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A Critical Look into Iranian EFL University Students' Critical Thinking and Argumentative Writing

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Abstract

Due to the potent role of critical thinking in learners' academic success and its connection with factors conducive to learning such as argumentation ability, the present study seeks to primarily probe the correlation between Iranian EFL learners' critical thinking ability and their argumentative writing achievement, and investigate the predictability of the students' argumentative writing achievement based on their scores on critical thinking scale. Furthermore, the effect of gender on Iranian EFL learners' argumentative writing achievement was investigated. In so doing, 'Watson-Glaser Critical Thinking Appraisal' (2002) as well as an argumentative writing assignment was employed, and the participants of the study included 178 EFL learners in three universities in Mashhad, Iran. Structure Equation Modeling (SEM) was utilized to analyze the data. The results substantiated the positive correlation between critical thinking ability and argumentative writing revealing that these two variables significantly and positively related to each other; among the predictors (subscales of the critical

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thinking) of argumentative writing, inference, assumptions, arguments were the stronger predictors. Finally, gender was not found to significantly affect Iranian EFL learners' argumentative writing achievement. The conclusions and implications of this study are pointed out with reference to foreign language teaching context.

Key words: Argumentative writing; Critical thinking; EFL university students; Gender

Introduction

Despite the fact that there is consensus among theorists and educators about the interrelatedness of the development of languages and thinking skills in educational settings, language learning and thinking skills are often regarded as independent processes (Miraman, & Tishman, 1988; Suhor, 1984). Thinking creatively and critically while using the target language is essential for learners to be proficient in a language (Kabilan, 2000).

Since higher-order thinking skills are reasonably required for success in a knowledge-based society, college students need to develop critical thinking skills in order to analyze, argue and make judgments about what they confront in their daily lives.

On the other hand, developing writing skills is not only academically important, but also crucial in professional endeavors (Geiser & Studley, 2001; Light, 2001). Students failing to develop appropriate writing skills in school may be feeble to articulate ideas, argue opinions, and analyze multiple perspectives- the essential skills for communicating persuasively with peers, colleagues, co-workers, and the community at large (Connor, 1987; Crowhurst, 1990; National Commission on Writing, 2004).

In the same vein, argumentative writing is considered as a vital skill during the school years and beyond (Crowhurst, 1990; Nippold, 2000). Academically, argumentative writing helps students acquire knowledge (Driver, Newton, & Osborne, 2000; Schwarz, Neuman, Gil & Iiya, 2003; Zohar & Nemet, 2002), improves scientific thinking skills (Shanahan, 2004), and fosters comprehension of history and social studies (De La Paz, 2005; Wiley & Voss, 1999). Moreover, argumentative writing can result in an increase in intrinsic motivation as well as

problem-solving performance in the academic setting (Chinn, 2006). Worldwide, students are required to comprehend, evaluate, and construct written arguments in multiple content-area disciplines (Ackerman, 1993; National Center for History in Schools, 1996).

Furthermore, critical thinking entails critical reading and writing skills (Browne & Keeley, 1981; Paul & Nosich, 1991). Aiming to reach advanced skills in writing, college students need to develop their critical thinking skills, which according to Simpson and Courtney (2002) requires active argumentation, contingency-related value judgments, reasoning, envisioning, and analysis of complex alternatives.

Nevertheless, traditionally Iranian English writing classes adopt product-based approaches with little, if any, emphasis on the processes of effective writing, specifically in terms of building effective arguments for or against certain propositions. Consequently, regarding the importance of critical thinking and the significance of subsequent transfer of this skill to other contexts, the present study aimed at studying the possible relationship between Iranian students' critical thinking ability and their argumentative writing achievement.

Review of the Literature

Critical Thinking (CT)

Despite the fact that CT is not a newly defined concept , it seems crucial to realize that critical thinking should not be considered as an outcome rather a process or state of mind which entails both cognitive and affective aspects of reasoning. The literature on CT demonstrates that in a plethora of definitions about critical thinking, it still remains controversial. CT and its realization traces back to John Dewey's beliefs. From a philosophical point of view, Dewey (1933) believed critical thinking entailing aspects of inquiry, discrimination, testing beliefs and considering alternatives, needed to be cultivated by education system through paving the way for forming the habits of mind training. Under recent definitions, critical thinking has been connected to cognitive skills. For instance, Paul (1993) views CT as a "disciplined, self-directed thinking which exemplifies the perfections of thinking appropriate to a particular mode or domain of thinking" (p. 462). In the same vein, Ennis (1996, as cited in Mason, 2008) defined it as reflective thinking. Furthermore, Gambill (2006) views CT as thinking in a purposeful way observing factors related to clarity, fairness, precision, accuracy, logic and relevancy.

