were implemented in faculties where instruction was given in languages other than English. The findings from this study revealed that integrating authentic assessments into the curriculum had a significant, positive effect on the critical thinking skills of the students involved, highlighting its importance in various educational settings.

Evaluations conducted in the publications reviewed throughout this research were partly carried out through argumentative writing, as shown in *A Critical Attitude in Academic Argumentative Texts: A Critical Textual Analysis in Various Academic Fields Among Students* (Jodoi, 2023; Özdemir, 2018). The authors of these publications argued that authentic assessment not only promotes critical thinking but also encourages meaningful learning and helps students become more engaged in the learning process. Similarly, Hassanpour et al. (2011) looked into the challenges and benefits of applying authentic assessment in non-English subjects at the higher education level and offered practical suggestions for its effective use. Another relevant study by Garcia, Buddy, & Hooper (2011) examined ways to integrate critical thinking skills into assessments in higher education. Their findings revealed that authentic assessment tools could effectively measure and improve critical thinking, especially in disciplines that require argumentative writing. In addition, Barnet & Bedau (2011) and Gleason et al. (2013) focused their research on how authentic assessment, involving both English and non-English content, played a significant role in boosting critical thinking and postgraduate competencies. Together, these studies emphasized the importance of authentic assessment in developing critical thinking skills, providing a solid foundation for future research in this field.

The focus on critical thinking really does go hand in hand with the larger aim of higher education, which is all about nurturing those kinds of skills, as talked about in the literature by Double et al. (2023b) and Gojkov et al. (2015). Based on what the authors said, the main point of this research is to highlight just how important it is to develop critical thinking, which should be one of the key outcomes in higher education. Authentic assessment methods, particularly in argumentative writing, have been observed to serve as a very important strategy for evaluating and enhancing critical thinking skills (Preiss et al., 2013). Furthermore, the exploration of authentic assessment within non-English departments has shown the potential benefits associated with the adoption of such practices across diverse academic disciplines and addressed a shared

interest in improving pedagogical approaches. Although the current research shares similarities with previous explorations particularly in the emphasis on critical thinking and authentic assessment, it also introduces significant distinctions (Preiss et al., 2013).

A significant distinction lies in the specificity of the title, which includes geographic and cultural terms, with a focus on Indonesia. Typically, this emphasis introduces unique educational dynamics that are often overlooked in broader discussions. For example, most of the existing literature tends to focus on Western contexts or other Asian countries, but there's something fresh about looking at the Indonesian higher education system and how critical thinking and authentic assessment can be applied there (Gao et al., 2019; Villarroel et al., 2020). It's also worth pointing out that calling this research "Argumentative Writing as a Specific Form of Critical Thinking Assessment" sets it apart from other studies, which usually take a broader approach to assessment types and skill development. The more focused approach here helps us dive deeper into how argumentative writing can serve as a tool to boost critical thinking, especially in non-English departments. The audience we're focusing on, students in higher education outside of English-related fields, brings up a whole different set of challenges and opportunities that previous research on other education levels or disciplines hasn't really touched on. This focus, of course, makes the contributions of this study stand out more in terms of what it adds to the existing body of knowledge (Agustina et al., 2022). In short, the aim of this research is to figure out how authentic assessment can help promote critical thinking through argumentative writing, specifically among students in Indonesian non-English departments at the post-secondary level. The main goal is to explore how authentic assessment can be effectively used to create real outcomes, like building strong arguments, evaluating evidence critically, and communicating ideas clearly, both in writing and speaking.

Research method

Research design

The design chosen for this research is quantitative, based on content analysis. This involved looking at a variety of student essays, with the goal of providing a clear and structured account of how effective arguments, evidence evaluation, and logical reasoning show up in these pieces. At the same time, a qualitative approach is also used here, focusing on deeply exploring how authentic assessment relates to the development of critical thinking skills in essay writing. Additionally, the research takes into account the distinct features of non-English departments in Indonesian higher education institutions, carefully considering those specifics.

Research object

The research objects, which are essay samples from students in non-English faculties at an Indonesian university, were carefully analyzed. The analysis used content analysis techniques, focusing on both the quality of the essays and the level of critical thinking the students demonstrated. By zeroing in on these aspects, the research aimed to assess how well authentic assessment practices help develop critical thinking skills in argumentative writing. Specifically, the study involved selecting and looking closely at four essays written by students from non-English departments at Indonesian higher education institutions.

Data collection

Four essay writing assignments were selected from a diverse pool of samples drawn from students in non-English departments across universities in Indonesia.

