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Original Research

Providing Critical Thinking Training on Argumentative Writing: Its Effects on Students' Critical Thinking Quality

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Abstract

This study examined how argumentative paragraph writing classes affect university first-year L2 students' critical thinking quality. The study included two randomly selected first-year social science classrooms as non-treatment and treatment groups. The treatment group learned argumentative paragraph writing with critical thinking training, while the non-treatment group did not. The embedded design was utilized because the study used mostly quantitative data enhanced by qualitative data to investigate treatment group participants' comments on the intervention. The quantitative and qualitative data were examined using one-way ANOVA between-groups and thematics analysis methods. The quantitative data analysis showed that the treatment group had higher critical thinking quality ratings (F (1, 60) = 79.835, p = 0.000, partial eta squared = 0.571). The interview analysis revealed that the treatment group members acquired promising experience from the intervention. Thus, it was recommended that the integration of critical thinking instruction into argumentative paragraph writing sessions be taken into consideration to improve the quality of critical thinking among university first-year EFL students.

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INTRODUCTION

This research sought to investigate the impact of integrating critical thinking (CT) teaching with argumentative paragraph writing (APW) sessions. aimed to investigate how first-year college students' critical thinking (CT) improved following critical thinking training in APW classes. Researchers like as Paul and Elder (2014), Norris and Ennis (1989), Fisher (2011), and Davies and Barnett (2015) all believe that children should be encouraged to develop CT skills that establish the groundwork for lifelong learning as part of classroom activities. According to Sims (2011), CT is actively thinking about a topic, subject, or material and attempting to identify every phase of the cognitive process, whether your own or

someone else's. In addition, Paul and Elder (2014) state that in order to progress any routine thought to CT, one must first reflect about their routine thinking in an effort to improve it.

Having strong reasoning skills to persuade the intended audience is essential in all forms of writing, but especially in argumentative writing, which necessitates not only fluency in the target language but also the ability to critically analyze and evaluate competing arguments, facts, and points of view. According to Vallis (2010), when it comes to academic writing, using CT can help with a lot of things. For example, one can learn the principles of written discourses, how to organize one's thoughts, what influences one's thinking, and how such factors can bias one's thinking. The foundation for approaching the writing work, according to McLaughlin and Moore (2012), is open-minded thinking, which prompts the writer to evaluate several approaches and potential outcomes. The ability to think critically is the bedrock of good writing and, more specifically, argumentative paragraph writing (hence APW), according to Widyastuti (2018), who contends that writing ought to reflect a thinking mind.

Since both CT and argumentative writing emphasize reasoning, evidence, and addressing opposing viewpoints, it appears that the two are interdependent phenomena. In support of this notion, Pei et al. (2017) assert that the ability to think critically is essential for argumentative writing, as high-quality writing should exhibit CT traits. Among the most important parts of argumentative writing is CT, according to Widyastuti (2018). It is critical to explicitly infuse or integrate CT into language training generally and writing instruction specifically in order to improve L2 students' CT and writing ability, according to the researchers cited above.

Based on Dong's (2015) research, this study modified the idea of including CT training within APW classes. According to According to Dong (2015), second language writing is intended to provoke thinking, and introducing CT into second language writing aims to assist students enhance their critical thinking abilities while writing in their target language. The goal of this study is to look at how APW classes specifically include CT training, as APW is a subset of writing. Fahim and Hashtroodi (2012) observed that students who participated in their study improved their critical thinking skills through the use of CT teaching methodologies; this growth was advantageous, despite the fact that the study focused on an argumentative essay. Furthermore, Younes and Ayyoub (2017) found that CT-based exercises improve the quality of argumentative paragraph writing among first-year secondary school students.

According to Richards and Schmidt (2010), an argumentative piece of writing is one that argues for or against a contentious issue or defends a stance on which two or more parties have differing opinions. Writing persuasively on a contentious matter requires not just the language but also the traditions of the language and the ability to present ideas in a convincing manner, both of which second language learners often fail to exhibit in their compositions. Richards and Schmidt (2010) agree with this assessment, stating that argumentative writing is the most challenging kind of writing for English as a foreign language (EFL) students to master due to its complexity. The use of critical thinking in the presentation of an argument is what gives argumentative writing its substance, according to Sánchez (2018).

