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Critical Thinking Strategies and Self-Efficacy

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ABSTRACT

This study aims to contribute to understanding of the concept of critical thinking, of the present state of teaching and learning for critical thinking (within systems of education), and of how to improve students' self-efficacy through critical Thinking T strategies. Historical, theoretical, and empirical review of the literature clearly show that the concept of critical thinking is becoming increasingly added and used in educational planning's, curricula, student "outcomes" lists, and other similar didactic outlooks. However, there is little actual evidence of successful teaching and learning for critical thinking than should be expected regarding the implications and values. Further, there is little empirical understanding of how best to improve self-efficacy in language learners' performance by adding critical thinking to the curriculum, especially within limited educational institutions. This review of the literature will shed light to some empirical researches and investigation across the realm of critical thinking and self-efficacy.

KEYWORDS: Critical Thinking Strategies, Self -efficacy, EFL Curriculum

INTRODUCTION

CT (critical thinking) has gained widespread popularity in recent decades. According to Brown(2002) the importance of teaching CT is nowadays obvious to all educators. The intellectual roots of CT refer to the teaching practice and vision of Socrates, 2500 years ago. Socrates proposed the importance of asking deep questions that make us think before accepting ideas as worthy of belief. His method of questioning is now known as 'Socratic questioning' and is the best known CT teaching strategy.

In a language learning setting, like any other learning milieu, teachers try to elicit answers by asking student questions which make them think about different things. So, teachers have great responsibility for teaching CT to students.Fisher and Scriven (1997) state CT skills are required to be taught since students' thinking skills are not enough to face the problems students deal with either in education or in daily life. According to Myers,(1992)Instructors should attempt to create an interesting environment in which learners' motivation for exploring CT process can be arisen .This means hard work for the teacher.

For language learners, it is absolutely essential to gain independence from their teachers. It is a well-known fact in vocabulary research and instruction that teachers cannot teach all the words learners may need to know. In fact, Nation (2008) argues that in a well-designed vocabulary development program, the teacher's jobs ''in order of importance are planning, strategy training, testing and teaching vocabulary'' (p. 1).

In Iran, which is considered an EFL setting, CT strategies are seldom an issue of concern in language classes. Teachers either pay some perfunctory attention or totally avoid it in their classes. In fact, many teachers find it impossible to work on strategies of CT due to time constraints in their syllabus. The syllabi do not usually allow any room for the teachers to work on CT strategies in their classes. In this study, however, the researchers aims to add the CT strategies to language learning syllabi in Iran and observe whether the learners benefit from the CT instruction as an indispensible part of their classes. As mentioned above, CT strategies have shown to bring about many good results language learners. The present study is aimed at finding the results of the CT strategies in an EFL in three aspects.

The first purpose of the study is to find out if CT strategies can help language learners learn vocabulary more easily. Secondly, the researchers aims to see whether the use of the CT strategies in the EFL language learning curriculum can help learners become more self-efficient in their language learning or not. The last purpose of the present study to investigate whether CT strategies can help learners become more efficient while speaking.

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LITERATURE REVIEW

THE THEORETICAL FRAMEWORK

Those working in the field of education have participated in discussions about critical thinking. Benjamin Bloom and his associates are included in this category. Their taxonomy for information processing skills (1956) is one of the most widely cited sources for educational practitioners when it comes to teaching and assessing higher-order thinking skills. Bloom's taxonomy is hierarchical, with "comprehension" at the bottom and "evaluation" at the top. The three highest levels (analysis, synthesis, and evaluation) are frequently said to represent critical thinking (Kennedy et al., 1991). The benefit of the educational approach is that it is based on years of classroom experience and observations of student learning, unlike both the philosophical and the psychological traditions (Sternberg, 1986). However, some have noted that the educational

