

# Effects of Rhetorical Analysis and Self-Regulation Strategies on Iranian EFL Learners' Critical Thinking and Reading Comprehension of Argumentative Texts<sup>1</sup>

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Received: 2016/03/15 | Revised: 2016/08/27 | Accepted: 2017/05/03

## ABSTRACT

A lot of attention has been recently devoted to critical thinking (CT) and reading comprehension as part of the goals of language pedagogy. This study examined the effects of rhetorical analysis and self-regulated strategies on EFL learners' CT and reading comprehension of argumentative texts. To this end, three groups (one control and two experimental groups), each consisting of 20 high intermediate female EFL learners, were selected conveniently from an English language institute. To collect the data, three instruments were used: Oxford Placement Test (OPT), California Critical Thinking Skills Test (CCTST), and reading summary tests. OPT was used to ensure the homogeneity of the participants; CCTST and two reading summary tests were used as the pretests and posttests to assess the participants' CT and reading

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<sup>1</sup>DOI: [10.22051/lghor.2017.8769.1017](https://doi.org/10.22051/lghor.2017.8769.1017)

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comprehension skills, respectively. The first experimental group was taught rhetorical analysis strategies of argument mapping and Socratic questioning and the second group received self-regulated strategy instruction. In the control group, no explicit instructional strategies were taught. Analysis of covariance and multivariate analysis indicated the positive effects of rhetorical analysis and self-regulated strategies on the participants' CT and reading comprehension skills. Nevertheless, no significant differential effect was found between the effects of the two strategies. Findings provide pedagogical implications for L2 instructors and learners.

**Keywords:** Reading comprehension, Critical thinking, Rhetorical analysis strategies, self-regulated, EFL learners.

## INTRODUCTION

The Socratic principle assumes that the unexamined life may not be worth living, and many unexamined lives may result in an uncritical, unjust, and dangerous world (Scriven & Paul, 1987). This principle points to the fact that humans should examine and criticize their lives. It encourages thoughtful and probing questioning which involves the practice of critical thinking (CT). CT is “the use of rational skills, world-views, and values to get as close as possible to the truth” (Gabennesch, 2006, p. 36). It is a cognitive ability mixed with multiple skills such as identifying, comprehending, and analyzing an issue by making inferences through top-down and bottom-up strategies to validate the reliability of arguments (Pithers & Soden, 2000). CT has been considered by many scholars (e.g., Allen, 2004, Moon, 2008; Paul & Elder, 2006) as an essential skill not only for teachers, but also for students in their learning. Thereby, some educational researchers (e.g., Moon, 2008; Paul & Elder, 2006) claim that high thinking ability results in academic success because learners can be in charge of their own learning and make use of strategies to study effectively.

Furthermore, reading is considered as a crucial skill for professional success and academic learning (Pritchard, Romeo, & Muller, 1999). Alvermann and Earle (2003) have considered reading comprehension as one of the main important skills in language learning for all learners because it provides the basis for a substantial amount of learning in education. In most academic subject areas, school success is dependent on knowing how to read, understanding what was read, and applying content to future learning (Vaughn, Levy, Coleman, & Bos, 2002). More to the point, L2 learners, particularly EFL learners, should develop their thinking for learning how to engage in the reading process through thinking and intellectual skills. As Mohd Zin, Bee Eng, and Rafik-Galea (2014) state, “in formal settings, such as in academic and working environments, students ... are constantly required to synthesize, evaluate, interpret and selectively use the information in texts” (p. 44). In this light, critical and effective reading, “the application of higher-order thinking skills such as analysis, synthesis, inference, and evaluation to reading” (Beyer,

1995, p. 20) should be regarded as one of the goals for L2 learners in higher education.

Both reading comprehension and critical thinking are basic skills for L2 learners that should be developed through carefully planned instructions during higher education. Instructional strategies have been considered as one of the important factors in facilitating the teaching/learning of the cognitive skills. Various strategies have been embraced in L2 teaching/learning as one of the helpful tools to develop language skills because L2 learners are conscious of using strategies and capable of controlling their process of learning (Manchon, 2008). Thus, in looking for ways to help L2 readers to be successful, some strategies such as rhetorical analysis and self-regulated strategies are possible considerations. This study intended to explore the effects of direct instruction of rhetorical analysis and self-regulated strategies on developing L2 learners' CT and reading comprehension skills. More specifically, it was an attempt to examine the effects of using two rhetorical analysis strategies (i.e., argument mapping and the Socratic questioning) and self-regulated strategy development (SRSD) on EFL learners' CT and reading comprehension of argumentative texts.

Rhetorical analysis strategies (RASs) can nurture L2 student's ability in discovering "the nutritional value" in the texts, books, and essays they study in school (Shea, Scanlon, & Aufses, 2008, p. 35). According to McGuire (2010), argument mapping and Socratic questioning are two rhetorical analysis strategies and useful tools for the analysis of formal arguments. Argument mapping relates to a method of visually diagramming and representing the structure of an argument to allow for easy comprehension of core statements and relations (Dwyer, Hogan, & Stewart, 2013). The Socratic questioning refers to "a mode of questioning that deeply probes the meaning, justification, or logical strength of a claim, position, or line of reasoning" (Paul, 1995, p. 539). Moreover, SRSD is a kind of self-regulating instruction designed to help students learn basic cognitive skills (Graham & Harris, 2005). It is "an active and constructive process whereby students set goals for their learning, and then attempt to monitor, regulate, and control their cognition, motivation, and behavior guided and constrained by their goals, and the contextual features in the environment" (Pintrich, 2000, p. 453).