The study team discovered that first-year students' argumentative paragraphs were of poor quality based on their experiences teaching English language common courses at Wollega University. While other causes or difficulties may have played a role, Wollega University

researchers hypothesized that first-year students' failure to think critically was one of the reasons they failed to create persuasive arguing paragraphs on disputed topics. Researchers are worried about students' argumentative paragraph writing skills because many tasks at the university level require students to provide explanations, provide evidence to back up their claims, and come up with a solid conclusion to win over their teachers.

According to the researchers' literature study, it was found that certain local researchers, like Geremew (1999), Haregewain (2008), and Italo (1999), came to the conclusion that the writing proficiency of students at Addis Ababa University was lower than what their teachers had hoped for. The researchers reasoned that because students travel from all around Ethiopia to attend these two colleges, their findings may also apply to the present study location. According to the researchers' interpretation, a handful of local studies found a relationship between CT and argumentative writing (Adege, 2016; Solomon, 2019). After reviewing relevant literature and conducting informal observations of first-year students' argumentative paragraphs at Wollega University, the researchers decided to conduct a study to see how incorporating CT into APW lessons affected the CT quality of argumentative paragraphs written by first-year students at Wollega University.

This study is grounded in constructivist theory, which emphasizes the importance of students drawing on their prior knowledge and experiences before collaborating with a partner. Proponents of this approach suggest that the first contact is critical (Piaget, 1977; Vygotsky, 1978). Several sources, like Aljohani (2017), Kouicem and Nachoua (2016), and Kouicem (2020), support this judgment, saying that constructivism theory covers both the individual and societal ways in which students construct knowledge. Every member of both groups attempted to think critically about the allotted topic, organize their thoughts, and write the first draft of an argumentation paragraph in line with cognitive constructivist theory. After that, according to social constructivist theory, the participants were paired up and instructed to assess each other's argumentation paragraphs by exchanging drafts.

Dong (2015) used a four-step writing process—brainstorming, drafting, peer review, and rewriting—in her study based on the theory. A CT-oriented brainstorming worksheet and a CT-oriented peer review checklist were utilized to lead the treatment group's APW activities, allowing participants to understand and enhance their CT quality while composing argumentative paragraphs. In comparison, the non-treatment group was simply directed to complete the four-step paragraph writing procedure without using these tools. Following that, participants changed their work based on their partners' suggestions and questions. This study set out to examine how incorporating CT training within APW classes affected the quality of CT among first-year college students. Therefore, it seeks to answer the following inquiries:

1. Does the number of first-year students who got CT training in APW courses (the treatment group) differ substantially from those who did not (the non-treatment group) in terms of post-test CT quality mean scores?
2. What are the treatment group members' opinions and feelings about the CT-infused paragraph writing lessons?

The Importance of Critical Thinking

Every human being's life is filled with thoughts. Paul and Elder (2014) agree that thinking is innate to the human condition, but that

unchecked thought tends to be prejudiced, incomplete, skewed, or ignorant. Thinking is one of the traits that distinguishes humans from other living beings, according to Karakoç (2016).

Because the ability to think critically is expected to be an important component of lifelong learning, CT is one of the learning objectives of postsecondary institutions (Halpern, 1993; McMillan, 1987; Moon, 2008). According to these researchers, the following are some of the most important skills for students to develop in order to improve their CT: the ability to critically analyze arguments, draw conclusions from given information, evaluate the strength of evidence, recognize important relationships, etc. In a similar vein, Nickerson (1988) explains why CT is so important for college students: it equips them to handle the intricacies of adulthood and the many obstacles they'll confront. Cottrell (2005) further stresses that fundamental CT abilities are required for everyday tasks.

Language, cognition, and education are all interdependent occurrences, asserts Suhor (1984). For example, CT is essential for second language learners to go beyond literal translations, compose compelling essays, provide sufficient evidence to back up their claims, and question and debate opposing viewpoints while studying English (Zhao et al., 2016). In addition, as stated by Zhao et al. (2017), teachers of English as a foreign language (EFL) must have a firm grasp of the idea of cognitive technology (CT) and its implications for language acquisition in order to effectively incorporate it into their lesson plans and classroom activities. On the other hand, tertiary-level foreign language training does not often use CT (Snider, 2017). While some scholars (Guth, 2016) link CT with higher-order thinking, others (Halpern (2007), Swartz (2004), and Gelder (2005)) contend that teaching CT explicitly in foreign language classes would enhance CT.