CRITICAL THINKING

A commonly perceived definition is needed for CT (Porter, Igein, Alexander, Blaylock, Comb &Williams, 2005). But there is no consensus about CT definition (Kennedy, Fisher & Ennis, 1991).Lyutykh (2009) argues that CT is "a right way of thinking". Bowell and Kemp (2005) believe that CT is an individual's engagement in/deciding on/ responsibility for actions they deal with in daily life. Some argue that CT is determined by especial skills such as ability to evaluate the presented reasons sensibly (Mason, 2008). Citing Bloom, Page (2007) argues that CT relates to high level cognitive thinking (analysis, synthesis and evaluation). Bullen (1998) says that CT is a well-founded thought which focuses on what we believe and what we do. Facion and Facion (1994) state that CT includes evaluation, inference, analysis, deductive reasoning and inductive reasoning.

As CT has been converted into one of main processes within education system, a common understanding of its various meanings is needed (Porter, Igein, Alexander, Blaylock, Comb & Williams, 2005). However, there seems to be little agreement on exactly what CT is (Allen, Rubenfield, & Scheffer, 2004). Most authors consider it as a cognitive and/or problem solving skill (Ennis, 1987; Halpern, 1996; Kurfiss, 1988; McPeck, 1981; Paul, 1989; Siegel, 1988).

Psychologists conceptualize CT as higher-order thinking skills and focus on the suitable learning and teaching processes (Halpern, 1988, &Kuhn, 1999, cited in Dam and Volman, 2004). Benesch (1993) points out CT is not simply higher-order thinking. As she explains "it is a search for the social, historical, and political roots of conventional knowledge and an orientation to transform learning and society" (p.546).

Robert Ennis, a popular authority on CT, has proposed an important definition of CT that focuses on its practical aspects. According to Ennis (1987) cited in Bensley (1998, p.5), "CT is reasonable, reflective thinking that is focused on deciding what to believe or do". Therefore, Bensley (Op Cit) concludes, CT can improve both how and what people think about a variety of questions. According to Bensley(1998, p.5), "CT is reflective thinking involving the evaluation ofevidence relevant to a claim so that a sound conclusion can be drawn from the evidence.
Glaser (1941) cited in Fisher (2001, p.4) defined CT as: "(1) an attitude of being disposed to consider in a thoughtful way the problems and subjects that come within the range of one's experience, (2) knowledge of the methods of logical enquiring and reasoning; and (3) some skill in applying those methods." CT calls for a persistent effort to examine any belief or supposed form of knowledge in the light of the evidence that supports it and the further conclusions to which it tends.

Profetto (2003) indicates that CT is not achieved without an enough desire for and disposition towards it. Whitehead considers students' motivation for and attitudes towards CT as main factors affecting their CT and resulting in the design of an appropriate framework for its teaching and applying (Myers, 1992).
The study by Curtis, Tracy, Rick, Gallo, Erin and Ricketts (2008) showed that classes should move from inactive programs and aimless memorization to CT as a means for facilitating training process. Teaching according to, problem solving approaches, (Ozturk, Muslu, and Dicle) and active learning procedures (Qing, Ni, and Hong, 2010) result in positive dispositions towards CT.

WHO IS A CRITICAL THINKER?

According to the Center for CT (1996b), a critical thinker is always involved in the process of achieving goals, making decisions, and solving problems. Gardner and Jewler (2000) define critical thinkers as people who have a high tolerance for uncertainty. They begin to say "I don't know" when they confront a difficult question. They do not judge until they can gather information and take the time it requires to find and verify an answer.

Wade (1995) identifies eight characteristics of critical thinkers: Critical thinkers involve in asking questions, defining a problem, examining evidence, analyzing assumptions and biases, avoiding emotional

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reasoning, avoiding oversimplification, considering other interpretations, and tolerating ambiguity. Dealing with ambiguity is also seen by Strohm and Baukus (1995) as an essential part of CT, "Ambiguity and doubt serve a critical-thinking function and are a necessary and even a productive part of the process" (p. 56).