Given the problems that many EFL students have in engaging with reading and analysing argumentative texts, the results of the current study can be of paramount importance for those who are looking for an alternative to more conventional methods in reading courses, especially when it comes to reading comprehension of argumentative texts. Argumentative texts present an author's standpoint, supporting reasons, and evidences on a controversial topic in hopes of convincing the reader to accept the author's point of view. The effective reading of argumentative texts is, in fact, important not only for academic success, but also for making real life decisions (Larson, Britt, & Larson, 2004). Furthermore, as Mohd Zin et al. (2014) state, it is crucial for EFL learners to possess good analytical and inferential skills to analyze, infer, and evaluate information contained in the text. If EFL learners achieve gains in the reading

comprehension of argumentative texts and enhance their CT skill, the specific approach to the reading course may be recommended as worthy of consideration at language schools.

## LITERATURE REVIEW

Strategy is defined as “a plan, method, or series of maneuvers or stratagems for obtaining a specific goal or result” (Garcia, 2012, p. 152). Good learners use strategies during the learning process to facilitate L2 learning. Reading strategies are one of the important strategies that have received a special focus in language learning. Several researchers (e.g., Li & Kaur, 2014) believe that strategy instruction, that is, “a combination of direct instruction and modelling, as well as guided and independent practice” (Zumbrunn, 2010, p. 15) can help L2 learners to be strategic readers. In fact, being a strategic L2 learner can help to plan, organize, and assess L2 learning, and become more autonomous (Jafarigohar & Khanjani, 2014). As Li and Kaur (2014) state, strategy instruction in reading courses can raise students’ awareness of various reading tactics that can be at language learners’ disposal in different reading situations.

Empirical research also indicates that strategy instruction in language skills, in general, can facilitate learners’ performance. For instance, Li and Chun (2012) investigated the effects of strategy use on Hong Kong university students’ reading literacy performance. Their results demonstrated a positive effect of learning strategy use on the university students’ English reading performance. Also, Phantharakphong and Pothitha (2014) conducted a study on the development of English reading comprehension of 18 students in the 10th grade by using the strategy of concept mapping. In their interview, the participants stated that concept maps helped them comprehend the reading texts.

Nonetheless, as Taylor, Pearson, Clark, and Walpole, (2000) state, L2 reading classroom includes very little instruction that directly addresses reading comprehension. In other words, reading comprehension is often tested, but is rarely taught. Thus, in search of effective reading instruction, some researchers have directed their focus towards self-regulated strategies. For instance, Ismail Ammar (2003) carried out a study to see the effect of self-regulated reading (SRR) program on the critical reading skills and reading motivation of Egyptian EFL learners. SRR included four basic phases: planning, metacomprehension activation, comprehension monitoring and control, and reflection. In his study, the experimental group had the self-regulated reading paradigm, whereas the control group did not receive self-regulated strategy instruction. The findings indicated that the participants’ self-regulation of their reading behaviors resulted in greater gains in their critical reading skills, as well as motivation to read. Also, Antoniou and Souvignier (2007) used a strategy-based program that concerned the explicit teaching of reading enriched with the use of self-regulation strategies to enhance the reading comprehension of learners with learning disability. The program included recognizing and activating prior knowledge by thinking, identifying text structures, and making prediction. It

focused on monitoring comprehension and finding meaning of unknown words; summarizing based on text genre; and self-regulation via a checklist plan. The results showed that the participants with learning disabilities benefited from implementation of the reading strategy-based program. In another study, Hedin, Mason, and Gaffney (2011) investigated the effect of teaching TWA strategy (thinking before reading, thinking while reading, and thinking after reading) on L2 learners with poor comprehension and attention-related disabilities. The participants received scaffolded support throughout the intervention and learned to self-monitor and self-reinforce their reading performance. The results showed their reading comprehension improved when compared with their performance before instruction. TWA helped these L2 learners regulate their strategy use and sustain attention during reading.

Moreover, as van Gelder (2005) states, CT is a difficult but not impossible skill; it needs deliberate and explicit practice. By providing specific instructions, learners may be able to learn how to think critically and promote their CT. He maintains that the instruction at best should allow deliberation, planning, and considering options. That is to say, it should provide occasions for students to analyze concepts, clarify issues, solve problems, and transfer ideas to new concepts. Thus, in looking for CT enhancement, strategy-based instruction has taken the eyes of several researchers.

For instance, Khodadady and Ghanizadeh (2011) carried out a quasi-experimental study to examine the impact of concept mapping as a postreading strategy on Iranian EFL learners' CT skill. The participants were 36 EFL learners at upper-intermediate and advanced levels, studying at Marefat English Institute in Mashhad, Iran. The results demonstrated that concept mapping had a positive and significant impact on learners' CT ability.