The multiplicity of definitions of critical thinking serving to be a hindrance has led the American Philosophical Association to run Delphi project in order to arrive at a more consistent definition. The American Philosophical Association Project conceptualized CT (as cited in Giancarlo & Facione, 2001) as purposeful, self-regulatory judgment ending in interpretation, analysis, evaluation and inference which is formed on the conceptual criteria upon which a judgment is based. In this conceptualization, the accentuation is towards disposition of CT.

Currently, critical thinking is viewed as a process including both cognitive and affective aspects of reasoning (Ennis, 1996; Facione, 2006; Gambrill, 2006; McPeck, 1981). Accordingly, CT is not merely an intellectual practice of problem solving but entails values aiming to improve human functioning, safety, health and emotional well-being (Gambrill, 2005; Mason, 2007). Mason (2007) believes CT encompasses not only knowledge of oneself, but also the ability and capacity to learn from people from different cultures, backgrounds and worldviews. Therefore, as Facione (1990, p. 2) postulates educating good critical thinkers "combines developing CT skills with nurturing those dispositions which consistently yield useful insights and which are the basis of a rational and democratic society". Likewise, Davis (2003) maintains that instilling critical thinking and analytical skills can lead to student empowerment. The agreed upon higher-order cognitive skills required for critical thinking according to Fonteyn (as cited in Brechin, Brown & Eby, 2000, p.59) include interpretation, analysis, evaluation, inference, explanation and self-regulation. In the same line Watson and Glaser (2002) known as the designers of the most commonly used measure of CT, believe that it is comprised of the following dispositions :discriminating the degrees of truth or falsity of inferences extracted from the related data; finding out unstated assumptions and presuppositions in a group of statements; determining if conclusions are logical and derived from the premises; weighing whether the generalizations made on certain premises are warranted or not; assessing whether the arguments are strong and relevant or weak and irrelevant.

McPeck (1981), believing in teaching both cognitive and affective domains of reasoning, maintains that CT is composed of the two aspects of discovery and justification. Similarly, Kurfiss (1988) views critical thinking to be connected with the justification of beliefs which is manifested through argumentation. According to Bell (1991) this skill can be developed through being engaged in debates which are assumed to contain the argumentation skills crucial for critical thinking like

reflecting on a problem, seeking to find evidence, building a case, arranging and organizing data to deliver a speech, setting refutation, rebuttal and debating. Consequently, critical thinking is more than a set of skills and argumentation plays a pivotal role in critical thinking (Brookfield, 1987; Facione, 1993; Kurfiss, 1988; McPeck, 1990; Paul, 1985).

Regarding the salience of critical thinking in every discipline and occupation, it is taken for granted that in educational setting, learning to think, as Dewey (1933) states should be the central purpose of education. CT is admitted as an essential competence for students to gain in academic language (Connolly, 2000; Davidson, 1998; Davidson & Dunham, 1997). In Kress' (1985) term critical thinking is a social practice and is considered as a language itself and CT skills have been recognized to be pivotal in achieving academic objectives (Facione, 2010). Similarly, teaching the general thinking skills as a "broad-based, cross-disciplinary" course, is regarded as the most beneficial way of teaching critical thinking (Halpern, 2001, p. 278).

Recently, in L2 context different ways of integrating CT skills into teaching and learning might remain controversial among L2 learning scholars and practitioners (Thompson, 2002). Sternberg (1990) reports that the predominate use of formative education does not lead to the enhancement of students' critical thinking ability. Pennycook (1994) pinpoints that there has been a movement from rote instruction to approaching learning as a constant discovery and reflective process of questioning and reformulating hypotheses. Therefore, critical thinking is not considered static rather it is a dynamic process in which learners can apply critical thinking skills not only in academic settings, but also in their professional complicated problems (Kealey, Holland & Watson, 2005; Yeh, 2004).