A person who thinks critically employs the scientific method for understanding the ordinary world. This is true because CT mimics the well-known method of scientific investigation: a question is identified, a hypothesis is formulated, relevant data are gathered, the hypothesis is logically tested and evaluated, and reliable conclusions are drawn from the result (Stapleton, 2002; Angeli&Valanides, 2009).

Peak (1997), Mishoe and Welch (2002), and Facione (2007) point out critical thinkers have got different attributes which makes no difference what definition you use for CT. These features help us distinguish them from uncritical thinkers. Here are some of those characteristics of a critical thinker:

Asks relevant questions to the issue
Assesses arguments which are made
Admits a lack of understanding
Has a sense of curiosity
Analyses the interpretations and claims made
Analyses the problems
Is eager on finding new solutions
Is a careful listener and is able to give appropriate feedback
Does not jump to conclusions before all the facts have been collected
Looks for proof
Rejects incorrect or irrelevant information
Compares beliefs and opinions with facts that come against them
Formulates the central ideas that are involved

Carroll (2005) asserts that the ideal critical thinker is habitually inquisitive, well-informed, trustful of reason, open-minded, flexible, fair-minded in evaluation, honest in facing personal biases, prudent in making judgments, willing to reconsider, clear about issues, orderly in complex matters, diligent in seeking relevant information, reasonable in the selection of criteria, focused in inquiry, and persistent in seeking results which are as precise as the subject and the circumstances of inquiry permit. Thus, educating good critical thinkers means working toward this ideal. It combines developing CT skills with nurturing those dispositions which consistently yield useful insights and which are the basis of a rational and democratic society (Worrell &Profetto-McGrath, 2007).

CRITICAL THINKING SKILLS

Fisher (2003) emphasizes the significance of teaching CT skills. He contends that CT skills are required to be taught since students' thinking skills are not enough to face the problems students deal with either in education or in daily life. Therefore, educators are required to focus on teaching CT to inform them how to learn instead of just transmitting information that is what to say.

Glaser (1941) cited in Fisher (2001) listed CT skills as:

(a) To recognize problems,
(b) To find workable means for meeting these problems,
(c) To gather and marshal pertinent information,
(d) To recognize unstated assumptions and values,
(e) To comprehend and use language with accuracy, clarity and discrimination,
(f) To interpret data,
(g) To appraise evidence and evaluate students,
(h) To recognize the existence of logical relationships between propositions,
(i) To draw warranted conclusions and generalization,
(j) To put to test the generalizations and conclusions at which one arrives,
(k) To reconstruct one's patterns of beliefs on the basis of wider experience,
(l) To render accurate judgments about specific things and qualities ineveryday life (pp.4-5).

Facione (2004) considers cognitive skills and affective dispositions and mentions that cognitive skills are at the very core of CT. These cognitive skills are: interpretation, analysis, evaluation, inference, explanation, and self-regulation. Quoting from the consensus statement of the national panel of experts, Facione (2004, pp.4-6) defines each term as the following:

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Interpretation is "to comprehend and express the meaning or significance of a wide variety of experiences, situations, data, events, judgments, conventions, belief, rules, procedures, or criteria." It includes the sub-skills of categorization, decoding significance, and clarifying meaning.

Analysis is "to identify the intended and actual inferential relationships among statements, questions, concepts, descriptions, or other forms of representation intended to express belief, judgment, experiences, reasons, information, or opinion". Sub-skills of analysis are: examining ideas, detecting arguments, and analyzing arguments.
Evaluation means "to assess the credibility of statements or other representations which are accounts or descriptions of a person's perception, experience, situation, judgment, belief, or opinion; and to assess the logical strength of the actual or intended inferential relationships among statements, descriptions, questions, or other forms of representation."