Regarding classroom learning, CT is essential for meaningful and lifelong learning because all information needs to be conceptualized and processed intellectually (Green, 2015; Hager & Holland, 2006). Therefore, in order to teach students to think critically, it is necessary to first have them think naively, and then to have them evaluate and re-examine ideas that appear obvious. Once a learner develops critical thinking skills, they can use what they've learned about CT to question what seems to be evident at first.

The Infusion Approach

Swartz (2004) originally proposed the infusion method as a means of integrating the instruction of critical thinking abilities with subject matter (Lin, 2018). Several studies have used this approach since its introduction (Abrami et al., 2008; Dewey & Bento, 2009; Dong, 2015; Kirkwood, 2000). The results show that lessons implemented using this approach are practical and effective in developing students' CT. However, there are other researchers (Atkinson, 1997) who argue that CT should not be taught but rather socially practiced, so it should be implicitly provided rather than explicitly provided.

Despite ongoing debate, the infusion method appears to be a viable and practical option for second language (L2) instructors looking to improve their students' critical thinking and subject-matter proficiency all at once. What this means is that teachers can better explain complex ideas and demonstrate critical thinking skills to their pupils through the use of explicit CT training within the context of a language skill or topic area. According to research (Bangert and Bankert, 1990; & Halpern, 1999),

it is crucial to incorporate CT into the subject matter (argumentative writing courses in this study) in order to enhance students' acquisition of both CT and the subject matter (language skills in a second language environment).

Providing CT training in this study means including CT in EFL APW classes in an overt way. The present study's authors make the assumption that this method would assist students in developing CT-based argumentative writing skills, particularly in the areas of decision-making, problem-solving, argumentation expression, and opinion explanation. Students may then be led to consider and weigh competing viewpoints, investigate potential solutions, and develop and articulate their own ideas in this way. Lin (2018) echoes this sentiment, arguing that writing on a topic can help strengthen one's mental processes and that it is a sign of practicing important thinking abilities.

The Critical Thinking Standards

Richard Paul and Linda Elder propose the idea of "CT standards" as one of the three CT dimensions; in two editions of their work (Paul and Elder, 2002; 2014), they use the term "Intellectual Standards" to describe this idea. According to these experts, there are nine distinct types of standards. Table 1 displays the subcategories along with their brief definitions, which have been significantly modified from Dong (2015). These parameters served as markers of CT quality for the present researcher.

Table 1

*The subcategories of CT standards and their concise meanings**

CT quality indicator	Its meaning the thought:
Clarity	is understandable, is free from confusion or ambiguity, is without difficulties to understand?
Accuracy	is free from errors, mistakes or distortions, is true, or correct?
Precision	is exact to the necessary level of detail, is specific?
Relevance	is related to the issue at hand, implies a close logical relationship with the issue under consideration?
Depth	contains complexities and multiple interrelationships, implies thoroughness in thinking through the many variables in the situation, context, idea, question.
Breadth	includes multiple viewpoints, comprehensive in view, wide-ranging and broadminded in perspective.
Logic	and its parts make sense together, are without contradictions in giving sound judgment and reasonability.
Significance	has importance and/or consequence; has considerable or substantial meaning.
Fairness	is free from bias, dishonesty, selfish-interest, deception or injustice?

*Adapted from Dong (2015, p. 114)

Argumentative Writing

In order to persuade a reader of one side or the other of a contentious issue, writers often resort to argumentative writing. A piece of writing that aims to argue for or against a contentious issue or defend a stance on which people have differing opinions is called an argumentative piece of writing, according to Richards and Schmidt (2010). Writing persuasively on a

contentious matter requires not just the language but also the traditions of the language and the ability to present ideas in a convincing manner, both of which second language learners often fail to exhibit in their compositions. Richards and Schmidt (2010) agree with this assessment, stating that argumentative writing is the most challenging kind of writing for English as a foreign language (EFL) students to master due to its complexity. Additionally, Sanchez (2018) argues that critical thinking is an essential component of effective argumentative writing.

