E–writing activity using instant messaging to ignite EFL students' critical thinking in writing English argumentation on a conservation issue

Dedeh Rohayati[1], Fauzy Rachman Kosasih[2]
[1]Department of English Education, Universitas Galuh, Indonesia
[2]Department of English Education, Universitas Terbuka

Abstract

The 21st-century skill has intrigued all stakeholders in the education context to ignite the implementation of critical thinking in the classroom. The present study aimed at exploring 1) the argument analysis of critical thinking demonstrated by the EFL students in writing argumentative text using Instant Messaging; and 2) students' awareness of the relationship among argumentative text, critical thinking, conservation issue and some challenges in experiencing the Instant Messaging activity. The qualitative paradigm with the type of case study was utilized involving five EFL students as the participants. The primary data was obtained by employing screenshots of students' written argumentation and Instants Messaging Interview. The findings came up with evidence that 1) the obvious premises and conclusion are not offered to build a good argument; 2) student's ability to write argumentative text needs more ignition and improvement; 3) the inclusion of technical support (internet access and an E-writing device, namely, instant messaging), helped them a lot in making judgments fast; and 4) the students were more aware of several issues in a concise time such as the term critical thinking, strategy in writing a good argumentative text, effects caused by plastic and its recommendation, and offering some alternatives for some challenges.

Keywords: Argumentative; Conservation; Critical; Technology; Thinking; Writing

INTRODUCTION

Recently, the study on argumentative essays reflecting students' critical thinking become an intriguing issue to be analyzed. That is not all, the inclusion of technology in these vibes is getting high in the study of students' argumentative writing and critical thinking ability. Mainly, in the education field, it is very critical to endeavor students' ability on thinking critically, as a 21st-century skill. Evaluating students' ability in critical thinking ability is derived from the way the teacher assessed their critical thinking ability. For this reason, Argumentative essay has been gradually popular as one of the alternatives to assess someone's critical thinking ability.

It is inevitable that the world is getting global and competitive. This 21st-century era leads education practitioners to pay conscious a high attention to critical thinking skills which are imperative in education (Davies & Barnett, 2015). For that reason, the stakeholders, mainly, the teachers, must provide the students preparation for successful lives in the future, i.e., by equipping their critical thinking skills. To achieve the target, educators need to design teaching and learning processes that integrate critical thinking skills in the classroom. On the contrary, very little is known about the encouragement of critical thinking and the way critical thinking be implemented explicitly in the classroom (Rahman et al., 2021; Rombout et al., 2021; Lailiyah & Wediyantoro, 2021; As'ari et al., 2019; Asgharheidari & Tahriri, 2015). Recalling this awful condition, all parties must get together in realizing the educational system which assists the students to be critical thinkers.

Many strategies might be lucrative in boosting students' critical thinking development such as solving their academic problems, project-based learning, and integrating informational technology in their learning environment (Cortázar et al., 2021; ŽivkoviL̇, 2016; Malik & Shanwal, 2017; Rohayati & Rachmawati, 2021). Using questioning and the Socratic Questioning method (Henny et al., 2022; Lintangsari et al., 2022; Abidah, 2022) and facilitating students' critical thinking skills in writing have also been conducted (Maamuujav et al., 2020; Khazrouni, 2019; Aliyu, 2020; Rohayati, 2017; Rohayati et al., 2019). That is not all, even, the experts make an effort to create a teaching and learning process that involves the skill of thinking critically by providing the provocative question to the thought (Asgharheidari & Tahriri, 2015; Gul et al., 2014). These ways of activities might be valuable insight for all of the stakeholders in fostering students' critical thinking in their classroom. Moreover, the involvement of conservation issue which is a critical broadens students' perspectives towards the world because the education community nowadays plays a role as an agent on keeping the citizens conserving their environment (Waititu, 2021).

In language learning, in particular the productive language skill, writing has been considered as an ultimate area to research students' critical thinking skills for some years. Also, the research implies that an individual deserves an effective critical thinker if she or he can produce both oral and written effective arguments. Regarding the written argument, students in higher education are required to have the ability to write academically. Several studies evidenced the students' argumentative writing as a reflection of critical thinking skills (Fahim & Hashtroodi, 2012; Afshar et al., 2017; Pei et al., 2017; Nejmaoui, 2018; Lu & Xie, 2019; Rohayati, 2017a, Rohayati & Lilies, 2019; Murtadho, 2021). Yet, studies focusing on discovering the technology support in developing EFL students' critical thinking in writing argumentative underpinned by Reichenbach (2000) framework, remain uncovered, especially digging out deeply the topic of conservation. This results in the intention of the present study to be conducted with the following objectives: 1) how does the English argument development demonstrated by the students; and 2) how do the students look over instant messaging as a device in E–writing activity to ignite students' critical thinking in English argument on a conservation issue.