Also, Nezami, Asgari, and Dinarvand (2013) investigated the effect of cooperative learning instruction on the CT of Malayer's high school students. For this purpose, the students in the experimental group were educated for ten sessions by the cooperative method, whereas the peers in the control group continued noncooperative learning method. The results demonstrated the significant effect of cooperative learning instruction on the students' CT.

However, the study by Bessick (2008) on the effects of two strategies (i.e., Thinker's Guides and argument mapping) on CT skill revealed no significant findings regarding the effect of instruction on CT skill. Thinker's Guides includes a comprehensible set of guidelines for analysis of textual as well as visual arguments. Argument mapping is a visual representation of the structure of an argument in informal logic. It is a map that "makes the logical structure of the argument completely explicit" (van Gelder, 2005, p. 4).

Bessick's (2008) study on the effect of these rhetorical analysis strategies on the CT skill and academic achievement of freshman students at a rural southeastern Pennsylvania university did not demonstrate great improvement in CT skill. But, he maintained that there is a need to improve the CT skills and that "instruction in critical thinking, whether through direct instruction or inde-

pendent study in addition to tutoring may contribute to the improvement of students' academic achievement" (p. 153).

Also, Yang (2008) conducted a study designed to examine the effectiveness of teaching critical thinking skills through discussion forums. The major goal was to investigate whether students' critical thinking skills would improve after they participated in Socratic dialogues as taught by their instructors. The results indicated that instructors who used Socratic dialogues during small-group online discussions could successfully improve students' critical thinking skills in a large university class.

In the area of rhetorical analysis strategies, McGuire (2010) examined the effect of direct instruction in rhetorical analysis on California college students' CT abilities, including knowledge, skills, and dispositions. More specifically, the researcher investigated their perceptions of the effectiveness of argument mapping, Thinker's Guides and Socratic questioning in improving student perception of CT abilities.

These data suggest that purposeful implementation of the abovenamed interventions could strengthen students' perceptions of critical thinking and of their own critical thinking abilities particularly inference and deduction. In sum, the review of the related literature shows that strategy-based instruction has been investigated with regard to L2 learners' reading skill (e.g., Li & Chun, 2012). Attempts have also been made to introduce self-regulated strategy instruction to overcome the reading comprehension of students with learning disability (Antoniou & Souvignier, 2007). Nevertheless, to the best of the present researchers' knowledge, the related literature has not addressed the effects of the rhetorical analysis strategies, such as argument mapping and Socratic questioning, on L2 learners' reading comprehension of argumentative texts within an EFL context.

Effective reading of argumentative texts is important because they put added responsibility on our readers to be aware of their own attitudes on a topic and to approach a text objectively to fully understand the author's argument (Haria, 2010). Besides, there is a gap in the related literature to investigate the effect of a SRSD instruction on EFL learners' reading comprehension of argumentative texts and compare its effectiveness with that of rhetorical analysis strategies in such a context.

Furthermore, a gap is seen in comparing the effectiveness of rhetorical analysis and self-regulated strategies with the hope of improving EFL learners' CT skill. This may provide us with some ways to help them become better critical thinkers. In light of the above issues, the following research questions were addressed:

1. Does using rhetorical analysis instructional strategies (argument mapping and Socratic questioning) significantly improve Iranian EFL learners' reading comprehension of argumentative texts and CT skill?

2. Does using self-regulation strategies significantly improve Iranian EFL learners' reading comprehension of argumentative texts and CT skill?
3. Are rhetorical analysis instructional strategies (argument mapping and Socratic questioning) more effective than SRSD in improving Iranian EFL learners' CT and reading comprehension skills?

## **METHOD**

### **PARTICIPANTS**

To carry out the study, 60 female EFL learners at high intermediate level, aged from 20 to 25, were selected from Atiehsazan English Institute in Dehaghan, Isfahan, Iran. After screening the students based on the Oxford Placement Test (OPT, 2007), they were assigned into three groups (one control and two experimental groups), each consisting 20 students. Meanwhile, complete randomization was not possible to be implemented in the present study. Thus, accessibility sampling was applied. The adult participants were native speakers of Persian and were taught by the same instructor. Except for three participants, all were first- and second-year university students with similar cultural backgrounds. None of them were English majors and had learning experiences in English-speaking countries. The selected participants had acceptable English proficiency having learned English as a foreign language for several years in high school, language institutes, or university.

### **INSTRUMENTS**

This study made use of three instruments for data collection. The first instrument was OPT which was used to gauge the participants' proficiency knowledge at the upper-intermediate level and ensure the homogeneity of the participants. The test included 50 multiple-choice items for grammar and vocabulary, 10 multiple-choice questions for reading, and an optional writing. The score on the test could range from 0 to 70. The test was designed to be completed within 65 minutes. According to Edwards (2007), the test provides a reliable and efficient means of placing students at different levels of language ability. OPT is capable of being utilized with any number of students of English to ensure efficient, reliable, and accurate grading and placing of students into classes at intermediate levels, and has been calibrated against the proficiency levels based on the Common European Framework of Reference for Languages (CEFR) and the Cambridge ESOL Examinations (Allen, 2004). Following Edwards' (2007) guidelines, those students who scored above 60 were assigned into high intermediate level. Meanwhile, the reliability of the test as measured by Cronbach's alpha in the current study was found to be 0.82.