In their definition of an argumentative paragraph, Folse et al. (2010) classify it as an opinion paragraph, sometimes called a "persuasive paragraph," because its purpose is to try to convince the reader to agree with the writer's point of view by presenting evidence and reasoning that back up the writer's claims. According to Bulkhater (1993), a writer needs to identify a unifying claim that connects all the content in persuasive writing, in addition to forming arguments and supporting them with suitable evidence. In addition, according to Folse et al. (2010), when writing an opinion paragraph, it is important to state the writer's opinion(s), provide facts, address a contentious issue (which may make the reader reevaluate their own views), and consider all sides of an argument (even though the writer's side is given more weight). An argumentative paragraph, often called a "opinion paragraph" or a "persuasive paragraph," is a type of academic writing that aims to present and defend an argumentative stance on a controversial topic by presenting compelling arguments and facts.

Empirical studies about CT and argumentative writing

While Lin (2018) studied Singaporean high school students with a between-groups comparison pretest-posttest methodology, Dong (2015) studied Chinese second-year college students using a mixed-methods research strategy. For example, in her study of Indonesian university students, Indah (2017) used an ex-post-facto research design to establish a connection between CT and argumentative writing. In addition, Liu (2014) used a pretest-posttest research approach to analyze Chinese college freshmen. A study was also carried out in China at two universities by Pei et al. (2017). For this study, they used a correlational research strategy.

Adege (2016) and Solomon (2019) are two examples of local studies that dealt with CT in the context of EFL education; both of these studies took place at the university level. At Addis Abeba University, Adege (2016) investigated the influence of critical thinking instruction on students' dispositions, general critical thinking abilities, and academic paper writing performance. Solomon (2019) conducted a research at the University of Gonder to investigate the effects of problem-based English writing instruction on students' critical thinking dispositions (CTDs), writing self-efficacy, and argumentative writing abilities. In contrast to the two previous studies conducted in the area, this one is concerned with how to best combine CT training with APW, the foundational skill for writing argumentative essays.

MATERIALS AND METHODS

The research team behind this study set out to find out how first-year students' CT quality changed after receiving CT training as part of APW classes. It made use of the embedded design (Creswell, 2012; Creswell & Clark, 2011), which allows researchers to combine quantitative and qualitative data for a more complete picture of the problem. The researchers mainly concentrated on an

intervention study with a treatment group and a non-treatment group so that the study could be better understood and better results and conclusions could be drawn. Creswell (2012) states that researchers are able to collect qualitative data to supplement the intervention study through the embedded design.

Rationale for site and selection of participants

Wollega University was chosen on purpose as it is the location where the problem—first-year students' incapacity to compose persuasive argumentation paragraphs—was first noticed by the researchers. Although the study's intended participants were first-year English as a foreign language (EFL) students at Wollega University enrolled in the 2020–2021 academic year's "Communicative English Language Skills II (FLEn 1012)" course, it's improbable that all first-years at Wollega participated due to the intervention used to measure its impact on the treatment group. Because of this, the researchers took a random pick from the Fresh Students Programme's social science stream rather than the natural science stream. Since recruiting all of the Social Science Stream students for an interventional study remained a challenge, they instead divided the class into two groups: one receiving treatment and the other receiving no such thing. Therefore, one group received APW lessons infused with CT (the intervention), whereas the other group received traditional paragraph writing lessons (i.e., without CT) as a control. The researchers consulted with all relevant parties before beginning the investigation. Two volunteer "Communicative English Language Skills II" teachers, two randomly selected sections of students from the Social Science Stream, and the Fresh Students Program were all involved.