Inference means "to identify and secure elements needed to draw reasonable conclusions; to form conjectures and hypothesis; to consider relevant information and to get the consequences flowing from data, statements, principles, evidence, judgments, beliefs, opinions, concepts, descriptions, questions, or other forms of representation." As sub-skills of inference the experts list querying evidence, conjecturing alternatives, and drawing conclusions.

Explanation is defined as being able "to state the results of one's reasoning; to justify that reasoning in terms of the evidential, conceptual, methodological, criteriological, and contextual considerations upon which one's results were based; and to present one's reasoning in the form of cogent arguments." The sub-skills under explanation are stating results, justifying procedure, and presenting arguments.
As Facione (2004) points out, we cannot call someone a good critical thinker just because he/she has these skills, a good critical thinker should use these skills.

FOUR ASPECTS OF CRITICAL THINKING

Good CT cannot be learned overnight, it takes a long time for each person to make changes in his habits of thought to become an excellent thinker.
According to Daly, cited in Gardner and Jewler (2000), the basic skill of CT divides in to four basic types:
1- Abstract thinking: discovering larger ideas from details. From large amounts of facts, one should seek bigger ideas or the abstraction behind the facts.
2- Creative thinking: finding new possibilities. One should use the general idea he has found to see what further ideas it suggests.
3- Systematic thinking: organizing the possibilities. Systematic thinking involves looking at the outcome of the second phase in a more demanding, critical way.
4- Precise communication of ideas to others: great conclusions are not very useful if one cannot communicate them to others. One should consider what his audience will need to know to follow his reasoning and be persuaded.

DIFFERENT VIEWPOINTS ABOUT CRITICAL THINKING

There are also different viewpoints about CT. Atkinson (1998) cited in Benesch (1999) argues that CT is a social practice and is unconscious. Gieve (1998) cited in Benesch (1999) agrees that CT is a social practice but he disagrees that it is unconscious. Instead, he says CT is a reflective social practice. Along with positing consciousness as central to CT, Gieve (1998) counters Atkinson's claim that CT is a uniquely Western or U.S. middleclass phenomenon, by distinguishing monologic and dialogic CT. Monologic CT, on which U.S. skills-based school curricula are often based, is defined by "the informal logic movement" (p. 126). Dialogic CT on the other hand, is "a form of dialogical discourse in which the taken-for-granted assumptions and presuppositions that lie behind argumentation are uncovered, examined, and debated" (p. 125). Gieve adds that this type of thinking is a powerful tool for differing across cultures and classes, not just in the West or among the middle class.

Atkinson (1997) concerns that critical thought is more of a social practice than a teachable set of behaviors. He concerns CT as a uniquely western phenomenon. Observing Atkinson and others' views, CT is considered as culture biased; and because of this, it cannot be taught to the people with different cultures. However Davidson (1998) states that, "it is an obvious fact that many societies discourage criticism in some contexts, such as the religious and political spheres. This does not mean that CT is entirely absent from these societies" (p. 121).
Also Ennis (1996) cited in Davidson (1998) argues that "the problem for the educator is really one of how and when to introduce CT, not whether CT has value for people belonging to other cultures. Indeed, he observes that the alternative to doing CT to some degree is to believe everything that you read and hear" (p. 121).

Stapleton (2002) studies about CT in Japanese learners. His study in which participants believed that they display elements of critical thought may suggest that changes are taking place. Because of changes in society which

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have recently been manifested in education system, including access to the internet, Japanese learners are in a position to state their ideas clearly and to criticize the ideas of others. This suggests that teachers no longer need to hesitate to introduce CT to learners.