Data analysis

To analyze the data through content analysis, a few systematic steps were followed. First, the collected essay samples were thoroughly reviewed to spot recurring themes, patterns, and differences in how critical thinking skills were shown. Then, a coding framework was put together, focusing on important aspects of critical thinking like clarity, precision, relevance, depth, breadth, logic, and fairness. The analysis also took into account key argumentative elements, such as the thesis statement, supporting evidence, recognizing and addressing counterarguments, and the conclusion. Each essay was then coded according to this framework to check for the presence or absence of critical thinking indicators and key argumentative components. Table 1 shows a detailed explanation of the critical thinking components and argumentation elements.

Table 1. Component of critical thinking

Component	Explanation
Clarity	The essay effectively communicates ideas without ambiguity.
Precision	The essay provides specific examples and avoids generalizations.
Relevance	All points are directly related to the topic of social media's role in modern democracies.
Depth	The essay explores various facets of the issue, considering both positive impacts and challenges.
Breadth	The essay covers a wide range of factors, including the influence of social media on elections, the phenomenon of the 'Post Truth Era', and the challenges and considerations related to social media in democracy.
Logic	Arguments are presented logically, with evidence and reasoning supporting each claim.
Fairness	The essay presents a balanced view, acknowledging both positive impacts and challenges.

Table 2. Component of argumentation

Component	Explanation
Thesis Statement	The essay presents a clear thesis on the role of social media in modern democracies.
Supporting Evidence	The essay provides ample evidence to support its claims.
Counterarguments	Counterarguments are acknowledged and addressed.
Conclusion	The essay concludes by summarizing the main points and offering considerations for the future.

After the coding process, quantitative analyses were done to figure out the frequency and distribution of critical thinking elements in the writing samples. These analyses involved calculating percentages, frequencies, and other statistical measures to spot trends and patterns that could reflect how well students in non-English departments at Indonesian higher education institutions demonstrate critical thinking skills. Alongside the quantitative analysis, qualitative methods were also used to interpret the coded data. This approach looked into the contextual factors that affect how critical thinking shows up in essay writing tasks.

Results

In this research, a qualitative approach was utilized to analyze the content of essays written by students majoring in non-English education fields, with a focus on both the critical thinking components and the structural elements of the essays. Table 3 presents four essay samples written by non-English education major students.

Table 3. Components of critical thinking

Component	Quality	Essay 1	Essay 2	Essay 3	Essay 4
Clarity	High	Clear explanation of terms like AI, robotics, and IoT.	Clear explanation of the role of social media in modern democracies and its impact on elections.	Clear explanation of how social media can both strengthen and undermine democracy.	Clearly defines social media, its role in modern democracy, and the importance of choosing accurate information.
Precision	High	Specific examples of job displacement and income inequality.	Specific examples of how social media is used in election campaigns and the challenges it poses, such as spreading false information and hoaxes.	Specific examples of social media's positive impact on political engagement and negative impact through misinformation.	Provides specific examples of how social media is used in election campaigns and its impact on political participation and awareness.
Relevance	High	Every argument contributes to the discussion of automation's effects.	Every argument contributes to the discussion of social media's impact on political engagement and public opinion.	Every argument contributes to the discussion of social media's impact on political engagement and public opinion.	Every argument contributes to the discussion of social media's impact on political engagement and public opinion.
Depth	High	Detailed examination of structural unemployment, income inequality, and job uncertainty.	Detailed examination of how social media can increase political participation, spread false information, polarize opinions, and manipulate public opinion.	Detailed examination of how social media democratizes access to information and fosters echo chambers.	Discusses the potential for social media to strengthen democracy by enabling wider political participation and the challenges posed by fake news and echo chambers.
Breadth	High	Considers perspectives from different sectors and countries.	Considers perspectives from different sources and contexts.	Considers perspectives from different angles, providing a comprehensive	Considers perspectives from different angles, providing a comprehensive

Logic	High	Logical progression from discussing benefits to challenges and solutions.	Logical progression from discussing the role of social media in elections to its impact on political engagement and public opinion.	analysis of social media's impact on democracy. Logical progression from discussing the positive aspects of social media to addressing its negative consequences.	analysis of social media's impact on democracy. Logical progression from discussing the definition of social media to examining its various roles and impacts in modern democracy.
Fairness	High	Recognizes potential benefits of automation alongside its risks.	Recognizes the potential of social media to increase political participation while also addressing concerns about false information and manipulation.	Recognizes the potential for social media to empower individuals while also discussing challenges such as misinformation and polarization.	Recognizes the potential for social media to empower individuals while also discussing challenges such as misinformation and echo chambers.