Due to the potent role of CT abilities on learners' achievement in EFL contexts (Davidson & Dunham, 1997; MacBride & Bonnette, 1995), empowering learners with CT skills is even more essential for L2 teachers than L1 teachers as it is their duty to prepare students to communicate with native speakers "who value explicit comment, intelligent criticism, and intellectual assertion" (Davidson, 1998, p.121).

Argumentative writing

Writing is a mental activity and its function is constrained by social norms, roles, relationships, and status in a particular setting. Among the four types of prose - descriptive, narrative, expository, and argumentative- it is recommended that EFL

novice writers should begin with the simplest mode- the descriptive essay- and gradually move towards learning the most complex one; that is, the argumentative mode (Richards & Schmidt, 2010).

Argumentative writing is one of the most frequent and important kinds of assignments set in university (Connor& Kaplan, 1987; Crowhurst, 1991; Johns, 1993; Knudson, 1994; Lloyd, 1996). Thus, it is a necessary writing style across various academic disciplines. On the other hand, it is difficult for most undergraduate EFL students to argue, discuss or evaluate competently as well as persuasively (Ballard, 1984; Ballard & Clanchy, 1981, 1988, 1991; Grabe & Kaplan, 1996). Many researchers confirm that argumentative writing is difficult for EFL learners since they are often both linguistically and rhetorically inexperienced (Connor, 1988; Johns, 1993; Thompson, 2001). The ability to write argumentatively crucially depends on EFL/ESL learners being equipped with an intellectual capacity for thinking in a critical manner.

Glenn, Miller, Webb, Gary, and Hodge (2004) conceive of argumentation as the art and science of civil debate, dialogue, and persuasion. English argumentative writing, based on Aristotelian rhetoric, argues for and against a certain proposition in order to convince an audience (Connor, 1996). Bachman (1990) believes that the writer should employ an appropriate style to create relevant and rational ideas that are linked and arranged logically with the help of language, world and strategic competencies in order to write a successful argumentative essay. In English, argumentative writing is embedded within a larger socio-cultural context encouraging individual self-expression, and critical thinking- skills essential to composing effective English argumentative writing-, and the emphasis is on articulation of one's stance, justification of one's position and ideas, a logical progression of one's ideas, and refutation of opposing arguments to defend one's claim (Connor, 1996; Hinkel, 1994 & 2002; Matalene, 1985; Oliver, 1971).

In this study, Crammond's (1998) definition is adopted in which argumentative writing is described as a kind of writing where the writer predicts the audience's needs and interests, and therefore anticipates counterarguments and the questioning of his/her assumptions.

Due to the fact that writing is interwoven with thinking, requiring students to reason and deduce in order to present their own standpoints for and against different propositions, seems to enhance learners' argumentative writing

achievement. The contention is that higher-order thinking skills improve higher order learning skills resulting in higher levels of language proficiency (Renner, 1996). In this study, argumentative writing is regarded as a manifestation of critical thinking skills, since a writer has to analyze, evaluate and counter arguments and maintain a logical justification to convince the reader.

The significance of this study, therefore, rests upon the fact that improving students' argumentative writing and critical thinking and reasoning skills may end in empowering them with the skills for knowledge-seeking and -building as well as communicating.

Investigating the existing theoretical contentions on CT and argumentative writing led the researchers of the present study to assume a reciprocal association between these two constructs. What was mentioned; nevertheless, is all based on theoretical contentions and logical reasoning and no study to date has empirically investigated the mutual relationship between argumentative writing and CT as well as the impact of gender on argumentative writing achievement in an L2 context. Therefore, to bridge this gap in the field, the present study seeks to examine the relationship between Iranian EFL learners' CT and their argumentative writing achievement among both males and females.

To empirically examine the relationships in the present study, the following research questions are posed and investigated:

1) Is there any relationship between CT ability and argumentative writing achievement of Iranian EFL learners?

2) Which of the CT subscales is the strongest predictor of argumentative writing achievement of Iranian EFL learners?

3) Does gender play any significant role in argumentative writing achievement of Iranian EFL learners?

Method

Participants

Participants of the present study comprised 178 Iranian students majoring in English Language and Literature and English Language Teaching in three universities in Mashhad. The age of the participants ranged from 18 to 31, and

considering their gender, 73 participants were males and 105 were females. All the participants had passed university writing courses and all of them were informed about the general objectives of the project, so they gave their consent to participate in the study.