Education must be able to produce a well-developed critical faculty which its aim is on teaching the students how to learn effectively to become independent learners. The notion of CT and the human concern for thought has not received enough attention, although it is among the oldest human concern. Thus, one of the primary concerns of educational system of every country must be to introduce this concept to people and use critical eye to look at the world surrounding them competence along a scale or may indicate the presence or absence of a characteristic (Luoma, 2004)

SELF-EFFICACY BELIEFS

The idea that the beliefs the students develop about themselves are key elements for academic success or failure makes it possible to believe that self-efficacy is the vital part of the motivation (Pintrich & Schrunk, 1996). Of all these self-beliefs, self- efficacy is the most effective on learning process. Due to this fact, self-efficacy has come to forefront of language learning research studies as well. Bandura (1986) defines self-efficacy as "people's judgments of their capabilities to organize and execute courses of action required to attain designated types ofperformances" (p. 391). Bandura introduced the construct of self-efficacy as a part ofSocial Cognitive Theory.

Social Cognitive Theory is a view about the human functioning emphasizing thathumans can regulate their behavior (Bandura, 1997). That is, individuals "possess asystem of self- beliefs that enables them to exercise control over their thoughts,feelings and actions" (Pajares, 2002a). The core of this theory is formed by the interplay among personal, behavioral, and environmental influences, which is called as "reciprocal determinism" (Pajares, 2002a). These three factors work in accordance and influence one another in two directions as it is shown in the figure 1 below (Bandera, 1997). Because of this bidirectionality of influence, the individuals are both the "products" and "producers of their own environment and of their social systems" (Bandera, 1997, p. 6).

EFFECTS OF SELF-EFFICACY

Self-efficacy is stated as related to learner's behaviors. One of them is choice behavior. That is, people tend to avoid the tasks that they believe they cannot manage and choose the ones they believe they can handle. This also affects their development since by avoiding the task; the individual cannot get feedback to counteract the negative self-efficacy beliefs (Pint rich & Chunk, 1996). In addition to choice, self-efficacy is linked to the quantity of effort and determination. Ones with high self-efficacy are more apt to spend more effort for the task and to show more determination when faced with difficulties (Pint rich & Chunk, 1996).Not only quantity, but quality of the effort is also affected by self-efficacy in terms of the use of cognitive and processing engagement (Pint rich & Schunk, 1996). Apart from the choice behavior and the effort, self-efficacy influences the thoughts and emotional reaction of an individual. The ones with high self-efficacy level feel calm and tranquil while approach a challenging task (Perjures, 1996) while the ones with low self-efficacy can think the activity is more difficult than it really is (Perjures, 1996).

Self-efficacy theory is also concerned with the differences between individuals with high self-efficacy and ones with low self-efficacy. According to Bandera (1997), people cannot develop skills for every area of knowledge. Thus, different people get abilities for different skills and different self-efficacy levels for the same skill. High self-efficacy improves personal accomplishments and well-being as the ones with high self-efficacy see the task not as a threat but as challenge to be better whereas the ones with low self-efficacy stay away from difficult tasks as they see them as threats (Bandera, 1997). Therefore, it is easy for ones with high self-efficacy to start the tasks they believe in their abilities, yet it is not an easy task for the ones with low self -efficacy since they do not trust their abilities and worry about the failure just at the beginning. Ones who have higher self-efficacy beliefs about their capabilities, while performing a task, get engaged in the task easily, strive harder, continue to do it even if they confront difficulties and at the end do better. (Chunk & Perjures, 2001).

Moreover, these individuals can get over the feeling of low self-efficacy after failure or difficulty (Herron et al, 2007). However, ones with low self-efficacy have weak commitment to their goal and they mostly focus on their personal deficiencies and the idea of failure. As a result, they go under a lot of stress and depression (Bandura, 1997). This may lead them to additional school problems, poor grades, conflict with teachers, failure on tests (Margolis & Mccabe, 2011). Considering these, it is obvious that low self-efficacy would be some kind of an obstacle for the learners in the learning process. As they tend to stay away from the difficult tasks, they most probably do not participate into the activities in the classroom, so this hinders their learning.