Literature Review
Critical Thinking

An accurate critical thinking definition has been shaped by many scholars who have taken a part in this area of study for many years. Most people tend to understand the concept of critical thinking as ''reasonable reflective thinking focused on deciding what to believe or do'' (Ennis, 1996; Reichenbach, 2000; Ennis, 2018). The other concept of critical thinking skills is also defined as "the capabilities to think reflectively and judge skillfully, to decide what information is reliable and what actions should be taken during reasoning and problem-solving" (Fung & Howe, 2014; Kwan & Wong, 2014; Kwan & Wong, 2014; Kong, 2014). As multiple definitions build up the term critical thinking, it is pivotal to be familiar with skills and disposition. Critical thinking skills can be understood as cognitive skills such as interpretation, analysis, evaluation, explanation, inference, and self-regulation; while critical thinking disposition pertains to the affective domain comprising inquisitiveness, systematicity, analyticity, truth-seeking, open-mindedness, self-confidence, and maturity (Facione, 2000; Ennis, 2016). Another expert implies that the necessity of critical competence in producing and promoting knowledge based on information society results in the existence of information and empirical data (Feuerstein, 1999; Ennis, 2016) in every argument. A good argument must have premises and a conclusion with logical indicators such as indicating premises and *so, therefore, for that reason* indicating conclusion (Reichenbach, 2000).

An effective argument is offered by critical thinkers due to their ability in writing argumentatively. The critical manner in writing proper argumentative results in the creation of text with the involvement of critical thinking elements such as issue, claims (thesis), argument, reasons, and data (evidence) which are utilized based on the ideas of Chaffee and Carlson (2014), Ennis (1996), and Reichenbach (2000).

The other aspects of critical thinking in writing argumentative that has to be demonstrated in the research report are relevance, clarity, accuracy, precision, logic, and coherence (Chaffee & Carlson, 2014). This ability crucially depends on the learners' equipment of thinking capacity intellectually in a critical manner. The integration of CT in writing argumentative text can guide students to become more critical thinkers in encountering the information, checking credible sources, considering alternative theses, evaluating evidence, etc. (Nejmaoui, 2018). It is to say that critical thinking and writing argumentative text are interrelated so that they can determine the proficiency level of a critical thinker.

Argumentative text

Writing argumentative text is a pivotal skill since it allows people to evaluate representations of someone (Ferretti & Graham, 2019). It is commonly developed in the personal context, professional, and academic contexts (Lee & Deakin, 2016). Sufficient knowledge of argumentative features results in successful writing (Crossley et al., 2022). Argumentative writing is defined as "opinion-based discourse in which a speaker or writer takes a particular stance on a controversial topic and attempts to convince the listener or reader to adopt that position"(Golder & Coirier, 1996). The writer's intention in writing argumentative is to persuade the readers to do something (Meiranti, 2012); thus it provides room for someone who has a different opinion on certain controversial issues (van Eemeren, 2018).

Argumentative writing consists of argument series that are built by supporting elements namely opinion, reason, and evidence, i.e., example and data (Reichenbach, 2000; Chaffee & Carlson, 2014; Ennis, 2016). Meanwhile, the moves of argumentative in the various stages lead to an effective argument as proposed by (van Eemeren, 2018). Table 1. illustrates the move and stages in constructing sophisticated argumentative writing. Another notion is claimed by Bondarenko et al. (2022) in that argumentative refers to a series of words forming in sentence collection which is crawled from debate, a large collection of text passages, representing public opinion on controversial topics.

Digital Technology

The term digital technology always relates to ICT (Information and Communication Technology) and is considered as technological devices and resources that provide the user the services for information communication. Stegman in Sailer et al. (2021) defines digital technologies as computer-based technologies providing the area of general and specific content and/or enabling teachers and students to interact with each other. The specific definition of digital technology embraces the utilization of computers for presentation purposes as well as computer-supported collaborative learning systems (Sailer et al., 2021). However, the other five types of digital technology can also be employed such as mobile phones, large online datasets, connected devices, low-cost computing resources, and machine learning and natural language processing (Vargo et al., 2021); accordingly, the daily use of digital technology is mostly used for searching and analyzing the information.

Although it is seen as something daunting for certain generations, the integration of digital technology into the curriculum is getting rampant and avoidable in the 21st century. The advantage of utilizing technology assists students in that they become more certain successfully about what to perform. The inclusion of technology is pivotal to realizing sequence development, for example, critical thinking skills development (Kong, 2015), the writing development (Maamuujav et al., 2020), and educational outcome development (Sailer et al., 2021). Regarding critical thinking skills development, digital technology enables the user to deliver and determine reasons, and evaluate the truthfulness and valuable values of information from various sources (Fraillon et al., 2014).