Instruments

The tests were administered both before and after the treatment in order to collect quantitative data. Qualitative data was collected through interviews with treatment group participants to ensure more solid findings. The present study modified the evaluation rubric developed by Dong (2015) for use in assessing CT in second language writing since determining CT quality in argumentative writing necessitates valid assessment criteria. As one of the three CT dimensions, "intellectual standards" is the basis for the evaluation rubric's nine criteria; each criterion was given a score between one and five ('Very Good' = 5, 'Good' = 4, 'Fair' = 3, 'Poor' = 2, and 'Very Poor' = 1), with the sum of these scores representing the CT quality in APW. Here, the CT quality score in APW might go as high as 45 and as low as 9, according to the nine criteria that made up the rubric, all of which were evaluated on a five-point scale. The average total score of a participant's CT quality score was calculated by adding together the scores acquired from the two raters and dividing the result by two.

Two well-known and divisive subjects were given to both groups before and after the intervention. Questions like "Should abortion be encouraged?" came up throughout. both ask if pupils of different grade levels should be required to wear school uniforms. Before and after the intervention, the participants' arguing paragraphs were marked using a rubric for evaluating CT in L2 APW by one of the researchers and the instructor of the two groups. The researchers also used a semi-structured in-person interview to collect information from three participants at random regarding how the intervention, which consisted of CT-infused paragraph writing lessons, helped them improve the quality of their CT in the argumentative paragraphs they wrote following the intervention.

Data Gathering Procedure

There was a single data gathering method that incorporated both quantitative and qualitative data. APW tests were used to collect quantitative data at the beginning and end of the intervention. Interviews were done immediately after the post-test to acquire qualitative data. The purpose was to obtain relevant and adequate information from each interviewee's recent memory on how the intervention improved their CT quality when writing argumentative paragraphs.

Methods of Data Analysis

The quantitative data obtained from argumentative paragraph writing assessments before and after the intervention were examined using descriptive and inferential statistics. Mean scores (M) and standard deviations (SD) were used in descriptive statistics to show the arithmetic average of each group, as well as to roughly see the difference in scores between the treatment and non-treatment groups, and to show the average distance of all scores in the distribution from the mean for each group, respectively. In terms of inferential statistics, the researchers used one-way between-groups analysis of covariance (ANCOVA) to answer the first research question.

The purpose for using ANCOVA is that it statistically adjusts the initial group differences before the intervention, which helps to validate that the difference shown between the groups after the intervention was indeed caused by it. Furthermore, ANCOVA is useful when a researcher is unable to assign participants at random and must rely on pre-existing groups such as student courses (Pallant, 2010).

Thematic analysis was used to examine the qualitative data from interviews, with respondent replies contrasted to pre-determined subjects. The topics included the relevance of a CT-oriented brainstorming worksheet and a CT-oriented peer review checklist in improving the students' CT quality in their argumentative paragraphs, as well as the experience they gained from the training after the intervention.

RESULTS AND DISCUSSION

Results

Effect of the Treatment on Participants' CT Quality Scores

In order to answer the research question, "Is there statistically a significant difference in the CT scores between first-year students who received CT-infused paragraph writing lessons (treatment group) and those who received conventional paragraph writing lessons (non-treatment group) after controlling the pretest scores?", both quantitative and qualitative data were collected.

Presented below are the findings from the quantitative analysis of the data collected through tests (both pre- and post-test) and the qualitative analysis of the data collected through semi-structured interviews. The purpose of this study is to describe how the intervention affected the CT quality ratings of the students in the treatment group. We used descriptive statistics and one-way between-groups ANCOVA to examine the quantitative data (CT quality in participants' argumentation paragraphs), and thematic analysis to examine the qualitative data (interview data).

The descriptive statistics' means (M) and standard deviations (SD) were employed for quantitative data analysis. The findings of the descriptive statistics and the analysis of covariance (ANCOVA) are shown in Table 1 and Table 2, respectively. On a scale from 0 to 45, the participants' CT quality findings determined the score categories: 'Very poor' for