Table 3 lays out the information on the remarkable critical thinking skills demonstrated by the students in writing arguments across four essays. All items related to critical thinking, including clarity, precision, relevance, depth, breadth, logic, and fairness, were noted to have high ratings for each essay. Additionally, the students were asked to dive into complex discussions about automation and social media to evaluate how clearly they could present complex topics. Throughout the discussion, the students used relevant examples that effectively supported their arguments with precision. The relevance of the arguments to the broader debate was clear, with each essay contributing valuable information to the issue at hand. The essays also showed a deep understanding, backed by enough facts for an in-depth analysis that solidified the overall argument. Each essay considered a wide range of perspectives, covering various sectors, contexts, and dimensions. On top of that, the essays displayed logical progression, moving from benefits to challenges and proposed solutions, and fairness was clearly shown in how the potential benefits were balanced with possible risks. In essence, the obtained data emphasized the ability of the students to critically analyze complex issues, construct coherent arguments, and effectively support the respective claims of the observed students.

Following the evaluation of the critical thinking competencies of the research subjects within the context of authentic assessment, the components of students' argumentation were also examined. Table 4 presents the results of analyzing the content of the essays written by the students.

Table 4. Components of argumentation

Component	Quality	Essay 1	Essay 2	Essay 3	Essay 4
Thesis Statement	High	Thesis: Automation brings benefits but also challenges to the job market.	Thesis: Social media serves as a new alternative for political communication and has significant impacts on elections and public opinion.	Thesis: Social media acts as both a tool for engagement and empowerment and a breeding ground for misinformation and division in modern democracies.	Social media enables wider political participation and increases political awareness, but it is crucial to be cautious of misinformation.
Supporting Evidence	High	Examples of AI in healthcare and robotics in manufacturing.	Examples of surveys, research findings, and real-life cases of hoaxes and misinformation during elections.	Examples of social media's positive impact on political engagement and negative impact through the spread of misinformation.	Examples of social media's impact on political campaigns and its role in improving digital literacy.
Counterarguments	High	Acknowledges the argument that automation creates new jobs.	Acknowledges the positive impact of social media on political participation but also discusses challenges such as spreading false information.	Acknowledges the potential for social media to empower individuals but also discusses challenges such as misinformation and polarization.	Acknowledges the potential for social media to strengthen democracy but also discusses challenges such as misinformation.
Conclusion	High	Summary of benefits, challenges, and the need for adaptation.	Summary of the positive impacts of social media on political engagement and the challenges it poses, followed by considerations for strengthening democracy.	Summary of social media's complex impact on democracy, followed by recommendations for promoting responsible use.	Summary of social media's role in modern democracy and the importance of using it wisely to improve democracy.

Table 4 provides a thorough evaluation of the quality of argumentation across four different essays discussing the impact of automation and social media on various aspects of society. When it comes to thesis statements, all essays demonstrated a high level of clarity, with the central argument or stance being clearly expressed. Each essay also bolstered its arguments by including solid evidence, such as real-world examples, research findings, and case studies. Moreover, counterarguments were acknowledged and thoughtfully addressed, ensuring that opposing viewpoints were considered and promoting a more balanced approach to argumentation. Finally, the conclusions in all essays effectively summarized the key points, while offering useful reflections or recommendations for future exploration. Overall, the quality of argumentation in these essays reflected clarity, coherence, and critical thinking, providing a well-rounded and insightful analysis of the topics discussed.

Discussion

The authentic assessment carried out throughout this research effectively captured the critical thinking competency of students, as demonstrated by the essays written by the observed students. Looking at the data presented in Table 3, it's clear that each student consistently achieved high levels of critical thinking across key aspects like clarity, precision, relevance, depth, breadth, logic, and fairness. Clarity was particularly notable in each writing, as the students displayed an inherent ability to simplify complex ideas. For instance, when discussing automation and social media, each student provided clear and precise explanations of complex concepts. This observation aligns with existing research that emphasizes the role of clarity in critical thinking. Also, the specificity of the examples used significantly bolstered the coherence and clarity of the arguments presented by the observed students, making each explanation not only easier to understand but also more convincing and grounded. The relevance of each argument to the central discussion further highlighted the students' ability to stay on point. Relevance is crucial in academic writing, every statement needs to meaningfully contribute to the overall discussion. This aligns with findings from Marni et al. (2019) and Song et al. (2014), which stressed how relevance ensures an essay remains coherent and impactful. In this study, the students maintained relevance by selecting and focusing on the most important information, which made their essays even more persuasive. Furthermore, the depth of analysis in the essays indicated a solid understanding of the subject. The students didn't just explore the benefits of automation and social media; they also critically examined the challenges and potential side effects.

