Developing Critical Thinking Skills in EFL Students' Writing Classes[1]

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Summary

This paper focused on the teaching of critical thinking skills in EFL writing in higher education. First, the importance of teaching critical thinking was discussed in reference to various needs in today's world. Then, several key concepts regarding critical thinking ability and teaching writing were delineated. An empirical study was conducted with a hypothesis that teaching L2 English writing will promote the critical thinking skills of Japanese university students. Twenty-six university students participated in this study. As an intervention, argumentative essay writing was taught over the course of one academic year. Three sets of evaluation instruments were administered to the participants as a pre-test and a post-test. One was a questionnaire on students' beliefs toward writing in view of critical thinking, the second was students' written products, and the third was students' reflections taken at the end of the academic year. Throughout the academic year, the students learned how to organize a paragraph/essay, with a focus on an argumentative essay, hierarchical structure of ideas in a paragraph/essay, and some writing strategies including the Toulmin Model. As a result, the students' self-evaluation scores on the questionnaire on their beliefs on their critical thinking skills increased after the year-long lessons. In addition, the analysis of the students' written products using Toulmin terms showed that they were able to write more robust arguments. Their progress was shown using samples taken at four different times in a year. In addition, their reflections written at the end of the year showed that the students grasped the concepts of critical thinking to some degree. I concluded that the writing lessons helped the students to develop critical thinking skills in their L2 and that they became better writers of English composition. (248)

Key Words: L2 English writing, critical thinking skills, Toulmin Model, argumentative essay

日本人大学生のライティング授業における
クリティカル・シンキングスキル向上

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要旨

　本稿は、日本の大学における EFL ライティングクラスでのクリティカル・シンキング（CT）スキルの指導に焦点を当てたものである。まず、CT を教えることの重要性につき今日の世界のさまざまなニーズとの関連で議論している。次に、CT 能力とライティング指導に関するいくつかの重要な概念が説明された。L2 としての英語のライティングを教えることは日本人大学生の CT 能力に寄与するという仮説のもと実証的研究が行われた。この研究には、26 名の大学生が参加した。介入として、論証文エッセイの書き方が 1 年間を通して指導された。その効果測定のため、プレテストとポストテストとして 3 種類の評価方法がとられた。1 つは、CT の観点からライティングに関する学生の信念についてのアン

ケートであり、2 つ目は学生が産出した作文であり、3 つ目は学年末の学生の省察である。一年間を通して、学生は、どのようにパラグラフ / エッセイを構成すべきかを学び、段落 / エッセイのアイデアの階層構造、および Toulmin モデルを含むいくつかのライティングに係るストラテジーを学ぶとともに、論証文エッセイを書くことに取り組んだ。その結果、CT 能力に対する信念に関するアンケートの学生の自己評価得点は、1 年間の指導後増加を見せた。加えて、Toulmin の用語を用いた学生の作文分析では、より強固な議論を書くことができたことを示している。こうした上達ぶりは、1 年間のうち 4 つの異なる時期に取られたサンプル分析を通して示された。加えて、学習後に書かれた彼らの省察から、学生はCT の概念をある程度把握できたことが見て取れた。この一連のライティング指導が学生の L2 での CT スキルの習得に役立ち、さらに学生は英語のよりよい書き手となったと結論づけられた。

1. Introduction

1.1 Background

　　With the progress of globalization and also easy access to SNS, we now have more opportunities to communicate with people all over the world in writing, and therefore, English-language education, in particular, the teaching of writing has been receiving more attention than ever before in Japan. The trend has been even more intensified since   MEXT announced that university entrance examinations for English will cover four skills within a few years[2]. According to the current *Course of Study*, one of the fundamental mottos is "to foster thinking ability, judgment, expressive ability, and problem-solving ability across all the subjects" (the Ministry of Education, Culture, Sports, Science and Technology (MEXT, hereafter, 2009). These terms may be covered under the umbrella term of argumentation (Andrews, 1995). In particular, English Expression I and II, which are newly-established subjects under the current *Course of Study* for senior high school, stipulate the objective of the course as "to develop students' ability to evaluate facts, opinions, etc. from multiple perspectives and communicate through reasoning and a range of expression, while fostering a positive attitude toward communication through the English language." In addition, MEXT announced "Five proposals in order to improve Japanese students' English proficiency in terms of English as an international language" in 2011 (MEXT, 2011). Among them, an item called the "ability to explain logically, to make a counter-argument and to convince others" is included as one of the basic tenets (MEXT, 2011). In the current educational world, there is an urgent need to "foster the ability of thinking and expression." Needless to say, "thinking ability" can be fostered across the range of school subjects, but for the purposes of this paper, I would like to develop the hypothesis that fostering "logical thinking ability and ability of expression" can be achieved through teaching English

argumentative essay writing.

In this paper, I would like to present a case study on teaching argumentative essay writing to university students in Japan that aimed to improve students' critical thinking ability. Before presenting the empirical case study I conducted, I would like to delineate some key concepts underlining the teaching of argumentative essay writing, which propelled me to undertake this study.