E-writing and Instant Messaging

E-writing pertains to the activity of writing involving electronic-based technology with platform internet-based supply (Mohamadi Zenouzagh, 2020; Alanazi, 2013; Rohayati & Lilies, 2019). such as Google, Protopage, Wiki, Facebook, Yahoo Mail, Gmail, Whatsapp, Twitter, Blog, Text

Message, dan Hotmail. It enables students to present their critical thinking capacity and writing in such a way (Alanazi, 2013; Romagnuolo, 2015) which can produce innovative work (Leston-Bandeira, 2016). The present study empowers the use of WhatsApp Group with the device of Instant Messaging. This device is commonly used when communicating via WhatsApp Group and the user may make considerations, and amendments before posting or sending the message (Dawson et al., 2021). The message in the present study is a kind of text which is called argumentative text.

METHOD

As previously mentioned, the present study was aimed at investigating students' critical thinking in argumentative text. Particularly, the study tried to uncover the researcher's curiosity on 1) the pattern of argument demonstrated by students as their critical thinking reflection; 2) how the students overlook the instant messaging in optimizing their critical thinking in argumentative writing. This led to several points, such as participants, research design, measurement, data collection, and analysis techniques, being elaborated.

A qualitative case study was employed because the richness of investigated case, as primary data, was detailed and described in written elaboration at which the events were chronologically narrated (Cohen et al., 2013). The research was carried out on a site where the accessibility, and availability matched the purpose of the study. The researcher's accessibility to the English Department Program in one of the private Universities in West Java, might become a beneficial opportunity for the researcher to present the skillful investigator and demonstrate ethically the position of research (Cohen et al., 2013) on Instant messaging, E–writing activity, critical thinking, argumentative text, and a conservation issue. Concerning relevance and availability, the EFL curriculum, particularly, Academic Writing based on an argumentative text framework is taught during the semester when the research took place. Apart from it, critical thinking has become a buzzword recently as one of the 21st-century skills; and the conservation issue is now beginning to whistle its blower as one of the university slogans, "Conservation and Culture".

Recalling these facts, the research involved fifth-semester five students of the English Department in a private university in West Java, who enrolled in Academic writing and were selected purposively. The students were required to follow the prompt writing which the lecturer shared on WhatsApp Groups, as given in the following Figure 1:
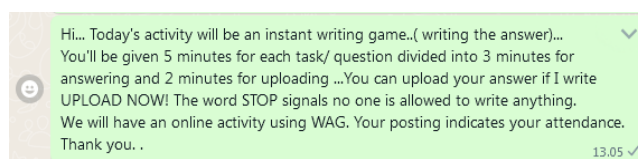
Hi… Today's activity will be an instant writing game..(writing the answer)…
You'll be given 5 minutes for each task/ question divided into 3 minutes for answering and 2 minutes for uploading …You can upload your answer if I write UPLOAD NOW! The word STOP signals no one is allowed to write anything.
We will have an online activity using WAG. Your posting indicates your attendance.
Thank you. .
13.05 ✓

Figure 1. Preliminary activity.

With regards to data collection, screenshots image of students' argumentative images, and instant messaging interviews were utilized each of which depicts students' argument structure and how the sound to the activity. Students' argumentative text represented the documented primary data (Cohen et al., 2013) that were to be analyzed. Meanwhile, the instant messaging interview was administered to five students for this kind of asynchronous chat or message providing participants with an affordable area at which response could be considered and amended best on their willingness (Dawson et al., 2021). The interview is the ultimate way to uncover participants' points of view about the situation they live in (Cohen et al., 2013). Thus, the triangulation of the present research (Cohen et al., 2013) consisted of two primary data: students' document texts and instant messaging interviews.

Students' argumentative images were measured by the theory of critical thinking as suggested by (Reichenbach, 2000) coping with argument structure. Regarding the analysis of Instant messaging interview, the several steps proposed by Kvale & Brinkmann (2009) and Creswell and Creswell (2017)was applied including "transcribing, categorizing and coding, condensing, and interpreting".

RESULTS AND DISCUSSION

The present study provides the desirable research result which is derived from the primary data such as the screenshots image of students' argumentative images, and instant messaging interviews. It has been mentioned previously that the screenshots image of students' argumentative images were used to reveal the students' argument recognition. On the contrary, the instant messaging interview was employed elaborate on what students said about the activity. Those analyzed results are the findings of the present study that will be elaborated in the following organization:

The student's argument analysis on conservation issues represents their critical thinking

The results of the present study come up with the fact that students offer an argument towards the controversial issue of conservation. Each argument represents students' critical thinking nevertheless the present study only focused on the type of argument structure. Among the number of controversial issues, the one representing the university slogan was selected, namely, "We should ban plastic bags. What is your position?"

The EFL students' argument portrays their arguments in responding to the controversial issue of conservation. The elements of argument have been proposed consisting of premises and conclusion indicated by the utilization of logical indicators such as *because* and *so*. Breaking the students' arguments down might be invaluable since it can unfold how their argument development can be. To make a desirable result, corrective linguistic features and mechanic aspects restored the students' arguments from the worst to a better one. To follow Reichenbach (2000,p. 161), the present study tries to recognize and analyze students' arguments in terms of *premises* and *conclusion*, as given in the following tables of excerpts:

Table 1. The first student's excerpt.