The second instrument was the California Critical Thinking Skills Test-Form 2000 (CCTST-2000). According to Laird (2005), the CCTST-2000 is considered



to be more reliable than Forms A and B. According to Facione, Facione, Blohm, and Gittens (2008), “the primary use of the CCTST is to gather valid and reliable data about the baseline, entrance-level, or exit-level critical thinking skills of various groups of people, commonly college level students and working adults” (p. 11). CCTST is a reliable and valid test, developed on conceptualization of CT. That is, expert consensus was based on the participation of 46 leading theorists, teachers, and CT assessment specialists. It consisted of 34 multiple-choice items; each item is awarded 1 point for the correct answer. The CCTST items emphasize several subskills, which include analysis of the meaning of a given sentence, drawing a correct inference from a set of assumptions, and evaluating or justifying the inference provided. The items are set in contexts and address topics that are familiar more to post-high school students.

Since CCTST was designed for English native speakers, to avoid any misunderstanding, its Persian version, adapted and validated by Askari and Malekia (2010) for a sample of 340 Iranian male and female students, was used. The validity of the test was determined through construct validity (convergent and divergent validity). Also, criterion-related validity was established through the correlation of the CCTST scores with the scores from Watson-Glaser Critical Thinking Test. The reliability of the test was calculated through the use of Kuder-Richardson, split half, and test-retest methods (Askari & Malekia, 2010; Bigdeli, 2006). In the present study, the test-retest reliability with 20 EFL students was calculated to be .70.

The third instrument was written summaries to assess the reading comprehension of the participants. They were supposed to create a written summary of what they read. Two argumentative texts were given to the participants at the pretest phase, and two other argumentative texts were given to the same participants at the posttest phase. Care was taken to select the upper-intermediate level reading texts with controversial topics which would encourage the EFL learners to consider different points of views while reading. For instance, arguments on topics related to the environment (e.g., “Should marine mammals be in captivity?”) generated several views. The texts included the basic structural elements of an argument (i.e., author’s belief or position, supporting reasons or corresponding evidence, opposing views, and conclusion). The argumentative texts were examined based on the elements of readability and length in order to ensure their validity and reliability.

The readability/difficulty of the texts were assessed through the Flesch-Kincaid readability formula. The Flesch Reading Ease scores ranged from 60 to 70, which were neither very easy nor very difficult for the high-intermediate level participants. Regarding the length of the texts, the number of words in each text varied from 280 to 350. The summaries were scored based on Hoyt’s (2010) Written Summarization Rubric by two raters. According to this rubric, the participants were supposed to recognize and write the main elements of an argument categorized into the main position of the argument, its supporting reasons/evidences, the opposing position of the argument and its evidences, and finally the rebuttal of the argument and its evidences. In so doing, each par-



participant was scored 2 if they completely supported the idea, 1 if they mentioned the idea but not fully support it, and 0 if the idea was not included in summary. The interrater reliability coefficients of the reading summary tests at the pretest and posttest phases of the study were high (i.e., 0.96 and 0.97, respectively).

## PROCEDURE

A quasi-experimental research design was used in this study. Three intact EFL classes from the above-mentioned language institute were selected. To further ensure the homogeneity of the EFL participants, who had enrolled in high intermediate level English classes, the placement test (i.e., OPT) was administered to them. Those students who received lower than 60 on the placement test, following Edwards' (2007) guidelines, were excluded from further data analysis. The three classes were randomly assigned to one control and two experimental groups, each consisting of 20 learners. At the beginning of the course, a training session was held to make the participants in both control and experimental groups learn how to relate ideas in the argumentative texts to each other and write a summary. Then, the Persian version of CCTST was administered to the participants in the three groups as the pretest to assess the participants' CT ability. Besides, two argumentative texts were given to them to write summaries as the pretest.

The interventions were, then, implemented in the experimental and control groups for more than a month (six weeks) by one of the researchers (who was the teacher in the language institute). In the first experimental group (rhetorical analysis strategy group), rhetorical analysis strategy of argument mapping and Socratic questioning were practiced during six weeks (three sessions per week, each lasting 90 minutes). The elements of an argument including position of the argument or conclusion, reasons and evidences, compromise, opposing position or objection against the argument, its reasons and evidences, and rebuttal were introduced and explained. For the strategy of argument mapping, box and arrow diagrams were used following van Gelder's (2005) guidelines (see the sample in Appendix). The boxes in the diagrams correspond to propositions and arrows correspond to relationships such as evidential support or rebuttal. In fact, argument maps follow a particular set of conventions in which the main point is put at the top of the argument tree. As displayed in Appendix, arrows indicate that a claim is evidence. The use of the green color and the word *reason* indicate they are supporting evidence. McGuire (2010) explains that these maps are mostly used in teaching reasoning and CT, and "can support the analysis of pros and cons when deliberating over problems" (p. 10). In the present study, the participants were explicitly taught how to construct the argument maps using pen and paper. They practiced constructing argument maps individually and in small groups for at least 10 minutes. They were taught to focus on the logical, evidential, or inferential relationships among propositions and create a summary of the text through box and arrow diagrams.