1.2 Critical Thinking (CT)

Critical thinking (CT, hereafter) skills have been valued and named as one of the most important skills in the 21st century (e.g. Kusumi, 2011, 2015 among others). Klefstad (2015) explains that "these skills [the 21st century skills] capitalize on children's natural way of thinking and include creativity, critical thinking, problem-solving, decision-making, and learning" (p. 147). Ennis (1991), who is one of the pioneers in this line of research, states, "In the past decade explicit official interest in critical thinking instruction has increased manifold" (p. 5).

In the current *Course of Study*, MEXT uses the phrase "to foster thinking ability, judgment, expressive ability, and problem-solving ability", not "critical thinking" per se. That is probably because the Japanese translation of "critical thinking" is 批判的思考. The word "critical（批判的）" does not mesh well with Japanese society where "harmony" is valued. It seems likely that MEXT is hesitant about using this word. Instead, it uses the words, 思考力 (thinking ability), 判断力 (judgment), 表現力 (expressive ability) and 問題解決力 (problem-solving ability). In essence, these four words share much connotation with "critical thinking ability."

Despite the fact that the word "critical thinking（批判判的思考）" is not used in the *Course of Study*, probably because of the negative connotation of the Japanese word, there is no denying that there is an increasing recognition of the need for CT teaching.

To take an example, particularly after the earthquake, tsunami, and a nuclear radiation in 2011, the "Tragedy in Okawa Primary School" was highlighted with a comparison with a "Miracle in Kamaishi" (*Asahi Weekly Magazine*, 2012.01.20).[3] The tragedy of Okawa Primary School in Ishinomaki can be summarized as follows: 70 % of the primary school students were killed or are still missing as a result of the tsunami. One reason, according to the article, is that following the massive earthquake, the students gathered on the school grounds, all lined up, waiting for orders from teachers. Thereby, they missed the chance to flee the resulting tsunami.

In contrast, very few primary and secondary school students in Kamaishi City became victims. In Kamaishi, independent thinking, which shares a lot of properties with critical thinking, had been taught for the previous seven years before the tragedy. The students

had been taught to decide by themselves as to what the next action should be rather than waiting for the orders; they had been taught that what the teachers and parents say is not always true (p.143). This way of independent thinking has been called "*tendenko*" in the local dialect, meaning "to act independently." Because of these "*tendenko*" beliefs, the students acted after the earthquake quickly and decided to go to higher ground, rather than to gather in the schoolgrounds to wait for orders.

This episode has been called "a miracle in Kamaishi", and a lot of people advocated that we should learn a lesson from this. In addition, there was a call for teaching this kind of independent thinking.

The call for teaching critical thinking has been a world-wide trend. It has been particularly so in Asian countries, which are distant from Western tradition where teaching CT has been the norm for a long time.

For example, in the Curriculum Guidelines of Senior High School English in Taiwan (issued on Jan, 2008 and implemented in August 2010), we can see the following aims in their Curriculum Objectives: "to develop students' abilities of logical thinking, analysis, judgment, integration and innovation in English."[4] In addition, in South Korea's National Curriculum (the 7th Curriculum) we can find the objective of "teaching reasoning and critical thinking skills" among the Main Principles (Choi, 2016).We now see a general surge of CT teaching in Asia.

1.3 Definitions of CT

I would like to make clear the definition of CT. According to the etymology, the word "critical" connotes the ability to discern something from something else as is shown in Figure 1.
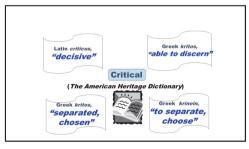
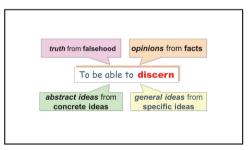Figure 1 The definition of CT (1)   Figure 2 The definition of CT (2)

In that sense, critical thinking ability comprises the ability to discern truth from falsehood, opinions from facts, abstract ideas from concrete ideas and general ideas from specific ideas as is shown in Figure 2. However, it is not necessarily an innate ability and

therefore it requires training. This can be achieved more effectively, I believe, through writing than oral expression. When students organize and express their thoughts in the target language, they are developing thinking skills necessary for critical thinking such as analyzing, synthesizing and decision-making.

Actually, however, CT is a complex process which involves a wide range of skills and attitudes, and definitions vary from author to author (see Kusumi (2015) for a comprehensive review, for example). Suzuki (2006) defines critical thinking skills as the ability to think skeptically, and to think in a logical and cautious way from several points of view(p.4).

In addition, Cottrell (2005, p.4) lists a variety of critical thinking skills. Among them, we find the following properties that are important and relevant to this research:

・being able to read between the lines, seeing behind surfaces, and identifying false or unfair assumptions;
・recognizing techniques used to make certain positions more appealing than others, such as false logic and persuasive devices;
・reflecting on issues in a structured way, bringing logic and insight to bear;
・drawing conclusions about whether arguments are valid and justifiable, based on good evidence and sensible assumptions;
・presenting a point of view in a structured, clear, well-reasoned way that convinces others.

As I have presented in this section, there are a variety of definitions of critical thinking skills; these properties given by Cottrell (2005) form the foundation of our research.

1.4 The relationship between teaching writing and fostering critical thinking

Since my hypothesis in this paper is that students can develop CT ability through academic English writing, in particular argumentative essay writing, let me delineate the relationship between teaching argumentative essay writing and fostering CT ability.