I agree because it can reduce the amount of plastic waste that is scattered around.
besides that, it can be replaced by using recycled plastic which is environmentally friendly.

Table 1 indicates that the sentence supplies only one logical indicator, i.e., **because** indicating premises**.** Henceforth, the sentence must be given a better sense to make the premises and conclusion obvious**:**

Assertion: I agree
Premise: because it can reduce the amount of plastic waste that is scattered around;
Conclusion: for this reason, plastic can be replaced by using recycled plastic which is
              environmentally friendly.

After being restored, it is obvious that there is one premise indicated by **because** and 1 conclusion indicated **for this reason**. This sentence can be categorized as a good argument since the premise is different from the conclusion.

Table 2. The second student's excerpt.

Yes, I agree with that because there are many bad impacts from that such as it is really difficult to recycle and it will have a bad impact on our environment.

Similarly, Table 2 shows that this sentence supplies only one logical indicator of **because** indicating premises. The additional phrases **such as** indicating evidence or fact are supplied by students to support the premise. Subsequently, this sentence needs improvement in terms of supplying logical indicators for premises.

Assertion: Yes I agree that
Premise 1: because there are many bad impacts
Evidence 1 of Premise 1: such as it is difficult for recycling;
Conclusion: **it must be that** it will have a bad impact on our environment.

Although the sentence has supplied the logical indicator *It must be that* still have the sentence does not so obvious what the students want to defend or support their conclusion. Thus, the 2nd Students Excerpt has not been categorized as a good argument yet for the student blatantly simply repeats similar words in the premise and conclusion. This bad argument is called *begging the question fallacy.*

Table 3. The third student's excerpt.

I agree that plastic waste must be reduced to make a healthier environment. Because plastic waste is difficult to decompose and pollutes the soil.

The 3rd Student's excerpt in Table 3 is not a good argument since the supply of *so*, as a logical indicator, does not commit the chronological order of a good argument because a conclusion must be drawn or inferred from the evidence. The better improvement might be:

Assertion: I agree,
Premises: because plastic waste is difficult to decompose and pollutes the soil;
Conclusion: that plastic waste must be reduced to make a healthier environment.

This current sentence makes sense because the truth of the claim or assertion offered by students: *I agree*, is inferred from the claim that *We should ban plastic bags* and *plastic waste is difficult to decompose and pollutes the soil*.

Table 4. The third student's excerpt.

I agree with the motion because plastic bag brings many environmental issues such as water, land, and air pollution.

This sentence in Table 4 only supplies the premise which is indicated by *because*. The depiction of obvious premises is given in the following elaboration:

Assertion: I agree with the motion
Premise 1: (because) plastic bag brings many environmental issues
Evidence of premise 1: such as water, land, and air pollution.
Conclusion: -

There is no conclusion indicating a good argument which the argument is defined as someone's drawing a conclusion based on a series of evidence. This is a kind of *opinion* on a certain issue, in this case, a conservation issue, to confirm what the students believe. The student also wants to persuade people to her opinion. To be a good argument, the author is supposed to repeat the motion (*We must ban plastic bag*s) to form a conclusion. So, the argument might be: *Because plastic bag brings many environmental issues, we must ban plastic bag.*

Table 5. The fifth student's excerpt.

I don't agree because the plastic recycling process is very slow, and also if plastic is thrown anywhere it will take a long time to destroy the plastic.

This sentence in Table 5 only supplies one logical indicator, namely, *because*, indicating premise. Meanwhile, the students involve the word *If* to indicate the reason. The sentence which has *it* is called a conditional sentence. Thus, this sentence supplies two-word connectors at which one shows an obvious premise and another does not. However, this sentence can be separated into two sentences to have a better sense:

Sentence 1:

Assertion: I don't agree …
Premise 1: because the plastic recycling process is very slow.
Conclusion: -

Sentence 2:

If plastic is thrown anywhere it will take a long time to destroy the plastic

Like the fourth Student's Excerpt (Table 4), Sentence 1 does not commit the argument because there is no conclusion. After being made obvious, Sentence 2 might become another example of argument form because the sentence uses the word *if.* The second sentence represents one of the deductive argument forms. Fragments following the word *if* are called ***antecedent***; and another one is ***consequent.*** Thus, the 5th Students Excerpt simply commits the opinion showing what students believe or the claim/assertion is true.

This result might imply that the involvement of technology resulted in students who are capable, with a high interest and motivation (Malik & Shanwal, 2017). Apart from it, students' understanding towards the topic was getting improved due to the technological support as a tool for facilitating students' critical thinking (Rohayati & Rachmawati, 2021). Unlike the study conducted by Maamuujav et al. (2020), the current study does not show students' development on writing since the logical reasoning constructed by students did not produce a desirable result. This leads to a conclusion that students' critical thinking, mainly, logical reasoning still need improvement.