scores greater than 9, 'Poor' for scores between 18 and 27, 'Average' for scores greater than 27, 'Good' for scores between 36 and 36, and 'Very good' for scores greater than 36 and 45. As a result, pre-intervention CT quality scores were slightly different between the treatment and non-treatment groups (non-treatment: M = 9.86; treatment: M = 10.08). As the findings of the pretest showed, the CT quality of both groups was "poor." The descriptive statistics for posttest mean scores showed that after the intervention, the CT quality mean scores of the treatment group were in the 'Average' range, while the non-treatment group's scores stayed in the 'Poor' range. This indicated a difference between the two groups. The non-treatment group had a mean score of 11.50 and the treatment group had a mean score of 18.70. According to the standard deviation data, 68% of the scores are off by at least one standard deviation. Regarding this matter, the non-treatment group's scores differed by approximately 0.69 and the treatment group's scores differed by about 0.78 in the pretest. As a result, we can see that the two groups' scores were rather evenly distributed around the mean: the treatment group and the non-treatment group. Nevertheless, according to the standard deviation results for the posttest, the scores in the non-treatment group were 1.87 standard deviations from the means, but in the treatment group they were 3.93 standard deviations. This suggests that the treatment group had more dispersed scores compared to the non-treatment group.

Table 2

Descriptive Statistics of CT Quality Scores

Test	Group	N	Statistic	
			Mean	SD
Pretest	Non-treatment	31	9.86	0.69
	Treatment	32	10.08	0.78
Posttest	Non-treatment	31	11.55	1.87
	Treatment	32	18.70	3.93

Data for the one-way ANCOVA were double-checked for normality and regression slope homogeneity, two ANCOVA assumptions. For example, in order to ensure that the CT quality scores of both the treatment and non-treatment groups were normally distributed, the Shapiro-Wilk test was computed. Both the pretest and posttest scores were found to be normally distributed, as their p-values were greater than the cutoff, which was set at 0.05. For the non-treatment group, the pretest score was 0.877 (p = 0.052), and for the treatment group, the posttest score was 0.903 (p = 0.059) and the pretest score was 0.890 (p = 0.053). There was no significant interaction between the two variables (group and CT pretest average scores) according to the analysis of the homogeneity of regression slopes for the non-treatment and treatment groups, as the p-value was greater than 0.05 (p = 0.538). These exploratory analyses allowed us to compute ANCOVA because they verified that our assumptions were true.

To determine if there was a difference in CT quality mean scores between the treatment and non-treatment groups following the intervention, we used a one-way between groups ANCOVA, controlling for the effect of

the pretest (covariate). According to Table 2, the non-treatment group and the treatment group had significantly different CT quality posttest mean scores (F (1, 60) = 79.835, p = 0.000). According to the results for the group independent variable, there was a significant difference ($p<0.05$) in the mean scores of the non-treatment group and the treatment group on the dependent variable, which is the CT quality mean scores. Cohen (1988) found that the partial eta squared result was 0.571, which further supported the idea that the intervention moderately improved the CT quality of the argumentative paragraphs written by the treatment group participants.

Table 3

One-way ANCOVA Results for CT Quality Scores,

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	829.625[a]	2	414.813	44.363	0.000	0.597
Intercept	14.992	1	14.992	1.603	0.210	0.026
CTQPrAv	23.581	1	23.581	2.522	0.118	0.040
Group	746.493	1	746.493	79.835	0.000	0.571
Error	561.026	60	9.350			
Total	15912.750	63				
Corrected Total	1390.651	62				

[a]R Squared = 0.597, CTQPrAv: Pretest average score for CT quality, (Adjusted R Squared = 0.583) Tests between-Subjects Effects, Dependent Variable: Posttest average score for CT quality.

Treatment Group Participants' Reflections on the Intervention

The interview analysis of three randomly chosen treatment group participants also revealed that the intervention helped treatment group participants improve the quality of their CT when writing argumentative paragraphs.

Thus, ES6 believed that the intervention helped him improve his argumentative paragraph's CT quality by considering the following elements of thought: purpose, question at issue, concept, point of view, assumption, information, inference, and implication; and intellectual (CT) standards: clarity, accuracy, precision, relevance, depth, breadth, logicalness, importance, and fairness. "I had no idea whether what I was writing had clarity, accuracy, etc. before the training," he said as an example of his response. However, now that I've had the instruction, I can evaluate the clarity, accuracy, depth, etc. of my writing.