In order to see the whole picture of argumentative essay writing, we can start from looking at the fundamental concept of paragraph writing. As is shown in Figure 3, we can find a hierarchical structure in an English paragraph. I believe that the hierarchical and logical structure inherent in an English academic writing with its general, abstract and concrete ideas (expressed through topic sentences, supporting sentences and details respectively) is related to critical thinking. That is to say, the writer needs to differentiate a general idea from a specific idea, an abstract idea from a specific idea, an opinion from a fact, not to mention to differentiate truth from falsehood. In view of macro-structure, the

English paragraph structure itself presents a model of argumentation. The general structure of a paragraph or an essay takes the form of "thesis—support." One states one's thesis at the outset, which is highly abstract in nature, and supports the thesis with explanations and concrete details, which are low at the level of abstractness (Figure 3). This two-part distinction has been prevalent ever since Aristotle posited, "A speech has two parts. It is necessary to state the subject, and then prove it." (cited in Andrews, 1995, p. 102).
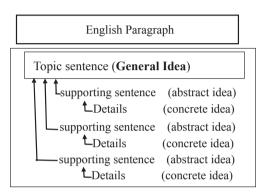
In this format, usually one writes a topic sentence at the beginning part of a paragraph, where one states one's thesis, and the reader will know what the paragraph is about, or what the writer's claim is. In the rest of the paragraph, the thesis is supported or explained with reasons, and then each reason is supported by concrete examples. This is the fundamental structure of a paragraph. That is to say, the writer's thesis (or claim), which

Figure 3 English Paragraph Structure

may invite a counter-argument by the reader, is supported by concrete data that will never invite counter-arguments because they are simply facts. This may sum up the essence of paragraph writing. Regarding the hierarchical structure of a paragraph, Grabe and Kaplan (1996) mention, "texts have hierarchical structure, most likely constituted as a set of logical relations among assertions, or as elements in a discourse matrix, or as cohesive harmony (p.61)". In addition, Bean (2001) describes the relationship between academic essay writing and dialogic thinking as follows:

> Formal academic writing requires analytical or argumentative thinking and is characterized by a controlling thesis statement and a logical, hierarchical structure. (p.18)
> The writing process itself provides one of the best ways to help students learn the active, dialogic thinking skills valued in academic life." (pp.19-20)

As Bean (2001) says, I believe that the writing process itself contributes to enhancing critical thinking ability. The writing process incorporates a set of stages: idea generation, making an outline, writing, carrying out a peer review, and rewriting. Different aspects of writing activities offer a range of thinking skills. For instance, in the stage of idea generation for writing, we can encourage students to think deeply and also from different

angles.　In the outline-making, students need to differentiate general ideas from specific ideas. Then, when we actually write a draft, we have to do so anticipating the reader, asking whether or not our ideas will be communicated thoroughly to the reader without misunderstanding.　In addition, if we employ a peer-review session, both the reviewer and the writer engage in critique. Based on the review (feedback) one gets from the reviewer, the writer rewrites the draft, anticipating (expecting) the counter-argument.　At the reviewing stage, we can give students advice on how to review their own writing critically, for example, expecting and preparing oneself for the reader's counter-argument. Throughout all the stages in the writing process, different kinds of thinking which can be covered by the umbrella term of CT are employed as shown in Figure 4.
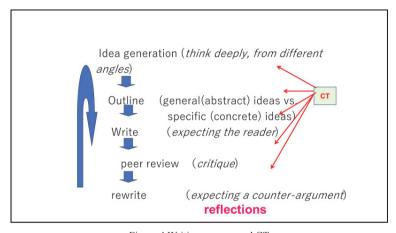

Figure 4 Writing process and CT

I am not the only one who claims that writing develops CT skills. To cite some other authors. Shrum and Glisan quoted in Scott (1986) claims:

> "…language is a tool for building and shaping thoughts rather than simply a means for conveying them. The writing process can help push students to the next developmental level." When students must organize and express their thoughts in the target language, they are developing critical-thinking skills such as analyzing, synthesizing and decision-making. (p.155)

Wade (1995) also contends, "Writing is an essential ingredient in critical-thinking instruction. Writing tends to promote greater self-reflection and the taking of broader perspectives than does oral expression." (p.24)

It is, however, not natural to have the faculty of critical thinking by birth. Blue (2010) states: "We human beings are not naturally capable of thinking logically; the capacity for mental skills would not function without careful nurturing"(p.20). In this regard, my contention is that teaching argumentative essay writing in academic English writing classes will help the students to foster CT ability.

Therefore, we have formed a hypothesis that there is a connection between writing activities and developing CT skills. Although there is some literature that mentions the effectiveness of writing activities in English as a first language (Hillocks, 2010; Quitadamo and Kurtz, 2007; Klefstad, 2015), there are very few studies that actually investigate the relationship between fostering CT skills and writing in English as a foreign language. Therefore, it is of interest to conduct research on this aspect; namely whether CT skills could possibly be developed through engaging in writing activities in English classes in English as a foreign language (EFL) contexts.