This in-depth scrutiny aligns with the concept of deep analysis, which is often seen as a core element of critical thinking. Previous literature, such as Castro (2022) and Mochales & Moens (2011), recognized that depth in argumentation signals a higher level of critical engagement and requires the ability to explore issues from multiple perspectives, taking into account various dimensions. The breadth of perspectives integrated into the essays used in this study demonstrated the students' ability to incorporate a wide range of viewpoints, which are crucial for balanced argumentation. This inclusivity is particularly important for grasping the complexity of the issues at hand. Research by Anisa et al. (2017) and Yaman (2018) further illustrated that considering diverse perspectives enhances argumentation quality by offering a more holistic view and mitigating bias. In this case, by integrating viewpoints from different sectors, contexts, and angles, the students enriched their arguments and showcased their comprehensive critical thinking abilities. It is also worth noting that the logical coherence of the essays ensured a smooth flow of ideas, guiding the reader from one point to the next. This logical

structure is considered key to maintaining clarity and reinforcing the strength of the overall argument.

The coherence of the essays showed a logical progression of ideas that guide the reader effortlessly from one point to the next. This logical structure is, in fact, vital for maintaining clarity and enhancing the impact of the argument presented. As Figueroa et al. (2018) mentioned, a well-structured argument is not only easier to follow but also more convincing, making the overall point much stronger. For instance, the students' ability to transition from discussing the benefits of automation and social media to tackling the associated challenges, followed by proposing solutions, exemplifies a logical approach that contributes, no doubt, to a more coherent narrative. Fairness, another fundamental element, was apparent through the recognition of both potential benefits and risks. This balanced approach highlighted the students' impartiality and thorough engagement with the topic, thus fulfilling the fairness requirement for building a credible case. By examining different perspectives and offering a well-rounded exploration of the issues, the students demonstrated their commitment to fairness. As noted by Yassin (2024), justice is key in critical thinking, and acknowledging both sides of the argument helps boost trust and credibility, ultimately strengthening the overall essays. Moving on, Table 4 lays out a detailed evaluation of the quality of argumentation across the four essays, which explored the impact of automation and social media on various societal aspects. The analysis indicated that each of the essays displayed high-quality argumentation, as shown by their clarity, well-structured thesis statements, effective use of evidence, thoughtful counter-argument recognition, and insightful conclusions. These aspects seemed to work together, creating a coherent, well-organized, and thorough analysis that reflected the students' critical thinking abilities. Upon closer inspection, the clarity and conciseness of the thesis statements stood out, as they helped sharpen the focus of the essays, laying a solid foundation for the arguments that would follow.

A good thesis statement plays an incredibly important role in guiding readers through the main argument, helping them follow the content and better understand its trajectory. This finding seems to align with Hanusova et al. (2020), who pointed out that a clear and concise thesis statement is fundamental to academic writing, often serving as the backbone of a well-organized argument. How students articulate key points really shows their ability, or lack thereof, to communicate their positions clearly. A key component of the findings presented in Table 4 involves the use of high-quality evidence throughout the essays. Students effectively supported their arguments with real-world examples, research findings, and case studies, providing a solid and persuasive foundation for each claim. The inclusion of such evidence played a significant role in transforming abstract ideas into more credible and convincing arguments. This observation is in line with earlier research by Yilmaz-Na & Sönmez (2023b) and Kaepfel (2021), who emphasized that well-supported arguments tend to be more persuasive and robust. In this research context, the ability of the observed students to integrate various types of evidence into their discussions highlighted their competence in research and analysis, ultimately adding credibility and depth to the issues discussed. Additionally, the essays recognized and addressed counterarguments thoughtfully, which showed that the students were aware of and engaged with opposing viewpoints, a crucial aspect of academic argumentation.

This balanced approach seems crucial in solid argumentation, particularly because it reflects the students' ability to engage in dialogue and understand the complexity of the issues being discussed. Lupton (2018) supported this by saying that addressing counterarguments not only deepened the analysis but also made the argument more well-rounded and fair. Thus, by considering opposing views, the students in this research were able to enhance their critical

thinking and use the evidence they gathered to build stronger, more balanced arguments. The results showed that the students possessed high levels of competence and critical thinking skills, which are considered essential for academic and intellectual development. Earlier studies have suggested that a student's ability to analyze complex issues and synthesize diverse sources of information signifies intellectual maturity (Ngajie et al., 2020). The consistently high scores achieved across all critical thinking subscales, including clarity, precision, relevance, depth, breadth, logic, and fairness, indicated that the students had effectively internalized these competencies. This finding aligns with educational theories which assert that critical thinking should be nurtured to deepen understanding within disciplines and promote independent, reflective thought. As further supported by research, the ability to construct well-supported arguments and consider diverse viewpoints are vital skills, both for academic success and for future professional roles (Tyas et al., 2019).