Using his understanding of "elements of thought" and "Intellectual standards," ES17 was able to verify the soundness and coherence of his arguments in his argumentative paragraph, which he discussed in the interview. Here is his take on the question:

Personally, I found the "Intellectual Standards" and "Elements of Thought" sections of this CT to be very useful. Since we were required to assess each paragraph's quality, logic, importance, accuracy, etc., in light of the "Intellectual standards" and "elements of thought" after we had written it, the training I received was really helpful in this area. Another thing I learned in class is to use the frameworks provided by the course, such as "intellectual standards" and "elements

of thought," to make sure that when I write a paragraph, I come up with strong ideas that are well-structured and have connections between them.

In addition, ES23 mentioned that the intervention helped her gain experience because the argumentative paragraphs she wrote after the training had better CT quality. Here are her exact words describing the intervention's function:

Thanks to the instruction, I was able to compose my argumentation paragraph with careful consideration of the CT criteria and the elements of thought, such as correctness, precision, clarity, and relevance. The training helps us produce better argumentative paragraphs when we compose them in reference to the parts of thought.

Discussion

Following the intervention, the treatment group demonstrated significantly improved CT quality compared to the non-treatment group, as indicated by the general mean scores of the argumentative paragraph writing test rated for the manifestation of the CT quality indicators (M = 11.5 and M = 18.70, respectively). Furthermore, at $p<0.05$, the outcome of the one-way between-groups ANCOVA indicates a statistically significant distinction between the two groups. Participants in the treatment group became accustomed to assessing their own and their partners' first draft paragraphs using the aforementioned CT quality indicators or standards after the researcher proposed incorporating CT into the intervention's argumentative paragraph writing lessons. In order to assist the treatment group participants in practicing evaluating their own and their partners' first draft paragraphs for the purpose of improving them during the second draft, the intervention team created a checklist utilizing the CT quality indicators. Research by Pei et al. (2017) and others has shown that people who received CT therapies fared better than those who did not. Our results are in line with those findings.

The results of this study are in line with those of other studies that have used the infusion technique to construct lessons, such as Dewey and Bento (2009) and Kirkwood (2000), which show that these lessons are practical and useful in developing students' CT. This study's findings suggest that second language learners may benefit from instruction in critical thinking skills, which in turn could enhance their language proficiency. Students' CT quality is improved when CT is integrated into argumentative paragraph writing, according to this study and the relevant studies cited earlier.

Interviewees in the treatment group were asked to reflect on their experience with the intervention in order to answer the second research question. The interview analysis showed that before to the intervention, they were unaware of intellectual (CT) standards and how to apply them to assess and enhance the CT quality of their argumentation paragraphs and those of their partners. They revealed that the intervention raised the quality of their CT in the argumentative paragraphs during the interview. Thus, it is clear that the answers to both the first and second research questions complement one another. Thus, the results of this study's interview data analysis were consistent with those of the research cited earlier.

CONCLUSIONS

Examples of methodological limitations include the fact that data was collected from only one study site and two randomly chosen parts, making it highly improbable that the results of this study can be applied to the broader EFL setting. Since the students enrolled in the institutions in Ethiopia likely came from quite comparable EFL learning backgrounds, the study's conclusions can be applied to first-year students from all around the country. Consequently, the results of the quantitative and qualitative data analysis show that the intervention helped the treatment group write argumentative paragraphs with better manifestations of CT quality indicators like clarity, accuracy, precision, relevance, etc.—in comparison to the non-treatment group. The treatment group also did better than the control group when it came to stating their goals, stating their opinions and those of others, citing appropriate sources, subtly conveying their message, and wrapping up their arguments. Participants in the treatment group were instructed to think critically while they created argumentation paragraphs on various contentious subjects using a CT-oriented brainstorming worksheet and a CT-oriented peer review checklist.According to the results, the intervention improved the CT quality of the treatment group members by combining CT training with APW courses. Therefore, below are the recommendations made by the researcher: To begin, in order to improve the CT quality of writing among first-year students, it is imperative that CT instruction be integrated into APW by EFL teachers, curriculum (syllabus) designers, and material creators. Additionally, in order to delve deeper into the subject, future research will focus on English as a foreign language (EFL) majors who enroll in a variety of writing classes. Additionally, since English majors learn advanced-level writing, a future study should center on argumentative essay writing and English majors.

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DECLARATION

The authors declare that there are no competing interest.

DATA AVAILABILITY

The data supporting the findings of this study are available from the corresponding author on request.

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