1.5 The Toulmin Model

Having established the importance of teaching CT, now we need to consider how we can teach argumentative essay writing to Japanese university students effectively. One method I usually employ is teaching the Toulmin Model (1958) to present an argument. Toulmin devised this model so that everyday argumentation can be taught easily without depending on formal logic. The model presented by Stephen Toulmin (1958) has been widely used in contemporary argumentation research (e.g., Connor & Lauer, 1985; Yeh, 1998; Stapleton, 2001; Lunsford, 2002; Kelly & Takao, 2002; Connor & Mbaye, 2002; Qin & Karabacak, 2010). The structure of the model is shown in Figure 5. The model visually presents how an argument is structured.

In its simplest form, the model contains three elements: (1) **Claim**, (2) **Data**, and (3) **Warrant**. Toulmin (1958) defines each element as follows (pp. 85-113):

(1) **Claim**: the conclusion of the argument and the point at issue in a controversy.

(2) **Data**: facts or evidence serving as the basis for a claim.

(3) **Warrant**: a statement that justifies the leap from data to claim.

Sometimes the warrant alone is vulnerable to attack and may invite **counter-argument**. Therefore, in order to consolidate the argument, we must provide details and examples to convince people that the warrant is valid. This purpose can be achieved by **Backing**. Both warrant and backing support the claim; the difference between warrant and backing is that the former is hypothetical while the latter is substantial (Lee & Lee,

1989, p. 91). In other words, the **backing** supports or justifies the **warrant**. There are two additional elements: **Reservation** (sometimes called **Rebuttal**) and **Qualification**. They are statements of possible exceptions to the warrant and claim. The reservation specifies the condition in which the warrant does not apply. The abstract scheme of the model is often presented visually as in Figure 5.
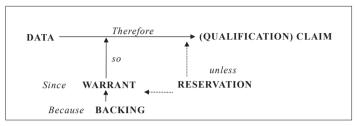

Figure 5 The Toulmin Model of Argument

Although Toulmin may not have intended the model to serve as a paradigm for general argumentation, it is included in many textbooks on argumentation (Winterowd, 1981; Lee & Lee, 1989; Renkema, 1993; among others). The popularity of this model as a pedagogical tool may lie in the point that it presents the structure of an argument visually (as is shown above) and it calls our attention to the different function of each element of the model. Furthermore, this model has been used in analyzing students' compositions, in particular, argumentative essays. Yeh (1998) mentions that Toulmin's model is well accepted and suited for the assessment of logical appeals (p. 125). There are a number of studies in which the Toulmin Model is used as an analytical tool in order to investigate the soundness of the arguments in students' writings (e.g., Connor & Lauer, 1985; Yeh, 1998; Stapleton, 2001; Lunsford, 2002; Kelly & Takao, 2002; Connor & Mbaye, 2002; Oi, 1999, 2005; Qin & Karabacak, 2010).

Despite its popularity, Toulmin's model has been subject to criticism by many scholars (e.g. Renkema, 1993). One important objection that has been made is over the artificiality of the distinctions between some elements in the model. For example, when this model is actually applied in the analysis of an argument, it can sometimes be difficult to distinguish the data from the warrant. Toulmin (2003) himself admits that it is difficult to draw any sharp distinction between elements, asking "How absolute is this distinction between data, on one hand, and warrant, on the other?"; however, he concludes that "we shall find it possible in some situations to distinguish clearly two logical functions" (p. 99). Later researchers have classified the data and warrant into several subcategories in order to avoid confusion (e.g., Lee & Lee, 1989).

Despite these shortcomings, the Toulmin Model has been influential in both speech communication and writing ever since its publication. Furlkerson (1996) states, "Its

prominence and the length of time it has held sway in both speech communication and in composition might suggest that the model has become part of the *canon* [emphasis added] by which we understand and teach argumentative writing." However, he adds, "The [the] question remains whether, despite its surface attractiveness, using the Toulmin Model of argumentation in a composition course can help improve student argumentation about substantive issues" (p. 51). I would like to show in this paper that the model is helpful in raising the students' consciousness in regard to solidifying their argument and thereby in assisting them to write a better grounded, more sophisticated argumentative essay.

Using the terms of the Toulmin Model, we can have an outline of an argumentative essay as is shown in Figure 6. This model and the terms used in the model are going to be major analytical tools for the present study.
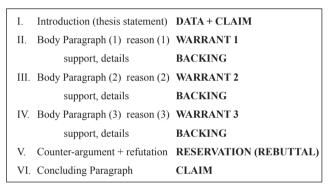
I.	Introduction (thesis statement)	**DATA + CLAIM**
II.	Body Paragraph (1) reason (1)	**WARRANT 1**
	support, details	**BACKING**
III.	Body Paragraph (2) reason (2)	**WARRANT 2**
	support, details	**BACKING**
IV.	Body Paragraph (3) reason (3)	**WARRANT 3**
	support, details	**BACKING**
V.	Counter-argument + refutation	**RESERVATION (REBUTTAL)**
VI.	Concluding Paragraph	**CLAIM**

Figure 6 The structure of argumentative writingcorresponding to Toulmin elements

2. The Study

2.1 Purpose

The purpose of this study is to examine the effect of teaching argumentative essay writing to developing the critical thinking skills of Japanese university students.