Students' experience of E–writing activity using instant messaging to ignite students' critical thinking in English argumentative on a conservation issue

Apart from the document of students' argumentative text which was taken from the screenshot, the second primary data were an interview consisting of 9 questions. These questions were delivered via WhatsApp Groups as Instant Messaging Interviews were administered to 5 students. The result of the interview was subsequently analyzed as suggested by Kvale (1996). The result of the interview in this section has been condensed into several central themes and it was divided into several central themes. The interpretation of the interview result is given in Table 2:

Table 6. Central themes and interview interpretation.

Central themes	The condensed version of an interview
Student's awareness of argumentative text	Students are aware of Argumentative text which refers to text organization representing someone's position to depend on or refuse, pros or cons which are supported by valid and factual data, rationale, analysis, and evaluation. They also state that Argumentative writing provides the students with the facility of their critical thinking. An effective argument is created by reasoning, evidence, conclusion, and supporting sentence (premise).
Students' awareness of critical thinking	Students are also aware of Critical thinking about someone's ability in analyzing and evaluating factual evidence rationally. They recognize six elements of critical thinking as suggested by Ennis under the abbreviation of FRISCO (Focus, Reason, Inference, Situation, Clarity, Overview)
Students believe in the conservation issue of "Plastic bags should be banned"	Students have their own beliefs which are in the pros position because they agree with the motion. They believe that motion increases their awareness of conservation and their curiosity about the disadvantageous of plastic. They also believe that plastic has become the most waste in the world in quantity. They understand that without proper recycling management, plastic can pollute the environment. Also, they realize that plastics take a long time to decompose. Finally, they recommend that people use recycled plastic bags to reduce plastic waste.
Students challenge in E-writing activity using Instant Messaging Devices to ignite their critical thinking	Students claim that short time allocation was deemed to trigger students in thinking and writing fast and spontaneously towards the topic. They agree that a lack of reading hampers the proses of writing that resulted in poor knowledge. For students themselves, this activity trains not only how to think critically but also how to produce good quality writing in three minutes.

Sources: Students' interview

Table 2 represents students' points of view towards E-writing activity. They positively believe instant messaging can assist their students' critical thinking development. Besides, their critical thinking ability reflected in English argumentative increases students' awareness of conservation issues. They become to get to know the interrelationship among critical thinking, writing argumentative, and conservation issue which in in line with the previous study (Rohayati & Rachmawati, 2021; Rohayati, 2017).

Discussion

Previously, the result of two primary data has been discussed depicting the image of students' argument as well as the way the students look over the activity. These images of the argument are a result of their struggle in accomplishing the task in a very short time allocation, i.e., three minutes. In this challenging situation, the ability of critical thinking skill was a must; apart from it, argumentative writing skill was also beneficial. As in spoken discourse, which is well-known as a debate topic (Bondarenko et al., 2022), this kind of argument is very common. This might be evidence of someone's critical thinking; hence, it must be kept in mind that an effective critical thinker relies on how logical, effective, and sound their argument is (Chaffee & Carlson, 2014). Unfortunately, none of the arguments were associated with the term *HIBBER (Hijau, Bersih, Berkarakter)* of which Green, Clean, and Character are English translations.

One of the most intriguing issues in seeing the student's argument is concerning the way they delivered the argument. As the present study is considered an E-writing activity, students' zero tricky spelling resulted in innovative work (Leston-Bandeira, 2016; Rohayati & Lilies, 2019), thinking fast and critically (Sharadgah, 2014; Kong, 2015). E-writing activity which involves the internet access enabled students to include evidence fast (Fraillon et al., 2014). Evidence that the students supplied supports the assertion; and therefore the conclusion is drawn from the series of evidence (Reichenbach, 2000; Chaffee & Carlson, 2014). Amid constructing the English argument, the students had a plentiful occasions to offer and amend their arguments before posting on WhatsApp Group (Dawson et al., 2021). As a result, the students were able to present the English argument in a short time.

Even though students have successfully reflected critical thinking and argument elements, they have not been categorized as effective critical thinkers (Ennis, 1996; Chaffee & Carlson, 2014). The student's critical manners need improvement because they have not been skillful in creating the desirable integration of argumentative text with critical thinking (Chaffee & Carlson, 2014; Reichenbach, 2000; Ennis, 1996; Afshar et al., 2017). Similarly, studies conducted by Fahim & Hashtroodi (2012), and Pei et al. (2017) show undesirable results since teaching critical thinking does not significantly improve students' argumentative writing which means that there is no significant correlation between critical thinking and writing argumentative text. However, a study conducted by Lu & Xie (2019) links to the present study in that students have a positive attitude towards the strategy used in teaching writing of argumentative. Similarly, a study reported by Nejmaoui (2018) and Murtadho (2021) suggests that the integration of critical thinking in teaching argumentative writing might be lucrative. Without any doubt, the present study has become fruitful information for all the practitioners to make an inclusion of digital literacy to trigger students' critical thinking skills as well as to develop the quality of students' argumentative writing, as given in a previous preliminary study (Rohayati, 2017a; Rohayati & Lilies, 2019).