As to the Socratic questioning strategy, different kinds of Socratic questioning strategies (i.e., clarification, viewpoint, consequences, and question about a question) were instructed and practiced. The Socratic questioning included a combination of spontaneous questioning and exploratory questioning. In the spontaneous questioning, the teacher (who was one of the present researchers) discussed the concepts/ideas taken from the required reading assignments, which generally consisted of a variety of arguments found in the text. The teacher would introduce the key concepts or questions (e.g., Should there be a school all year-round?) from the readings to stimulate student thinking. To allow participants to reflect on the issues, they were given 5-10 min to free write a response. This was followed by class discussion of the issue as the teacher asked for clarification, examples, and evidence, while offering examples, asking for a paraphrase, or rephrasing student responses. In the exploratory questioning, the whole group discussion was used to introduce key questions or concepts (e.g., endangered species) to the class and to stimulate thinking. The participants were often given a prompt that dealt with a controversial issue discussed in a previous reading assignment. They were then allowed 5-10 min to free-write their responses. This was often followed by small-group speaking and listening to encourage them to think and reason cooperatively and to assess their ideas.

In the second experimental group (SRSD group), SRSD, which drew on the TWA technique, were taught during six weeks. TWA is an instructional technique used to improve reading comprehension through self-regulation before, during, and after reading. In other words, it is a self-regulatory strategy that has the reader thinking before reading, thinking while reading, and thinking after reading (Rogevich & Perin, 2008). TWA included nine components which were taught through three steps. In step 1, L2 learners identify the author's purposes, reflect on what they know, and determine what they want to learn. In step 2, while L2 learners are reading, they monitor their reading speed, link their own knowledge to what they read, and reread parts which are confusing. In step 3, they establish the main idea for each paragraph, summarize with supporting details, and identify what they have learned. In fact, TWA was taught through the six stages of SRSD: (a) develop preskills, (b) discuss the strategy, (c) model the strategy, (d) memorize the strategy, (e) support it, and (f) independent practice in strategy use.

In the control group, no rhetorical analysis and self-regulated strategy was practiced. The participants were merely taught the same argumentative texts in a traditional way. In fact, they were supposed to read the texts, followed just by question-and-answers. Then, the instructor asked the learners to read the assigned text silently in the classroom. Next the teacher selected one of the students in the classroom to read the text aloud. Afterwards the teacher read the text paragraph by paragraph again and gave explanations about the structural parts of texts, such as the author's intent, reason, evidence, and conclusion, and paraphrase difficult words, if any, in the reading material. Then, several comprehension questions were asked by the teacher in the context of classroom.

After carrying out the instructions, the participants in the three groups were asked to summarize two other argumentative texts and take CCTST as the post-tests. Meanwhile, given pretest-posttest design of study, ANCOVA and MANCOVA were used as statistical tools for data analysis. According to Larson-Hall (2010), ANCOVA is “useful when you assume that there is some external factor, such as pretest ... which will affect how your students will perform on the response variable” (p. 357). ANCOVA is an improvement over *t*-tests; it likes repeated-measures, but it can “reduce the amount of variability in the model that is unexplained” (Larson-Hall, 2010, p. 357), and factor out the effects of possible pre-existing differences in reading ability.

## RESULTS

Descriptive statistics of reading comprehension scores in the rhetorical analysis strategy (henceforth RAS), SRSD and control groups were obtained and summarized in Table 1:

**Table 1.**  
Descriptive Statistics of the Reading Scores in the Three Groups

Group	Variable	<i>N</i>	Min	Max	Mean	Std. Deviation
RAS	Pretest	20	19	35	28.55	4.25
	Posttest	20	28	40	35.85	3.81
SRSD	Pretest	20	18	38	27.25	6.20
	Posttest	20	23	40	33.30	5.322
Control	Pretest	20	18	37	28.20	6.30
	Posttest	20	20	37	28.75	5.65

As Table 1 shows, the pretest mean scores in the RAS ( $M = 28.55$ ), SRSD ( $M = 27.25$ ), and control ( $M = 28.20$ ), were smaller than the posttest mean scores in the RAS ( $M = 35.85$ ), SRSD ( $M = 33.30$ ), and control ( $M = 28.75$ ), respectively. The above data show that the mean scores increased from the pretests to the posttests in the three groups of the study, indicating the better performance of the groups after the instructions.

The descriptive statistics of the CT scores for the control and experimental groups of the study are presented in Table 2:

**Table 2.**  
Descriptive Statistics of the CT Scores in the Three Groups

Group	Variable	<i>N</i>	Min	Max	Mean	Std. Deviation
RAS	Pretest	20	6	17	11.55	2.35
	Posttest	20	9	19	13.65	2.74
SRSD	Pretest	20	6	18	11.95	3.49
	Posttest	20	8	24	13.90	4.01
Control	Pretest	20	6	18	11.10	3.08
	Posttest	20	8	19	11.60	3.07

As Table 2 shows, the pretest CT mean scores in the RAS ( $M = 11.55$ ), SRSD ( $M = 11.95$ ), and control ( $M = 11.10$ ) groups were lower than the posttest CT mean scores in the RAS ( $M = 13.65$ ), SRSD ( $M = 13.90$ ), and control ( $M = 11.60$ ) groups. These results suggest that the participants' CT scores in both experimental and control groups increased on the posttest phase.