2.2 Method

2.2.1 Participants and data collection

Twenty-six university students (mostly 1st year students) in a national university participated in this study. They can be classified as higher intermediate, CEFR B2 level, with their English proficiency measured by TOEFL-ITP being 517.

2.2.2 Intervention

I used the academic year of 2011-12, both the first semester (April- July) and the second semester (October – February).

The textbooks used in this course were *Writing Power* (Oi, Kamimura & Sano, 2011), *Student Writing Guide* (Institute of Education, 2008), some other teaching materials made by myself, such as worksheets based on the Toulmin Model, peer-feedback sheets.

In order to foster the students' CT skills, I taught the following contents.

1) Academic English writing instruction with a main focus on argumentative writing
2) Peer feedback activities
3) Reflection writing after every activity
4) Introduction of the Toulmin Model
5) How to make a counter-argument
6) How to cite outside sources
7) What are the logical fallacies?

2.2.3 Analytical measures

In this study, three analytical methods were taken: one was a quantitative analysis, another was argumentation analysis using Toulmin terms, and lastly the students' reflections after the completion of the course. For the quantitative analysis, two sets of data were taken. One is a questionnaire which was conducted by the students. This was to see the students' change in their self-evaluation regarding their CT ability at both pre/posttests. (In order to measure the improvement of students critical thinking ability/skills, I employed students' self-evaluation.) This self-evaluation was adapted from Cottrell (2005)'s "Critical Thinking checklist" (p.13) and translated into Japanese. There were 25 questions. The students were asked to respond to each question on the scale of six (6 = strongly agree, 5= agree, 4= sort of agree, 3= sort of disagree, 2= disagree, 1= strongly disagree). The same questionnaire was used at the beginning of the first semester (April) and the last class of the second semester (February).

Another set of data is students' writing products. I collected four sets; a pretest and posttest in the first semester and those in the second semester under the following conditions:

1st semester pre-& posttests: essay writing for 30 minutes, without using a dictionary.
　　Write your opinion on the following statement with specific reasons and examples.
　　"All high schools should ask their students to evaluate their teachers."

2nd semester pre-& posttests: essay writing for 30minutes, without using a dictionary
　　Write your opinion on the following statement with specific reasons and examples.

　　　　"We should make another foreign language learning (other than English) compulsory at high school."

The prompt for the second semester was different from that of the first semester. This is to avoid the practice effect. The students wrote on the same prompt twice in each semester.

　　　For a quantitative analysis, the total number of words was counted. For the qualitative analysis, the students' essays were analyzed in depth using the terms of Toulmin Model, which constitutes argumentation analysis in this study. By this analysis, it was hoped that I could observe how the contents of their essays were enriched.

　　　As the third set of data, I used the students' post-course reflections that they wrote on the reflection sheets.

2.3 Results and Discussion
2.3.1 Results of the quantitative analysis
2.3.1.1 Results of the questionnaire

　　　The results of the questionnaire are shown in Table 1 and Figure 7. In Table 1 each question and the score changes are shown, and in Figure 7 the changes are shown in the bar graphs.

Table 1 Questions in the questionnaire and the score changes

Questions	Score change
1. I can remain focused on the exact requirements of an activity.	$3.77 \Rightarrow 4.15$*
2. I can read what the writer implies.	$3.69 \Rightarrow 4.38$*
3. I am aware of a model of an essay so that I can construct an essay using the model.	$3.54 \Rightarrow 5.00$**
4. I can present my own arguments clearly.	$3.46 \Rightarrow 4.31$**
5. I am good at recognizing the signals used to indicate "stages" in an argument.	$3.38 \Rightarrow 4.38$*
6. I am aware of the "line of reasoning" when I write an essay.	$3.08 \Rightarrow 4.23$**
7. I am very patient in concentrating on considering which part of the essay is its ground and conclusion.	$3.00 \Rightarrow 3.77$*
8. I am very patient in going over the facts in order to reach an accurate view.	$4.31 \Rightarrow 4.08$ n.s
9. I find it easy to separate key points from other materials.	$2.92 \Rightarrow 3.54$**
10. I can recognize whether the writer uses misleading information or distortion to persuade the reader.	$3.54 \Rightarrow 3.85$ n.s
11. I am good at identifying unfair techniques used to persuade readers.	$2.69 \Rightarrow 3.92$**
12. I am aware of how my current beliefs might prejudice fair consideration of an issue.	$2.92 \Rightarrow 3.54$**
13. I know the structure of an argument.	$2.85 \Rightarrow 4.62$**
14. I can tell descriptive writing from analytical writing.	$2.54 \Rightarrow 3.77$**
15. I can consider and evaluate different points of view fairly.	$3.46 \Rightarrow 4.80$*
16. I can offer criticism without feeling this makes me a bad person.	$4.00 \Rightarrow 4.08$ n.s
17. I know the reasons why abstract or vague words are often used in essays.	$3.08 \Rightarrow 3.92$ n.s