Instrumentation

The materials used in the study included 'Watson-Glaser Critical Thinking Appraisal' (CTA), and an argumentative writing task entitled "Television is doing irreparable harm" in the form of a four-paragraph argumentative essay of about 180 words.

The 'Watson-Glaser Critical Thinking Appraisal' (CTA) includes 80 items and is divided to the following 5 subtests as Table 1 shows.

Table 1
The subtests of CTA along with the corresponding descriptions

Subtest	Description	Items
Test 1. Inference	Discriminating among degrees of truth or falsity of inference drawn from given data.	1-16
Test 2. Recognizing Unstated Assumptions	Recognizing unstated assumptions or presuppositions in given statements or assertions.	17-32
Test 3. Deduction	Determining whether certain conclusions necessarily follow from information in given statement or premises.	33-48
Test 4. Interpretation	Weighing evidence and deciding if generalizations or conclusions based on the given data are warranted.	49-64
Test 5. Evaluation of Arguments	Evaluation of Arguments: Distinguishing between arguments that are strong and relevant and those that are weak or relevant to a particular question at issue.	65-80

In the present study, the Persian version of the Watson-Glaser test was utilized. This version and its subscales possess reliability and validity in Iran's context (Mohammadyari, 2002). The reliability of the Persian version was found to be 0.98 and the test-retest reliability of the original version of the critical thinking appraisal has been reported to be 0.81 by Watson and Glaser (1980). In this study, the

reliability of the questionnaire was calculated via Cronbach's alpha which was found to be 0.85.

To require the participants to write argumentative essays, the researchers selected the topic from the book titled "For and Against" authored by Alexander (1968)- widely used for setting argumentative topics in Iran. Having been teaching writing courses, two EFL instructors familiar with the rating procedure were then required to score the essays using the Rubric for the Assessment of the Argumentative Essay used as an analytic marking scheme. The inter-rater reliability coefficient was subsequently calculated to be 0.82.

The third tool was the Rubric for the Assessment of the Argumentative Essay proposed by myteacherpages.com -validated by Fahim, and Mirzaii (2014) with regard to content and construct validity as well as the inter-rater reliability of 0.81. The Rubric served as an analytic framework of writing criteria, consisting of the components of an argumentative essay. The five broad categories forming this scheme are comprised of introduction and conclusion, main points, organization, works cited, and mechanics. To assign grades to compositions, the researchers set scores based on sub-classified categories of more detailed components. Hence, the range of scores were between 0-20.

Data Collection

The study was conducted in Farhangian University, Imam Reza University and Binaloud Higher Education in Mashhad in February 2013. The participants were asked to answer the Watson-Glaser Critical Thinking Appraisal (Form A) and write argumentatively on a topic adopted from the book “For and Against” in two separate sessions during two consecutive weeks.

Results

Descriptive statistics including minimum, maximum, mean, and standard deviation regarding all the variables are presented in Table 2. As this Table indicates, the minimum score for the argumentative writing was 7 and highest score was 20. Moreover, the minimum and maximum scores for the other variables are as follows: inference (min= 1, max= 11); assumptions (min= 3, max= 14), deductions (min= 3, max= 14), interpretation (min= 4, max= 14), arguments (min= 3, max= 19), and total critical thinking (min= 27, max= 59).

Table 2
Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Argumentative writing	178	7.00	20.00	14.4213	2.33543
Inference	178	1.00	11.00	6.0843	2.42601
Assumptions	178	3.00	14.00	9.6067	2.33914
Deductions	178	3.00	14.00	9.4045	2.16400
Interpretation	178	4.00	14.00	9.9719	2.24346
arguments	178	3.00	19.00	10.4045	1.96707
Total critical thinking	178	27.00	59.00	45.4719	6.98439

In order to answer the first research question, examining the relationship between critical thinking and argumentative writing, Pearson Product-moment correlation formula was used. The relationships between critical thinking subscales and argumentative writing are reported in Table 3.

Table 3
Correlation between argumentative writing and other variables

		Inference	assumptions	deductions	interpretation	arguments
Argumentative writing	Pearson Correlation	.366**	.300**	.363**	.330**	.590**
	Sig. (2-tailed)	.000	.000	.000	.000	.000
	N	178	178	178	178	178

As can be seen in Table 3, all the critical thinking subscales were positively and moderately correlated with argumentative writing. It shows that the higher the critical thinking ability of the students, the higher is their argumentative writing ability. Interestingly enough, augmentative writing had the highest correlation with the arguments subscale of the critical thinking (r=.59, p<.01).