To find out whether using the two rhetorical analysis strategies could significantly improve the Iranian EFL participants' reading comprehension of argumentative texts and CT skill, ANCOVA was conducted. The results for the effect of two rhetorical analysis instructional strategies (i.e., treatment) on the posttest reading comprehension and CT scores are reported in Tables 3 and 4, respectively:

**Table 3.**  
Results of ANCOVA for the Effect of the Rhetorical Analysis Strategies on the Posttest Reading Scores

Source	Sum of Squares	<i>df</i>	Mean Square	<i>F</i>	<i>Sig.</i>	Eta Squared
Corrected Model	1199.14	2	599.57	118.47	.000	.86
Treatment	464.81	1	464.81	91.84	.000	.71
Error	187.25	37	5.06			
Total	43118	40				

**Table 4.**  
Results of ANCOVA for the Effect of the Rhetorical Analysis Strategies on the Posttest CT Scores

Source	Sum of Squares	<i>df</i>	Mean Square	<i>F</i>	<i>Sig.</i>	Eta Squared
Corrected Model	186.24	2	93.12	19.45	.000	.51
Treatment	29.70	1	29.70	6.20	.017	.14
Error	177.12	37	4.78			
Total	6739	40				

As displayed in Table 3, the two rhetorical analysis instructional strategies had a statistically significant effect on the participants' posttest reading comprehension scores,  $F(1, 37) = 91.84, p = .000$ . That is to say, the RAS group performed better than the control group on the reading comprehension posttests. The partial eta squared for the treatment effect was found to be large (.71), meaning that a large amount (about 71%) of the variance in the posttest reading scores could be due the treatment effect, that is, the rhetorical analysis instructional strategies.

Likewise, as shown in Table 4, the two rhetorical analysis instructional strategies had a statistically significant effect on the participants' posttest CT scores,  $F(1, 37) = 6.20, p = .017$  (at .05 level of significance). The partial eta squared indicating the effect size of the treatment was found to be .14, meaning that a smaller amount of the variance in the posttest CT scores was accounted for the treatment effect, compared with that of the reading comprehension scores. These statistics point to the conclusion that using the two rhetorical analysis instructional strategies in the RAS group significantly increased both reading comprehension and CT scores.

To answer the second research question, intending to see whether using SRSD could significantly improve Iranian EFL participants' reading comprehension of argumentative texts and CT skill, ANCOVA was conducted (with the type of the instruction i.e. treatment as an independent variable). The results for the effect of SRSD (treatment) on the posttest reading comprehension and CT scores are reported in Tables 5 and 6, respectively:

**Table 5.**  
Results of ANCOVA for the Effect of SRSD on the Posttest Reading Scores

Source	Sum of Squares	df	Mean Square	F	Sig.	Eta Squared
Corrected Model	1115.86	2	557.93	87.80	.000	.82
Treatment	278.43	1	278.43	43.81	.000	.54
Error	235.10	37	6.35			
Total	39853	40				

**Table 6.**  
Results of ANCOVA for the Effect of SRSD on the Posttest CT Scores

Source	Sum of Squares	df	Mean Square	F	Sig.	Eta Squared
Corrected Model	382.06	2	191.03	45.47	.000	.71
Treatment	23.27	1	23.27	5.54	.024	.13
Error	155.43	37	4.20			
Total	7040	40				

According to Table 5, the SRSD instruction had a statistically significant effect on the participants' posttest reading comprehension scores,  $F(1, 37) = 43.819$ ,  $p = .000$ . It increased the participants' posttest reading comprehension of argumentative texts significantly ( $*p \leq .05$ ). The partial eta squared was also found to be .54, which was large. According to the Cohen's guidelines, the effect size above .40 is large (Larson-Hall, 2010). Similarly, the SRSD instruction had a statistically significant effect on the participants' posttest CT scores,  $F(1, 37) = 5.54$ ,  $p = .024$ . It increased the participants' posttest CT scores significantly ( $*p \leq .05$ ). However, the partial eta squared for the treatment effect on the posttest CT scores was not large (.13), following the Cohen's guidelines for effect size (Larson-Hall, 2010).

In sum, the results of ANCOVA showed that both rhetorical analysis strategy and SRSD instructions improved reading comprehension of argumentative texts and CT skill. In order to see which one of these two instructions was more effective in improving the participants' reading comprehension and CT skills, which was the focus of the third research question, MANCOVA was carried out. Tables 7 and 8 report the results of MANCOVA for the type of treatment effect, labelled "group":

**Table 7.**  
Result of Multivariate Analysis for Group Effects on the Reading Comprehension and CT Scores

	Effect	Value	<i>F</i>	<i>df</i>	Error <i>df</i>	<i>Sig.</i>	Eta
Intercept	Pillai's Trace	.433	13.36	2	35	.000	.433
	Wilks' Lambda	.567	13.36	2	35	.000	.433
	Hotelling's Trace	.763	13.36	2	35	.000	.433
	Roy's Largest Root	.763	13.36	2	35	.000	.433
Group	Pillai's Trace	.088	1.68	2	35	.201	.088
	Wilks' Lambda	.912	1.682	2	35	.201	.088
	Hotelling's Trace	.096	1.682	2	35	.201	.088
	Roy's Largest Root	.096	1.682	2	35	.201	.088