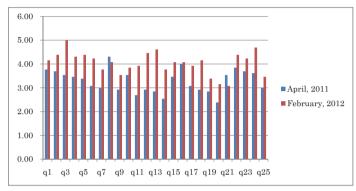| 18. I can point out some defects in an argument. | 2.92 ⇒ 4.15** |
19. I feel comfortable pointing out potential weaknesses in the work of experts.	2.85 ⇒ 3.38 n.s
20. I know how to evaluate the materials, data which are used as the supports for the essay.	2.38 ⇒ 3.15*
21. I'm good at conceiving a new idea.	3.54 ⇒ 3.08 n.s
22. I'm trying to convey my ideas to readers.	3.85 ⇒ 4.38 n.s
23. I spent a lot of time to complete an essay.	3.69 ⇒ 4.23 n.s
24 I often use a dictionary or other books for reference while writing.	3.62 ⇒ 4.69**
25. I am confident in spelling and grammar.	3.00 ⇒ 3.46 n.s

Figure 7 Score changes between the pretest and posttest

As we can see, the score of each question is higher in the posttest in the second semester than the pretest of the first semester except for Questions 8 and 21. Wilcoxon rank sum tests were carried to see if the changes were statistically significant. The changes of Questions 3,4,5,6,9,11,12,13,14,18, and 24 were statistically significant (p<.01) and those of Questions 1,2,5,7, and 15 were also significant (p<.05). The rests of the changes were not significant.

Let me reiterate some noteworthy changes in reference to the intervention. The following items are related to the contents of lessons on argumentative essay writing:

Q3. I am aware of a model of an essay so that I can construct an essay using the model. (3.54 ⇒ 5.00)

Q4. I can present my own arguments clearly. (3.46 ⇒ 4.31)

In addition, the following points are related to the contents of CT lessons including the Toulmin Model.

Q6. I am aware of the "line of reasoning" when I write an essay. (3.08 ⇒ 4.23)

Q9. I find it easy to separate key points from other materials. (2.92 ⇒ 3.54)

Q11. I am good at identifying unfair techniques used to persuade readers. (2.69 ⇒ 3.92)

Q13. I know the structure of an argument. (2.85 ⇒ 4.62)

Q15. I can consider and evaluate different points of view fairly. (3.46 ⇒ 4.80)

The overall results show that the students learned how to write a good argumentative essay and improved their attitudes toward critical thinking.

2.3.1.2 Results of the total words

Next, I would like to show the results of another qualitative analysis. Figure 8 shows the average number of words the students wrote at each test.
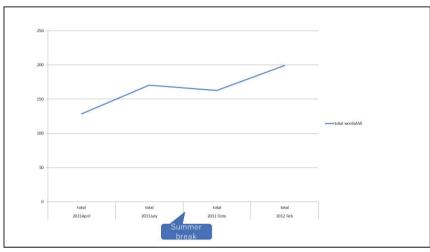

Figure 8　The average total number of words

The average number of the total words of the students as of the pretest (April, 2011) was 149.5 and that of the posttest (February, 2012) was 180.97. A t-test was administered to see if there was a significant change. The result was that the change is significant ($t = -0.003$, $p<.01$).

As we can see in Figure 8, although the students wrote more in the end, there is a slight decline between the posttest of the first semester and the pretest of the second semester. This is due to the summer break in which the students probably did not have a chance to engage themselves in extended writing; therefore, in October when the second semester started, they were a little slow in writing compared to the end of the first semester. However, as the second semester progressed they were able to write more.

2.3.2 Sample analysis using Toulmin terms

The next analysis is the analysis of students' writing products using Toulmin terms.

As shown in Figure 6, the structure of an ideal argumentative essay is as follows: In the introductory paragraph, some background information about the theme is introduced as **Data**, and then the writer's thesis is presented as **Claim**. In the second paragraph

on, the writer presents his/her reasons (**Warrant**) to support his/her Claim. It is better if the writer's reason is further supported by details (**Backing**). We usually expect that there is more than one reasons (**Warrant 1, Warrant 2,** …) and subsequently more than one Backings (**Backing 1, Backing 2,** ...). One's writing shows a sophistication if one incorporates a possible counter-argument and the writer's refutation of it to defend the writer's claim (**Reservation/Rebuttal**). Lastly, in the concluding paragraph the writer is supposed to restate one's claim (**Claim'**).

Based on the Toulmin terms I mentioned above, the students' writing products were analyzed. I call this an argumentation analysis.

The procedure of the argumentation analysis taken in this study was as follows:

I. Based on the Toulmin Model and other literature, all the students' writings were investigated in terms of the nature of the arguments, and the labels (**Data, Claim, Warrant, Backing, Reservation, Claim'**) were placed by two raters, who were versed in the model, and they engaged in the analysis independently.

II. After the completion of labeling, two raters checked each other's data; when there was a discrepancy, they discussed it until they reached agreement.

In this paper, I will show two sample analyses. The abbreviations used in the analysis are as follows: **D** for Data / **W** for Warrant / **B** for Backing / **C** for Claim / **Q** for Qualification / **R** for Reservation (Rebuttal) /**C'** (restatement of the Claim). In order to place those marks and show the parts corresponding to these terms, the original paragraphing was dismantled. I will show two students' samples at four different points in one academic year (the beginning of the first semester, the last class in the first semester, the beginning of the second semester, and finally the end of the second semester) to show the students' progress. The students' writing were kept intact.

First, I start with Student 1. The prompt for the first semester pretest was:

Write your opinion on the following statement with specific reasons and examples. "All high schools should ask their students to evaluate their teachers."