These findings have significant implications for educational practices and curriculum design. First, the high level of critical thinking mastery demonstrated by the students suggests that teaching strategies and educational interventions seem to be effective in cultivating these important skills (Broadbear, 2012). For educators, this implies that there is a need to continuously enhance instructional methods to improve students' critical thinking and argumentation abilities. However, the findings also hint at how well students are prepared to confront real-world problems, as the ability to analyze complex issues and create logical arguments is a key skill sought by employers across various sectors (Deane et al., 2008). This is particularly relevant to professions like business, law, medicine, and public policy, where critical thinking and the capacity to develop sound arguments are core to daily tasks. To effectively prepare students for addressing intricate problems, the results suggest that continuous efforts to foster critical thinking in education are necessary for equipping learners with the skills they need to succeed, both academically and professionally. From these insights, it would seem advisable for institutions to prioritize integrating critical thinking and argumentation into their curricula. This could involve introducing more complex writing assignments that motivate students to critically assess multifaceted issues, incorporate evidence-based reasoning, and consider multiple perspectives. However, teachers are also expected to offer specific feedback on critical thinking elements such as clarity, precision, relevance, depth, breadth, logic, and fairness, all of which may assist students in identifying areas for improvement and help guide them toward ongoing skill enhancement. Additionally, workshops on effective argumentation techniques, including addressing counterarguments, could further improve students' argumentative abilities. It's also important to note that reinforcing these skills across a range of subjects and contexts may better prepare students to apply critical thinking both in academic settings and real-world situations, thereby expanding their analytical and argumentative capacities overall.

Conclusion

In conclusion, authentic assessment was observed to play a significant role in the development of critical thinking skills among students, particularly in supporting claims. The results of this research indicated that students in non-English faculties at Indonesian universities demonstrated notable competence in handling the abstract qualities inherent in argumentative essays, such as clarity, precision, relevance, depth, breadth, logic, and fairness. This suggests that, through real-world writing tasks and meaningful evaluation criteria, authentic assessments effectively fostered critical thinking skills in argumentative writing. Furthermore, the impact of authentic assessment on the quality of argumentation within non-English departments in

Indonesian higher education institutions was clearly evident. The high quality of argumentative writing reflected the students' proficiency in formulating strong thesis statements, effectively utilizing evidence, considering counterarguments, and drawing insightful conclusions.

Based on these findings, it was inferred that authentic assessment enhanced the ability of students to argue convincingly, analyze complex issues, and approach subjects with a critical perspective. Accordingly, the obtained results emphasized the importance of integrating authentic assessment practices into curriculum design, particularly in departments where English is not the primary language of instruction in Indonesian higher education institutions. Future research can be carried out to further emphasize and thoroughly explore the mechanisms underlying the development of critical thinking and argumentation skills. Furthermore, longitudinal studies tracking the progression of these skills over time could offer valuable insights into how each competence evolves in response to various teaching methodologies, curriculum designs, and educational interventions. Comparative studies across diverse student populations and educational settings could also provide a more comprehensive understanding of the factors influencing the acquisition and mastery of critical thinking abilities. Lastly, complementing these quantitative approaches, qualitative investigations can be performed to explore the perceptions of students about critical thinking instructions to provide a strong foundation for refining pedagogical strategies.

Declaration of conflicting interest

The authors declare that there is no conflict of interest in this work.

Funding acknowledgements

We extend our heartfelt gratitude to Universitas Muhammadiyah Makassar for generously granting us research funding under the International Collaboration Research Scheme. This invaluable support, as outlined in Contract Number 004-KOP-PEN/PENGABD/IV/1443/2022, has provided us with the opportunity to conduct meaningful and impactful research. We deeply appreciate the trust and commitment shown by Universitas Muhammadiyah Makassar in fostering academic excellence and international collaboration.