**Table 8.**  
Pairwise Comparison of the RAS and SRSD Groups on the CT and Reading Comprehension Scores

Dependent Variable	(I) Groups	(J) Groups	Mean Difference (I-J)	Std. Error	<i>Sig.</i>	95% Confidence Interval for Difference	
						Lower Bound	Upper Bound
Reading Comprehension	RAS	SRSD	1.63	.93	.087	-.25	3.52
	SRSD	RAS	-1.63	.93	.087	-3.52	.25
CT	RAS	SRSD	.26	.74	.725	-1.25	1.77
	SRSD	RAS	-.26	.74	.725	-1.77	1.25

As demonstrated in Table 7, the results revealed no statistically significant difference for the group variable, i.e. type of treatment effect in the experimental groups,  $F(1, 37) = 1.68$ ,  $p > .05$ ; Wilks'  $\lambda = .912$ ,  $\eta^2 = .088$ . In other words, there was no statistically significant difference between the two types of instructions in the RAS and SRSD groups. As displayed in Table 8, the pairwise comparison of the RAS and SRSD groups did not reveal any statistically significant mean differences of the reading comprehension (1.63) and CT (.26) scores between the RAS and SRSD groups at the posttest phase ( $p = .087$  and  $p = .725$ , respectively). In sum, the results revealed no differential effect of the rhetorical analysis strategy and SRSD instructions for the reading comprehension of argumentative texts and CT skill.

## DISCUSSION

The results, firstly, revealed that those EFL learners who had received the rhetorical analysis strategies of argument mapping and Socratic questioning had better achievements in the reading comprehension of argumentative texts and CT skill than the learners in the control group who did not receive the rhetorical analysis instructional strategies. It is assumed that the argument mapping strategy assisted them to visually display the structure of reasoning, argumentation, and the logical, evidential, or inferential relationships among propositions presented in the argumentative texts to create better summaries of the texts. Employing visual-spatial activities in the RAS group, that is, using the box-and-arrow diagrams in argument mapping, might have served the EFL readers, especially those with high spatial-visual intelligence to accomplish something more than purely linguistically-encoded data during the instruction. As Armstrong (2003) argues, during the reading process, different kinds of information, such as visual-spatial configurations, are brought together to construct meaning. Mapping might have helped them envisage the texts to better analyze information and construct meanings from the texts. Moreover, argument maps could help the participants clarify and organize thinking by showing the logical relationships between thoughts that were expressed simply. As Van Gelder (2005) states, argument maps make the logic of arguments in texts more straightforward. They may have helped the EFL participants organize and navigate around complex information and clarify reasoning. Repeated individual and collaborative practice of constructing maps would have encouraged them to evaluate and modify the premise, structure, support, and logic of their own written arguments. Thus, their responses to the assigned readings and analysis of required reading materials led to some improvement in CT and reading comprehension skills. As with the current study, Phantharakphong and Pothitha (2014) have reported that using the strategy of concept mapping could help their Thai students comprehend English reading texts better. Besides, the above results find further support from the findings of the study by Khodadady and Ghanizadeh (2011) about the positive impact of concept mapping as a postreading strategy on EFL learners' CT skill.



Moreover, utilizing continued questioning and thoughtful discussion through the Socratic questioning strategy might have raised the analytic skills and critical thinking level of the participants in the RAS group. Most likely, they became more skillful readers by analyzing the text content and doing evaluation during the process of repeated questioning and answering. Such an analytic technique helped them increase both CT and inferential comprehension. Most likely, the Socratic questioning strategy assisted the EFL participants to discover the structure of thought and reasoning through a series of questions, develop sensitivity to clarity, accuracy, and relevance, as well as creating and evaluating arguments in the texts. Moreover, the Socratic questioning could provide opportunities for the teacher to explore how the EFL students discover if something was logical in the text. It could provide opportunities for the teacher to “listen critically” and for the students to “become self-correcting” (p. 48); hence better critical reading and thinking skills. The above findings can challenge the results of Bessick’s (2008) study about the effect of rhetorical analysis strategies on the CT skill of freshman students at Pennsylvania University. Their study did not demonstrate significant improvement in CT skill after using rhetorical analysis strategies. However, the findings of Yang (2008) and Mcguire’s (2010) study on the effect of deliberate instruction on CT development support the above results on the effective implementation of the two rhetorical analysis strategies.

Furthermore, the study results showed that the EFL participants in SRSD group, as compared with the control group, had better achievements in comprehending the argumentative texts and, to some extent, enhancing their CT skill. One reason for the aforementioned results can be due to their improvement in strategic behaviors, thought processes, and skills taken by them to make their reading more self-directed. The participants in the SRSD group experienced strategic instruction in several steps during which they practiced the TWA technique to arrive at the meaning through thinking. First, they were instructed how to reflect on what they know and determine what they want to learn (thinking before reading stage). Second, they practiced how to monitor their reading speed and link their own knowledge to what they read (thinking while reading stage). Third, they practiced how to establish main idea for each paragraph, summarize supporting details, and evaluate what they have read (thinking after reading stage).