Student 1 (April)	
C	I agree with the opinion
B1	When I was a high school student, we weren't allowed to choose our teachers, and it was very boring to have classes that I wasn't interested in.
W	So, I hope all the students in high schools can evaluate their teachers and choose classes they really want.
B	Secondly, I think teachers in high schools have different abilities, from poor to very good. But they get almost the same fees.
W2	So, teachers should be evaluated from many points of view, and should be paid differently. In that way, teachers will study more to make good classes,
	and also students will study hard to catch up with the class. Bad teachers will be…fired.
C'	I want to be a good teacher, so I should study very very hard from now. Thank you.

Probably because the writer was not used to writing an academic essay, the way this essay is organized is very poor and there are some colloquial expressions, which are not appropriate for academic essay writing, are used.

Student 1 (July)
C   I agree with the idea that all high schools should ask their students to evaluate their teachers. There are some reasons.
W1   First, students have a right to choose teachers to get good lectures.
B1   There are some teachers who have poor knowledges and teaching abilities around us. However, we cannot avoid taking their classes if we cannot evaluate our teachers.
W2   Second, this idea is very good for teachers to check their abilities of teaching.
B2   If they are doing well, their students will tell that their lectures are good. If students say their lectures are poor, teachers can review their lectures and make them good.
W3   Third, it will make good relationships between students and teachers. Students and teachers can evaluate each other in this way and students can tell their teachers what they are thinking of about teachers.
C'   For all these reasons, it is good to ask students to evaluate their teachers.

In this sample, we can see Student 1 had acquired knowledge on how to arrange his ideas logically. Namely, warrants (abstract/ general ideas) are presented first and then backing (examples) follow. It shows a better structure of an essay.

Next, Student 1's writing products in the second semester are presented. The prompt was:

Write your opinion on the following statement with specific reasons and examples "We should make another foreign language learning (other than English) compulsory at high school."

Student 1 (October)
C   I do not agree to make a second language learning compulsory at high school. There are some reasons.
W1   First, it is important for high school student to learn English as a second language at first.
B1   Nowadays, most people in other countries can speak English fluently, so Japanese people can communicate with them in English in foreign countries. Most of the students don't have enough knowledges nor abilities of speaking English, so they have to study English hard, and then study other languages like Spanish, French and German in university.
W2   Second, there are not enough teachers who can teach languages other than English, and it costs a lot to find teachers.
R   If private schools want to make it compulsory, it may be possible. However, when it comes to other local high schools, it is difficult to make it compulsory because of its high cost.
C'   For all the reasons above, I am against the idea to make a second language learning other than English compulsory at high school.

We can see much improvement in this ample. W1 is effectively supported by B1 and even **Reservation** is appropriately inserted.

> Student 1 (February)
>
> D | These days, I hear that some high schools provides students some second language class besides English.
> C | However, I think it is not so much important for students to study languages other than English. There are some reasons for this.
> W1 | First, most of the universities in Japan use English as a second language, so students have to read or write thesis.
> B1 | We can study other languages in universities but most of the students think it as a third language or second foreign language. Thus, English is more important than other languages in Japanese universities.
> B2 | Second, there are not much teachers who can teach other languages like French, Italian, German. Of course they are popular as a second language in universities and there are enough teachers. However, if we want to make them compulsory in high school, we should give license to high school teachers.
> W2 | It costs very much that we cannot make it compulsory.
> R | For all those reasons above, it is very good experiment to teach high school students languages other than English as a not-compulsory class. However, thinking of making it compulsory, these are too many differences and problems, so
> C' | I disagree with the idea that we make it compulsory to teach languages other than English in high school.

We can see further improvement in this sample. **Data** is presented at the beginning, providing background information. In addition, **Reservation** is appropriately added before the writer's claim' as a conclusion.

　　Next, I would like to show the samples of Student 2.

> Student 2 (April)
>
> C | I don't think high schools should ask students to evaluate their teachers.
> B1 | Students have their own ideas. it is bad thing to push teacher's ideas to them.
> W1 | If high schools do so, students would not be able to make and explain their idea.
> W2 | They will be scared to be denied their opinion by their teachers. maybe they cannot be indipensed people.
> C' | High schools should teach students many things, but they mustn't make their students evaluate their teachers.

As a typical novice writer, Student 2 could not differentiate **Backing** from **Warrants**. The line of logic in this sample is not clear.

> Students 2 (July)
>
> C | I believe that all high schools should ask their students to evaluate their teachers. I have two reasons to support this idea.
> W1 | First of all, teachers can get a chance to improve their classes. If they are evaluate by students, they can know what is their good or bad point. They can also know their students' needs. They can think about those and do better at next time.
> W2 | Second, it is not equal that only students are evaluated.
> B2 | Teachers always evaluate their students. However, they are not evaluated by anyone, so some of them will be invedgo. They should know what do they think when they are evaluated.
> C' | In conclusion, to ask high schools students to evaluate their teachers is good idea. It improves classes and have a chance for teachers to know students' mind.

In this sample, Student 2 learned that one should present a **Warrant** first and then it should be supported by **Backing**. The structure of this sample shows improvement in this regard.

Student 2 (October)

C　　We should not make a second language learning compulsory at high school. It is very difficult to do that because of two reasons: teachers and necessity.