In order to answer the second research question, Structural Equation Modeling (SEM) was used (Kunnan, 1998). It is run to examine the predictability of the argumentative writing by critical thinking subscales. In the present study, a special form of SEM, Path Analysis, was used. It is different from SEM in that it uses only

observed variables. SEM is a powerful multivariate technique used to take a confirmatory hypothesis-testing approach for the proposed structural theory. An SEM model consists of two parts, the measurement model and the structural model (Kunnan, 1998). The measurement model examines the relationships between the observed variables and latent variables. The structural model is concerned with the relationships among the latent variables. The overall theory behind the SEM is like regression analysis; however, it has some advantages over them (Kline, 2011). First, it takes into account the errors. Second, more than one dependent variable can be examined at the same time. And finally, it also examines the relationships between independent variables. In the end, model fit is assessed using goodness of fit indices. . Testing fit means how well the model fits the data. For this purpose, goodness-of-fit indices are used. In the present study, χ^2/df, GFI, AGFI, CFI, and RMSEA were used. To have a fit model, χ^2/df should be less than 3, GFI, AGFI, and CFI should be above .90, and RMSEA should be less than .08 (Kunnan, 1998).

Amos 16 software was used for performing SEM. The results of the Path Analysis indicated that the goodness of fit indices were all acceptable. These indices are shown in Table 4.

Table 4
Goodness of fit indices

χ^2/df	GFI	AGFI	CFI	RMSEA
2.43	.94	.92	.96	.07

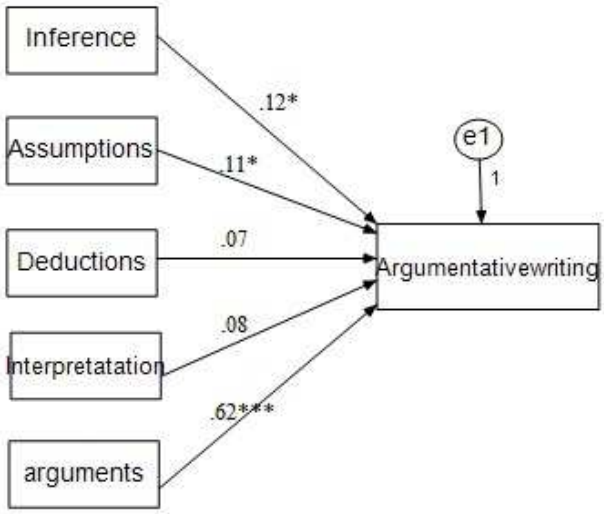

Figure 1: Sub-scales of CT as predictors of argumentative writing

As can be seen in Figure1, among the predictors (subscales of the critical thinking) of the argumentative writing, inference (β=.12, p<.05), assumptions (β=.11, p<.05), arguments (β=.62, p<.001) were statistically significant. However, argument was the strongest predictor of argumentative writing. This finding confirms the correlational results in which argument had the strongest correlation with argumentative writing. Moreover, two of the paths were not significant, namely deduction and interpretation.

To see whether males and females are different with regard to their argumentative writing scores, independent-samples t-test was run. Descriptive statistics of both groups are given in Table 5. As can be seen in the table, the argumentative writing mean scores for males and females are 14.54 and 14.33, respectively. To examine whether this difference is statistically significant, a t-test was run.

Table 5
Descriptive statistics for males and females

	gender	N	Mean	Std. Deviation	Std. Error Mean
Argumentative Writing	male	73	14.5479	2.66167	.31152
	female	105	14.3333	2.08782	.20375

As the t-test table (table 6) shows, no significant difference was found between males and females (t=.57, df= 130.27, p>.05). This implies that gender does not affect the argumentative writing scores.

Table 6
Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means			
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference
Argumentative writing	Equal variances assumed	8.404	.004	.602	176	.548	.21461
	Equal variances not assumed			.577	130.27	.565	.21461

Discussion

The main goals of this study were, primarily to verify the association between EFL learners' critical thinking ability and their argumentative writing achievement, and to investigate the predictability of the students' argumentative writing achievement based on their scores on critical thinking scale. Furthermore, the effect of gender on Iranian EFL learners' argumentative writing achievement was investigated.