References

- Agustina, N., Mayuni, I., Iskandar, I., & Ratminingsih, N. M. (2022). Mobile learning application: infusing critical thinking in the EFL classroom. *Studies in English Language and Education*, 9(2), 724–743. <https://doi.org/10.24815/siele.v9i2.23476>
- Anisa, A., Widodo, A., & Riandi, R. (2017). Argumentation quality of socio-scientific issue between high school students and postgraduate students about cancer. *Journal of Physics: Conference Series*, 895(1). <https://doi.org/10.1088/1742-6596/895/1/012160>
- Bağ, H. K., & Gürsoy, E. (2021). The effect of critical thinking embedded english course design to the improvement of critical thinking skills of secondary school learners☆. *Thinking Skills and Creativity*, 41(July). <https://doi.org/10.1016/j.tsc.2021.100910>
- Barnet, S., & Bedau, H. (2011). Critical thinking, reading, and writing: A brief guide to argument: Bedford/St. Martin's.
- Bayley, K. E. (2023). The impact on practice of authentic assessment as part of a university postgraduate taught programme of study for nursing and healthcare professionals: a literature review. *Nurse Education Today*, 120(November 2022), 105622. <https://doi.org/10.1016/j.nedt.2022.105622>

- Beresova, J. (2015). Authentic materials – enhancing language acquisition and cultural awareness. *Procedia - Social and Behavioral Sciences*, 192, 195–204. <https://doi.org/10.1016/j.sbspro.2015.06.028>
- Broadbear, J. (2012). Essential elements of lessons designed to promote critical thinking. *Journal of the Scholarship of Teaching and Learning*, 3(3), 1–8. Retrieved from <https://scholarworks.iu.edu/journals/index.php/josotl/article/view/1603>.
- Burton, J. D. (2020). Raters' measurement of test-task authentic engagement in L2 oral-performance assessment: An exploration of scale development. *System*, 90, 102233. <https://doi.org/10.1016/j.system.2020.102233>
- Castro, D. (2022). Argumentation in Suboptimal Settings. *Argumentation*, 36(3), 393–414. <https://doi.org/10.1007/s10503-022-09571-9>
- Deane, P., Odendahl, N., Quinlan, T., Fowles, M., Welsh, C., & Bivens-Tatum, J. (2008). Cognitive models of writing: Writing proficiency as a complex integrated skill. *ETS Research Report Series*, 2008(2), i–36. <https://doi.org/10.1002/j.2333-8504.2008.tb02141.x>
- Double, K. S., Masri, Y. El, McGrane, J. A., & Hopfenbeck, T. N. (2023a). Do IB students have higher critical thinking? A comparison of IB with national education programs. *Thinking Skills and Creativity*, 50(November), 101416. <https://doi.org/10.1016/j.tsc.2023.101416>
- Double, K. S., Masri, Y. El, McGrane, J. A., & Hopfenbeck, T. N. (2023b). Do IB students have higher critical thinking? A comparison of IB with national education programs. *Thinking Skills and Creativity*, 50(November), 101416. <https://doi.org/10.1016/j.tsc.2023.101416>
- Fernandes, R., Willison, J., & Boyle, C. (2024). Characteristics of facilitated critical thinking when students listen to and speak English as an additional language in Indonesia. *Thinking Skills and Creativity*, 52(August 2023), 101513. <https://doi.org/10.1016/j.tsc.2024.101513>
- Figueroa, J., Meneses, A., & Chandia, E. (2018). Academic language and the quality of written arguments and explanations of Chilean 8th graders. *Reading and Writing*, 31(3), 703–723. <https://doi.org/10.1007/s11145-017-9806-5>
- Gao, R., Liu, J., Johnson, R., Wang, J., & Hu, L. (2019). Validating an ethical decision-making model of assessment using authentic scenarios. *Studies in Educational Evaluation*, 62(July), 187–196. <https://doi.org/10.1016/j.stueduc.2019.05.003>
- Gleason, B. L., Gaebelein, C. J., Grice, G. R., Crannage, A. J., Weck, M. A., Hurd, P., Walter, B., & Duncan, W. (2013). Assessment of students' critical-thinking and problem-solving abilities across a 6-year doctor of pharmacy program. *American Journal of Pharmaceutical Education*, 77(8), 166. <https://doi.org/10.5688/ajpe778166>
- Gojkov, G., Stojanović, A., & Rajić, A. G. (2015). Critical thinking of students – indicator of quality in higher education. *Procedia - Social and Behavioral Sciences*, 191(2012), 591–596. <https://doi.org/10.1016/j.sbspro.2015.04.501>
- Garcia, C. G., Buddy, H. H., & Hooper, J. (2011). Exploring factors of a web-based seminar that influence hispanic preservice teachers' critical thinking and problem-solving skills. *Journal of Hispanic Higher Education*, 10(3), 200–211. <https://doi.org/10.1177/1538192711402690>
- Hanusova, S., Dontcheva-Navratilova, O., Valisova, M. L., & Matulova, M. (2020). Process genre approach to l2 academic writing: An intervention study. *XLinguae*, 13(4), 30–51. <https://doi.org/10.18355/XL.2020.13.04.03>