W1　First, schools should find who can speak and teach the languages.

B1　It is difficult for them because most Japanese peoples can not use foreign languages other than English because they do not have to use them. Many people forget those languages even they studied at universities. It needs much effort for schools to find such peoples.

W2　Second, it is not necessary to study those languages.

B2　English is used all over the world. We can communicate with peoples in English most of the countries. We can spend time there even we do not use their own languages.

C'　High school students do not have to learn a second languages other than English. It is difficult to find teachers and they can use English in other countries.

The writer' claim is effectively supported by two **Warrants**, and each of which is very-well supported by **Backing**. The student learned that an abstract idea is presented as a **Warrant** (reason) and then detailed accounts follow as a **Backing**.

Student 2 (February)

C　　It is not good idea to make a second language learning compulsory at high school.

W1　First of all, there are few teachers who can teach foreign languages other than English.

B1　Most of the Japanese people study English at school as a second language. Some people study foreign language such as French, Italian, Chinese and so on in their university life, but it is not enough to the ability to teach the language to other people.

R1　Some people argue that we can invite ALT from the country. It is true. But how can we communicate with them? We can not use the language so we invite the person. It is clear that it is hard to do the idea.

W2　Second, I believe that we must learn world wide language at first.

B2　English is studied many place all over the world. So many people can understand it.

R2　It is true that it is the best way to communicate with foreigners in their language, but if we can not do so, English will be a good tool to talk with them. It is not so late to study other language after you learned English.

C'　In conclusion, to make a second language learning is useful than other languages these days. It is hard to find teachers and English is more useful than other languages these days.

In the last sample,   Student 2 successfully inserted a **Reservation** for each of the **Warrant** he made. This shows that Student 2 learned to look at the issue from other perspectives in addition to his own. This is clearly one property in critical thinking skills.

I showed only the samples of the two students. The overall results of the analysis using Toulmin terms showed that all the students were able to write more robust arguments through one academic year's instruction. In most cases, the students were able to write in the following way at the end of the second semester:

1) Backings follow warrants

2) Reservation was inserted showing the students' attitude of taking more objective view.

3) More words were written, giving soundness and strength to the students' arguments.

2.3.4 Students' Reflections after the posttest

Lastly, I would like to show some of the reflections that the students wrote at the end of the second semester. (The original reflections were written in Japanese. They were translated for this paper by the author.)

・Through repeated writing of assignments, I started to write from a deeper point of view. For example, I started to consider whether my writing was really objective and whether there might be an opposite point of view.

・A t first I just tended to write my opinion intuitively. Then I started to ask myself: where did my instinctive views come from? What was the basis of my point of view?

・Before (this class) I just wrote down what I thought. There was no basis to my ideas. However, after taking this class, I realized I had to add further information to support my argument. Compared with before, I really became better at thinking of my reasons and foundations of my argument before writing. I came to ask myself, "Can you really say that?", and stopped writing just any old thing.

・At first I could only think of a conclusion from my own point of view, but now I try to develop my argument considering what conclusion could be reached from the opposite point of view.

From these reflections, we can observe that the students were made conscious of some of the CT skills and strategies necessary for writing good argumentative essays.

3. Conclusion

In this study, I discussed the necessity of teaching CT in today's world. Then I reviewed the connection between fostering CT and writing with a hypothesis that writing can foster CT ability. According to the results of the study I conducted, the students improved the scores for CT skills on the questionnaire, although it was a self-check test. In addition, the close analysis of the students' writing data showed that they improved

the quality of argumentative essay writing, as analyzed using Toulmin terms. In addition, through the students' reflections, it can be observed that the students were made conscious of some of the CT skills and strategies necessary for writing good argumentative essays. These data provide evidence that writing instructions throughout an academic year developed the students' critical thinking ability to some extent.

Finally, I need to mention the limitations of the study. First of all, I could not have a control group where the participants were not given English writing lessons. If the participants had been divided into two groups (the experimental group and the control group), I could have compared the two groups and clarified the impact of English writing instruction. It should also be noted, however, that having a control group is difficult for practical and ethical reasons. In addition, samples of our participants are biased in the sense that they belonged to the same university (i.e. academically they were overall at the same level). If more students from a broader range of universities had participated, different results may have been achieved. Furthermore, the measurements I used were limited. I believe that further studies need to be carried out in order to settle these matters.

Despite these shortcomings, I can conclude that writing lessons on how to construct a good argumentative essay contributed to fostering the critical thinking skills of Japanese university students to some degree.

Notes:

1　This paper is based on my oral presentation given at IATEFL(2012) at Glasgow, UK.
2　Regarding the implementation of the English four skills test, although MEXT itself wanted to implement this as of 2020, there have been various concerns expressed by high schools and the commercial test-makers regarding practical problems; it has not been announced officially when it will be implemented.
3　This episode was included in my presentation at IATFL because it was shortly after the earthquake, tsunami, and a nuclear radiation in 2011 in Japan which attracted much attention and concern worldwide, and it seemed suitable for the international audience at the conference.
4.　This is based on the information given by Professor Brian Yeh at National Taiwan Normal University. He kindly translated Taiwan's Curriculum guideline into English for me.

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