It is to be concluded that the present study provides the practitioners several new insights. The instant messaging might become an alternative device for creating an online interactive writing activity leading to students' learning engagement. Besides, the use of instant messaging fosters students' critical thinking because the internet access provides the students searching system of facts and evidence. The critical thinking elements supporting an effective arguments and focusing on the obvious "premises" and "conclusion" are also new insight. It is very unfortunate that, comparing to the previous studies (Rohayati, 2017a; Rohayati, 2017b; Rohayati & Lilies, 2019); there is a consistency of students' critical thinking performance which are still weak and needs improvement. It might be an

evidence that the weak critical thinking in writing English argumentation characterized the students in the country where English status as foreign language.

CONCLUSION

The finding of the present study might become a shred of evidence that the inclusion of cognitive aspect, namely, critical thinking ability in writing development is worth paying great attention to. That is not all, the attractive activity that involved digital technology support might also be beneficial for students learning outcomes. The fact that the students could not offer a contented argument, i.e., obvious premises and conclusion are still blurred, might become a warning for all the academic practitioners to be more sparkling in delivering. The characteristic of students who are digital natives might also become promising potential in developing both argumentative writing ability and critical thinking abilities. This leads to the condition where the students become more aware of the quality of argumentative writing, critical thinking, and digital literacy. The inclusion of local university slogans is also attractive because that shows how to care for the students towards the world where they live in.

Limitations and future direction

One limitations of this study is that the explicit teaching of critical thinking has not been implemented yet in the classroom, mainly how to build the obvious premises and conclusion. These terms are the elements of a good argument that should be taught to the students. The integrated of teaching critical thinking and writing Argumentative writing are also invaluable for creating the students who are critical. Further research is suggested to carry out more enlightening research. As in the present study, the number of participants and methodology need development. For example, the use of critical thinking tests, writing scoring rubrics using sophisticated tools, and the effectiveness of Instant Messaging might be intriguing to be examined.

Acknowledgements

Declarations

The writers declare that this article is our original work and it is submitted for first publication to *Interdisciplinary International Journal of Culture and Conservation (IIJCC).* The article has not been published and is not being submitted or considered for publication elsewhere. The text, illustrations, or any other materials included in the article contains no violation of any existing copyright and does not infringe any rights of third parties. All authors participated in the work in a substantive way are prepared to take public responsibility for the work.

REFERENCES

Abidah, U. F. U. (2022). Reasoning Socratic Questioning Method to Enhance University Students' Critical Reading in Critical Reading Course. *Research on English Language Teaching in Indonesia*, *10*(1), 1–8.

Afshar, H. S., Movassagh, H., & Arbabi, H. R. (2017). The interrelationship among critical thinking, writing an argumentative essay in an L2 and their subskills. *Language Learning Journal*, *45*(4), 419–433. https://doi.org/10.1080/09571736.2017.1320420.

Alanazi, M. (2013). Using electronic writing to promote students' writing. *EWU Masters Thesis Collection*, 1–92.

Aliyu, M. M. (2020). Exploring the nature of undergraduates' peer collaboration in a PBL writing

process. *International Journal of Language Education*, *4*(1), 11–23. https://doi.org/10.26858/ijole.v4i2.8406.

As'ari, A. R., Kurniati, D., & Subanji. (2019). Teachers expectation of students' thinking processes in written works: A survey of teachers' readiness in making thinking visible. *Journal on Mathematics Education*, *10*(3), 409–424. https://doi.org/10.22342/jme.10.3.7978.409-424.

Asgharheidari, F., & Tahriri, A. (2015). A survey of efl teachers' attitudes towards critical thinking instruction. *Journal of Language Teaching and Research*, *6*(2), 388–396. https://doi.org/10.17507/jltr.0602.20.

Bondarenko, A., Fröbe, M., Kiesel, J., Syed, S., Gurcke, T., Beloucif, M., Panchenko, A., Biemann, C., Stein, B., Wachsmuth, H., Potthast, M., & Hagen, M. (2022). Overview of Touché 2022: Argument Retrieval. *CEUR Workshop Proceedings*, *3180*, 2867–2903. https://doi.org/10.1007/978-3-031-13643-6_21.

Chaffee, J., & Carlson, S. (2014). *Critical thinking, thoughtful writing*. Cengage Learning.

Cohen, L., Manion, L., & Morrison, K. (2013). *Research Methods in Education*. Taylor & Francis.

Cortázar, C., Nussbaum, M., Harcha, J., Alvares, D., López, F., Goñi, J., & Cabezas, V. (2021). Promoting critical thinking in an online, project-based course. *Computers in Human Behavior*, *119*(February). https://doi.org/10.1016/j.chb.2021.106705.

Creswell, J. W., & Creswell, J. D. (2017). *Research design: Qualitative, quantitative, and mixed methods approaches*. SAGE Publications.