- Hassanpour, B., Utaberta, N., Abdullah, N., Spalie, & Tahir, M. (2011). Authentic assessments or standardized assessment new attitude to architecture assessment. *Procedia - Social and Behavioral Sciences*, 15, 3590–3595. <https://doi.org/10.1016/j.sbspro.2011.04.340>
- Hossain, K. I. (2024). Reviewing the role of culture in English language learning: Challenges and opportunities for educators. *Social Sciences and Humanities Open*, 9(August 2023), 100781. <https://doi.org/10.1016/j.ssaho.2023.100781>
- Hyytinen, H., Ursin, J., Silvennoinen, K., Kleemola, K., & Toom, A. (2021). The dynamic relationship between response processes and self-regulation in critical thinking assessments. *Studies in Educational Evaluation*, 71(August), 101090. <https://doi.org/10.1016/j.stueduc.2021.101090>
- James T. Broadbear. (2013). Essential elements of lessons designed to promote critical thinking. *Journal of the Scholarship of Teaching and Learning*, 8(1), 1–14. <https://doi.org/10.14434/josotl.v>
- Jodoi, K. (2023). The correlations between parliamentary debate participation, communication competence, communication apprehension, argumentativeness, and willingness to communicate in a Japanese context. *Argumentation*, 37(1), 91–118. <https://doi.org/10.1007/s10503-022-09591-5>
- Kaepfel, K. (2021). The influence of collaborative argument mapping on college students' critical thinking about contentious arguments. *Thinking Skills and Creativity*, 40(February), 100809. <https://doi.org/10.1016/j.tsc.2021.100809>
- Kuyyogsuy, S. (2019). Patterns of interaction on peer feedback: Pair dynamics in developing students' writing skills. *International Journal of Higher Education*, 8(3), 191–205. <https://doi.org/10.5430/ijhe.v8n3p191>
- Le, T. T., Pham, T. T., Nguyen, A. T., Phuong, H. Y., Huynh, T. A. T., & Nguyen, H. T. (2024). “Becoming a trilingual learner may be harder than I thought!”: Difficulties encountered by Vietnamese French-major students when studying English as a foreign language. *Ampersand*, 12(December 2023), 100168. <https://doi.org/10.1016/j.amper.2024.100168>
- Lupton, M. (2018). Evidence, argument and social responsibility: First-year students' experiences of information literacy when researching an essay. *Higher Education Research and Development*, 27(4), 399–414. <https://doi.org/10.1080/07294360802406858>
- Luquin, M., & Mayo, M. D. P. G. (2024). A longitudinal study of the effects of model texts on EFL children's written production. *System*, 120(May 2023), 103190. <https://doi.org/10.1016/j.system.2023.103190>
- Marni, S., Suyono, Roekhan, & Harsiati, T. (2019). Critical thinking patterns of first-year students in argumentative essay. *Journal for the Education of Gifted Young Scientists*, 7(3), 683–697. <https://doi.org/10.17478/jegys.605324>
- Mochales, R., & Moens, M. F. (2011). Argumentation mining. *Artificial Intelligence and Law*, 19(1), 1–22. <https://doi.org/10.1007/s10506-010-9104-x>
- Muhsin, A., Setiawan, B., Asse, A., Sukri Syamsuri, A., Setiawan, S., Baharuddin, B., Aminullah, A., Ariani, N., & Mutmainnah, M. (2024). Critical thinking pattern in argumentation: a study on EFL higher education students in Indonesia. *The International Journal of Learning in Higher Education*, 31(1), 177–194. <https://doi.org/10.18848/2327-7955/cgp/v31i01/177-194>
- Ngajie, B. N., Li, Y., Tiruneh, D. T., & Cheng, M. (2020). Investigating the effects of a systematic and model-based design of computer-supported argument visualization on