These steps could enhance the higher-order thinking skills such as analysis, synthesis, inference, and evaluation. Besides, thinking before, while, and after reading might have helped the participants in the SRSD group be more autonomous and activate their self-awareness of the meaning constructing process. The SRSD instruction might have helped them to be metacognitively active participants in their reading process. That is to say, the participants who had used SRSD instruction might have performed better in controlling, regulating and planning their reading comprehension. As Pintrich and De Groot (1990) state, the use of processes such as planning, monitoring, and regulating can be linked to achievement and better performance in reading comprehension and CT. This finding of the present study is supported by other research findings (Antoniou

& Souvignier, 2007; Aregu, 2013; Hedin et al., 2011; Nabavi Ekhlas & Shangarffam, 2012) which demonstrated that the SRSD instruction was closely linked to success in the language skills, especially the reading skill.

Additionally, the abovementioned results showed that both types of strategies were equally effective in improving the EFL learners' CT and reading comprehension skills. There was no statistically significant difference between the effects of the two types of instructions (rhetorical analysis and self-regulation strategies) in the experimental groups. This can be attributed to the similarity in their functions. Both rhetorical analysis and self-regulation strategies are (meta)cognitive strategies which work on criticality, deep-structure examination, and scrutinizing the context. Such elements as analyticity, open-mindedness, reasoning, and evaluation can be traced in the rhetorical analysis (argument mapping and Socratic questioning) and SRSD strategies. In both strategies, the participants were required to activate and stimulate their thinking minds by scrutinizing and openly analyzing, inferring, and evaluating the texts. That is to say, both types of instructions provided the opportunity for the participants to evaluate the texts through probing questions, identifying the author's standpoint on the issue, and connecting their own experiences with what the author has said in the text. This can be a plausible reason for the insignificant difference between the performance of the learners in the RAS and SRSD groups after implementing the instructional strategies.

## **CONCLUSION, IMPLICATIONS, AND SUGGESTIONS**

Reading is not a simple process. It is "thinking guided by print" (Perfetti, 1984, p. 40). It is an interaction of language and thought (Goodman, 1982). More attention should then be paid to CT and reading skills which provide opportunities for learners "to develop their English L2 abilities to the point at which advanced academic curricular goals can be achieved" (Grabe, 2009, p. 6). In this light, this study examined the effects of rhetorical analysis (argument mapping and Socratic questioning) and self-regulated strategies on EFL learners' CT and reading comprehension of argumentative texts. One outcome of the study was that the strategy instructions had positive effects on the high intermediate level participants' reading comprehension of argumentative texts as well as their CT skill. Using the rhetorical analysis strategies of argument mapping and the Socratic questioning significantly improved the participants' reading comprehension and CT skills. Also, they had better achievements in comprehending the argumentative texts and improving their CT skill after implementing SRSD instruction. Unlike the participants in the control group, the participants who received the rhetorical analysis and SRSD instructions were required to activate their thinking minds by analyzing, inferring, and evaluating the argumentative texts. Furthermore, the results of the present study showed that there was no statistically significant difference between the effects of the two types of instructions in the experimental groups. In fact, both types of instructions provided the opportunity for the participants to interact with the

texts and assisted them to identify the structural parts of argumentative texts such as the author's intent, reason, evidence, and conclusion.

The findings of the present study imply that the rhetorical analysis strategies of argument mapping and Socratic questioning as well as self-regulatory strategies can be used by L2 teachers in upper-intermediate level L2 classes as toolkits to analyze the reading texts and their students' thoughts. They can use these strategies to bring an explicit shift in the conception of reading comprehension. Besides, based on the findings, providing EFL readers at upper-intermediate level with genre-specific strategy instruction is a pedagogically-rich method which can assist them with the knowledge and thinking skill to better understand their reading materials; Such an instruction may support EFL readers' efforts to make sense of genre-specific texts. Moreover, the results imply that reading argumentative texts is an active process, requiring L2 learners to monitor understanding and to reflect on what they read for constructing meaning. Therefore, considerable emphasis should be placed on student effort in using metacognitive strategies such as self-regulation to make gains in reading comprehension.

Possible limitations exist due to the sample size of 60 female EFL students and the short-term instruction carried out in the current study. As Pallant (2010) states, with a small sample size, one can get results that may not be generalizable to a target population in other settings unless the sample sizes share similar characteristics. In this study, no attempt at randomization occurred. Therefore, the study was limited to an existent situation rather than a true experimental situation. Besides, CT enhancement is a lifelong process and very successful interventions may need to occur over an academic year. Ideally, a longitudinal study would be more beneficial in determining growth in CT skills as a result of the interventions.

The current study is a step toward applying the rhetorical analysis and self-regulatory strategies in reading-based courses and further research is indeed required with a larger sample size, including both genders, long-term instructions with L2 learners at different proficiency levels and other genres to make stronger generalizations about the effectiveness of the above-mentioned instructional strategies for enhancing L2 learners' reading comprehension and CT skills.

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## Appendix

### A Sample of an Argument Map