Crossley, S. A., Tian, Y., & Wan, Q. (2022). Argumentation Features and Essay Quality: Exploring Relationships and Incidence Counts. *Journal of Writing Research*, *14*(1), 1–34. https://doi.org/10.17239/jowr-2022.14.01.01.

Dawson, J., Einion-Waller, A., & Jones, D. (2021). Instant messaging: a novel means of facilitating the participation of hard-to-reach groups in sensitive topic research. *Qualitative Research Journal*, *21*(2), 206–216. https://doi.org/10.1108/QRJ-06-2020-0061.

Ennis, R. H. (1996). *Critical Thinking*. Prentice Hall.

Ennis, R. H. (2016). Critical thinking across the curriculum: A vision. *Topoi*, *37*(1), 165–184. https://doi.org/10.1007/s11245-016-9401-4.

Facione, P. A. (2000). The Disposition Toward Critical Thinking: Its Character, Measurement, and Relationship to Critical Thinking Skill. *Informal Logic*, *20*(1), 61–84. https://doi.org/10.22329/il.v20i1.2254.

Fahim, M., & Hashtroodi, P. (2012). The Effect of Critical Thinking on Developing Argumentative Essays by Iranian EFL University Students. *Journal of Language Teaching and Research*, *3*(4), 632–638. https://doi.org/10.4304/jltr.3.4.632-638.

Feuerstein, M. (1999). Media Literacy in Support of Critical Thinking. *Journal of Educational Media*, *24*(1), 43–54. https://doi.org/10.1080/1358165990240104

Fraillon, J., Ainley, J., Schulz, W., Friedman, T., & Gebhardt, E. (2014). Preparing for Life in a Digital Age. In *Preparing for Life in a Digital Age*. https://doi.org/10.1007/978-3-319-14222-7.

Fung, D., & Howe, C. (2014). Group work and the learning of critical thinking in the Hong Kong secondary liberal studies curriculum. *Cambridge Journal of Education*, *44*(2), 245–270. https://doi.org/10.1080/0305764X.2014.897685.

Golder, C., & Coirier, P. (1996). The production and recognition of typological argumentative text markers. *Argumentation*, *10*(2), 271–282. https://doi.org/10.1007/BF00180729.

Gul, R. B., Khan, S., Ahmed, A., Cassum, S., Saeed, T., Parpio, Y., & Profetto-mcgrath, J. (2014). Enhancing Educators ' Skills for Promoting Critical Thinking in Their Classroom Discourses : A Randomized Control Trial. *International Journal of Teaching and Learning in Higher Education*, *26*(1), 37–54.

Henny, I., Tambusai, A., & Hasibuan, A. L. (2022). *The Effect of Questioning Technique and Critical Thinking on Students Reading Comprehension*. *01*(01), 159–163.

Khazrouni, M. (2019). Assesment for Improving ESL Learners' Writing Skills among Undergraduate Students: a Case Study of Skyline University College. *International Journal of English Language*

Teaching, *7*(1), 30–44.

Kong, S. C. (2014). Developing information literacy and critical thinking skills through domain knowledge learning in digital classrooms: An experience of practicing flipped classroom strategy. *Computers and Education*, *78*, 160–173. https://doi.org/10.1016/j.compedu.2014.05.009.

Kong, S. C. (2015). An experience of a three-year study on the development of critical thinking skills in flipped secondary classrooms with pedagogical and technological support. *Computers and Education*, *89*, 16–31. https://doi.org/10.1016/j.compedu.2015.08.017.

Kvale, S., & Brinkmann, S. (2009). *Interviews: An Introduction to Qualitative Research Interviewing*. Sage Publications.

Kwan, Y. W., & Wong, A. F. L. (2014). The constructivist classroom learning environment and its associations with critical thinking ability of secondary school students in Liberal Studies. *Learning Environments Research*, *17*(2), 191–207. https://doi.org/10.1007/s10984-014-9158-x.

Lailiyah, M., & Wediyantoro, P. L. (2021). Critical thinking in second language learning: Students' attitudes and beliefs. *International Journal of Language Education*, *5*(3), 180–192. https://doi.org/10.26858/ijole.v5i3.18350.

Lee, J. J., & Deakin, L. (2016). Interactions in L1 and L2 undergraduate student writing: Interactional metadiscourse in successful and less-successful argumentative essays. *Journal of Second Language Writing*, *33*, 21–34. https://doi.org/10.1016/j.jslw.2016.06.004.

Leston-Bandeira, C. (2016). Why symbolic representation frames parliamentary public engagement. *British Journal of Politics and International Relations*, *18*(2), 498–516. https://doi.org/10.1177/1369148115615029.

Lintangsari, A. P., Emaliana, I., & Kusumawardani, I. N. (2022). Improving Learners' Critical Thinking and Learning Engagement through Socratic Questioning in Nominal Group Technique. *Studies in English Language and Education*, *9*(2), 705–723. https://doi.org/10.24815/siele.v9i2.22352.