With regard to the first goal, the results substantiated the positive correlation between critical thinking ability and argumentative writing revealing that these two variables positively and significantly related to each other. It is compatible with Kurfiss' (1988) claim believing in manifestation of critical thinking through argumentation, or Bell's (1991) contention expressing that CT ability can be developed through being engaged in debates or tasks which are assumed to contain the argumentation skills crucial for critical thinking. Similarly, this finding is

consistent with Brookfield (1987), Facione (1993), McPeck (1990), Paul (1985), and Watson and Glaser's (1980) contention maintaining that argumentation plays a pivotal role in critical thinking. Hence, the higher the critical thinking ability of the EFL learners is, the higher scores they obtain on their argumentative writing task.

Considering the second goal, critical thinking scale consists of five components: inference, assumptions, deduction, interpretation, and arguments and the results of the SEM indicated that critical thinking subcomponents affect EFL learners' argumentative writing achievement. Among the predictors (subscales of the critical thinking) of the argumentative writing, inference, assumptions, arguments were the stronger predictors. However, argument was the strongest predictor of argumentative writing. This finding confirms the correlational results in which argument had the strongest correlation with argumentative writing. Since critical thinking entails certain abilities such as analyzing arguments, claims, or evidence (Facione, 1990; Halpern, 1998), making inferences using inductive or deductive reasoning (Paul, 1992; Willingham, 2007), judging or evaluating all aspects of arguments, cases, and situations (Case, 2005; Lipman, 1988), it is hardly surprising that these indispensable components of critical thinking are more strongly associated with argumentative writing ability.

Furthermore, the impact of recognizing unstated assumptions or presuppositions in given statements or assertions sounds plausible since one of the objectives of argumentative writing is enabling students to read between the lines and to understand and challenge ideological assumptions of texts for the purpose of putting their arguments stronger and more logical. The results of the present study seem to shed light on the fact that students' ability to question or evaluate the validity of ideas and premises in the texts, as well as their attempt in going beyond the surface of texts and discovering hidden meanings, are likely to be transmitted and extended to wider educational and life settings in which identifying and evaluating multiple arguments from various perspectives are indispensable- the contention of which is in line with (Hashemi & Ghanizadeh, 2012).This implies that through involving students in argumentative tasks, along with encouraging them to go beyond texts, and becoming aware of the inferences they make and the assumptions underlying those inferences, not only would students begin to gain command over their thinking, but also teachers would follow the educational goal of scaffolding learners to reach the lifelong ability in critical thinking. Hence, teachers literally highlight the principles of liberal pedagogies seeking to make a

change in students' education, and their lives through assisting them to practice reflective and creative thinking (Shor, 1992).

Regarding the third goal, the results of the t- test showed that gender did not affect Iranian EFL learners' argumentative writing achievement. It implies that there is no significant difference between Iranian male and female EFL learners relative to their argumentative writing achievement. Therefore, due to the paucity of robust study on the impact of gender on writing performance, more research needs to be conducted, particularly within the genre of argumentative writing, to further understand this issue.

Conclusion

Based on the results of the SEM, among critical thinking subscales, argument, assumptions, and inference, are the three influential factors in argumentative writing achievement. The findings of this study; therefore, have relevance for the teaching of writing, suggesting that EFL students can benefit from enhancing and teaching critical thinking ability. Thus, providing a good and competitive education is a key to the success of any country.

Unfortunately, educational systems commonly put much effort on "what to think rather than how to think" (Daud & Husin, 2004, p. 478). Moving from what to think to how to think necessitates a major shift in approaches towards instructional paradigms. It is now time for the education system in Iran to put less emphasis on the memorization and recalling of information (Hashemi, Naderi, Shariatmadari, Seif Naraghi, & Mehrabi, 2010; Maftoon, 2002) and to adopt new methods of teaching, most specifically through explicit instruction and hands-on approach that would enhance students' intellectual abilities and prepare them to deal with complex tasks involving complex thinking along with critically evaluating their own arguments and reasoning which are necessary for self-regulated learning and coping with the demands of today's world. It seems the most significant prerequisite for the proper teaching of argumentative writing is that of fostering critical thinking by means of thought-provoking pedagogy.

There were also some limitations in the present study such as not employing an experimental design. Some experimental procedures can also be used for examining the effect of teaching or enhancing the CT and argumentative writing ability.

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