- critical thinking. *Thinking Skills and Creativity*, 38(August), 100742. <https://doi.org/10.1016/j.tsc.2020.100742>
- Özdemir, S. (2018). The Effect of Argumentative text pattern teaching on success of constituting argumentative text elements. *World Journal of Education*, 8(5), 112. <https://doi.org/10.5430/wje.v8n5p112>
- Preiss, D. D., Castillo, J. C., Flotts, P., & San, E. (2013). Assessment of argumentative writing and critical thinking in higher education: Educational correlates and gender differences. *Learning and Individual Differences*, 28, 193-203.
- Salafia, A. F. (2021). Enhancing students' critical thinking skills in writing narrative through peer-feedbacking activities. *Journal of English Education Program*, 63–72. <https://jurnal.unigal.ac.id/index.php/je>
- Simonovic, B., Vione, K., Stupple, E., & Doherty, A. (2023). It is not what you think it is how you think: A critical thinking intervention enhances argumentation, analytic thinking and metacognitive sensitivity. *Thinking Skills and Creativity*, 49(June), 101362. <https://doi.org/10.1016/j.tsc.2023.101362>
- Singh, H., Malone, D., & Lim, A. S. (2023). Shifting to authentic assessments? A systematic review of student perceptions of high-fidelity assessments in pharmacy. *American Journal of Pharmaceutical Education*, 87(7), 100099. <https://doi.org/10.1016/j.ajpe.2023.100099>
- Sokhanvar, Z., Salehi, K., & Sokhanvar, F. (2021). Advantages of authentic assessment for improving the learning experience and employability skills of higher education students: A systematic literature review. *Studies in Educational Evaluation*, 70(February 2020), 101030. <https://doi.org/10.1016/j.stueduc.2021.101030>
- Song, Y., Heilman, M., Klebanov, B. B., & Deane, P. (2014). Applying argumentation schemes for essay scoring. *Proceedings of the Annual Meeting of the Association for Computational Linguistics*, 2011, 69–78. <https://doi.org/10.3115/v1/w14-2110>
- Tumilty, E., Spratt, H., Cestone, C., Wooten, K., Aronson, J., Hommel, J., Hellmich, M. R., & Chao, C. (2022). Developing future translational scientists through authentic learning and assessments. *International Journal of Educational Research Open*, 3(August 2019), 100151. <https://doi.org/10.1016/j.ijedro.2022.100151>
- Tungkasamit, A., & Junpeng, P. (2012). The development of authentic assessment training curriculum for research-based learning class in higher education of Thailand. *Procedia - Social and Behavioral Sciences*, 69(ICEEPSY), 1168–1173. <https://doi.org/10.1016/j.sbspro.2012.12.047>
- Tyas, M. A., Nurkamto, J., Marmanto, S., & Laksani, H. (2019). Developing higher order thinking skills (HOTS) – Based questions: Indonesian EFL teachers' challenges. *The 2nd International Conference on Future of Education*, 2(1), 52–63. <https://doi.org/10.17501/26307413.2019.2106>
- Villarroel, V., Boud, D., Bloxham, S., Bruna, D., & Bruna, C. (2020). Using principles of authentic assessment to redesign written examinations and tests. *Innovations in Education and Teaching International*, 57(1), 38–49. <https://doi.org/10.1080/14703297.2018.1564882>
- Wilson, K. (2016). Critical reading, critical thinking: Delicate scaffolding in English for Academic Purposes (EAP). *Thinking Skills and Creativity*, 22, 256–265. <https://doi.org/10.1016/j.tsc.2016.10.002>
- Yaman, F. (2018). Effects of the science writing heuristic approach on the quality of prospective science teachers' argumentative writing and their understanding of scientific

- argumentation. *International Journal of Science and Mathematics Education*, 16(3), 421–442. <https://doi.org/10.1007/s10763-016-9788-9>
- Yassin, E. (2024). Examining the relation of open thinking, critical thinking, metacognitive skills and usage frequency of open educational resources among high school students. *Thinking Skills and Creativity*, 52(March), 101506. <https://doi.org/10.1016/j.tsc.2024.101506>
- Yilmaz-Na, E., & Sönmez, E. (2023a). Having qualified arguments: Promoting Pre-service teachers' critical thinking through deliberate computer-assisted argument mapping practices. *Thinking Skills and Creativity*, 47(July 2022). <https://doi.org/10.1016/j.tsc.2022.101216>
- Yilmaz-Na, E., & Sönmez, E. (2023b). Having qualified arguments: Promoting Pre-service teachers' critical thinking through deliberate computer-assisted argument mapping practices. *Thinking Skills and Creativity*, 47(July 2022). <https://doi.org/10.1016/j.tsc.2022.101216>
- Zhao, L., Hussam, E., Seong, J. T., Elshenawy, A., Kamal, M., & Alshawarbeh, E. (2024). Revolutionizing art education: Integrating AI and multimedia for enhanced appreciation teaching. *Alexandria Engineering Journal*, 93(December 2023), 33–43. <https://doi.org/10.1016/j.aej.2024.03.011>.