Lu, D., & Xie, Y. (2019). The effects of a critical thinking oriented instructional pattern in a tertiary EFL argumentative writing course. *Higher Education Research and Development*, *38*(5), 969–984. https://doi.org/10.1080/07294360.2019.1607830.

Maamuujav, U., Krishnan, J., & Collins, P. (2020). The utility of infographics in L2 writing classes: A practical strategy to scaffold writing development. *TESOL Journal*, *11*(2). https://doi.org/10.1002/tesj.484.

Malik, N., & Shanwal, V. K. (2017). INTEGRATED JOURNAL OF SOCIAL SCIENCES A comparative study of traditional and smart classrooms in relation to their creativity and academic achievement. *Integrated Journal of Social Sciences Integr. J. Soc. Sci*, *2017*(1), 15–19.

Meiranti, R. (2012). Improving Students' Writing Skills Through Field Trip Method. *English Review: Journal of English Education*, *1*(1), 1–8.

Mohamadi Zenouzagh, Z. (2020). Syntactic complexity in individual, collaborative and E-collaborative EFL writing: mediating role of writing modality, L1 and sustained development in focus. In *Educational Technology Research and Development* (Vol. 68, Issue 6). Springer US. https://doi.org/10.1007/s11423-020-09818-w.

Murtadho, F. (2021). Metacognitive and critical thinking practices in developing EFL students' argumentative writing skills. *Indonesian Journal of Applied Linguistics*, *10*(3), 656–666. https://doi.org/10.17509/ijal.v10i3.31752.

Nejmaoui, N. (2018). Improving EFL Learners' Critical Thinking Skills in Argumentative Writing. *English Language Teaching*, *12*(1), 98. https://doi.org/10.5539/elt.v12n1p98.

Pei, Z., Zheng, C., Zhang, M., & Liu, F. (2017). Critical Thinking and Argumentative Writing: Inspecting the Association among EFL Learners in China. *English Language Teaching*, *10*(10), 31. https://doi.org/10.5539/elt.v10n10p31.

Rahman, O., Usman, & Johar, R. (2021). Improving high school students' critical thinking ability in linear programming through problem based learning assisted by GeoGebra. *Journal of Physics: Conference Series*, *1882*(1). https://doi.org/10.1088/1742-6596/1882/1/012070.

Reichenbach, B. R. (2000). *Introduction to Critical Thinking* (Vol. 5, Issue 1). Mcgraw Hill Higher

Education.

Rohayati, D. (2017a). Students' Critical Thinking in Writing An English Exposition Text. *Advance in Social Sciences and Humanities Research (ASSEHR)*, *82*(Conaplin 9), 228–232.

Rohayati, D. (2017b). *Students' Critical Thinking in Writing an English Exposition Text (A Case Study in a Private University in West Java)*. https://doi.org/10.2991/conaplin-16.2017.50.

Rohayati, D., & Lilies, F. Y. (2019). E-Writing untuk meningkatkan kemampuan berfikir kritis dalam menulis teks eksposisi mahasiswa Bahasa Inggris Universitas Galuh. *Faktor Jurnal Ilmiah Kependidikan*, *6*(2), 119–128.

Rohayati, D., & Rachmawati, E. (2021). The impacts of creating youtube video project to facilitate students' critical thinking. *English Review: Journal of English Education*, *9*(2), 323–332.

Romagnuolo, A. (2015). Teaching English professional writing in an e-learning environment: an Italian case study. *International Journal of Language and Linguistics*, *3*(6), 383–393.

Rombout, F., Schuitema, J. A., & Volman, M. L. L. (2021). Teachers' implementation and evaluation of design principles for value-loaded critical thinking. *International Journal of Educational Research*, *106*(September 2020), 101731. https://doi.org/10.1016/j.ijer.2021.101731.

Sailer, M., Murböck, J., & Fischer, F. (2021). Digital learning in schools: What does it take beyond digital technology? *Teaching and Teacher Education*, *103*. https://doi.org/10.1016/j.tate.2021.103346

Sharadgah, T. A. A. (2014). *Developing Critical Thinking Skills through Writing in an Internet-Based Environment*. *4*(1), 169–178.

van Eemeren, F. H. (2018). Argumentation Theory: A Pragma-Dialectical Perspective. In *Informal Logic*, *33*(1).

Vargo, D., Zhu, L., Benwell, B., & Yan, Z. (2021). Digital technology use during COVID-19 pandemic: A rapid review. *Human Behavior and Emerging Technologies*, *3*(1), 13–24. https://doi.org/10.1002/hbe2.242.

Waititu, P. (2021). Creating community based environmental awareness with social media: A Kenyan perspective. *Southern African Journal of Environmental Education*, *37*(1), 27–42. https://doi.org/10.4314/sajee.v37i1.2.

ŽivkoviL̦, S. (2016). A Model of Critical Thinking as an Important Attribute for Success in the 21st Century. *Procedia - Social and Behavioral Sciences*, *232*(April), 102–108. https://doi.org/10.1016/j.sbspro.2016.10.034.