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SOURCES OF SELF-EFFICACY

According to Bandura (1997), there are four main sources of influence about people's beliefs of their efficacy: enactive mastery experience, vicarious experiences, verbal persuasion, and physiological and affective states. First way to create self-efficacy is through enactive mastery experiences. Enactive mastery experience which is about the personal experiences of success or failure is considered to be the most influential source. Bandura (1997) clarifies it by saying that "successes rebuild a robust belief in one's personal efficacy" and "failures undermine it, especially if failures occur before a sense of efficacy is firmly established" (p.80). That is, successful experiences promote self-efficacy whereas failure lowers it. After achieving a challenging task, especially under difficult circumstances, the self-efficacy is developed. On the other hand, if a person gets accustomed to easy and quick success, that person may overestimate his/her capabilities and as a result there occurs discouragement (Bandura, 1997).

The second way is through vicarious experiences. Vicarious experience is the social comparison between the self and those who have similar capabilities (Bandura, 1997). In the circumstances in which there is "no absolute measure of adequacy" (p.86), people should assess their capabilities by examining the attainments of others. What Bandura means by this is that if a person sees someone similar to himself/herself achieving something would think that s/he can also succeed in similar tasks? Similarly, witnessing the failure of a similar person in spite of the effort they show would lead to decrease in their self-efficacy. The key element here is the similarity since one's self-efficacy beliefs are influenced by the similar model, yet if the models are different from themselves, then beliefs of self-efficacy are not much influence (Bandura, 1997).

The third way to strengthen self-efficacy is verbal persuasion. Ones who are verbally encouraged by explaining that they have the ability to accomplish the given task would show greater effort, and this will promote their self-efficacy (Bandura, 1997).

These encouragements should be "within realistic bounds" (Bandura, 1997, p.101).Otherwise, the people who are unrealistically persuaded to be capable of overcoming the demands of the task may fail, which weakens their self-efficacy. As a result, they avoid trying again and the credibility of the persuader is damaged (Bandura, 1997).

Besides positive and encouraging feedback, discouraging ones have stronger influence on one's self-efficacy as it is easier to weaken the self-efficacy with negative appraisal (Bandura, 1997).

The last source of self-efficacy is the psychological and affective state of the person. Bandura (1997) posits that such psychological, affective, and mood states as high anxiety, nervousness and tiredness can influence self-efficacy. These strong emotional states can provide hints about the success or the failure in the task.

According to Bandura (1997), people have different point of view about the sources of their emotional arousal and how it will influence their performance. The ones who are tend to think that their emotional arousal stems from personal inadequacies will lower their self-efficacy while the ones who think that it is a normal reaction that everyone experiences will not. (Bandura, 1997). Negative thoughts and fears in one's capabilities can lower the self-efficacy beliefs of the person and create more stress and anxiety which lead to inadequate performance and failure (Pajares, 2002).

Besides physiological and affective factors, mood is a factor in self-efficacy as positive mood improves the self-efficacy whereas the negative mood lessens it (Bandura, 1997). To sum up, it can be said that self-efficacy is the product of information taken inactively, vicariously, socially, and physically. After formed, self-efficacy improves the quality of human functioning.

STUDIES ON SELF-EFFICACY

As mentioned earlier, self-efficacy of individuals affects the choices they make, the effort they put on the task and their thoughts and emotional reactions. As self-efficacy is an influential factor in human behavior, it has been studied in relation to different variables such as career choices (Betz &Hacket, 1986), athletic performances (Feltz, 1982), interpersonal relationships (Kanfer& Zeiss, 1983),career planning, self-regulation and teacher education (Ashton & Webb, 1986; Gibson & Dembo, 1984; Woolfolk&Hoy, 1990).

The other field that self-efficacy has been an appeal for many years is the academic achievement. Believing that self-efficacy is critical to academic achievement, researchers have done studies to investigate the relationship between self-efficacy and academic achievement of students. As the self-efficacy is context specific and subject-matter specific, relationship between academic achievement and self-efficacy has been studied in various educational fields from mathematics (Hackett & Betz,1989; Norwich, 1987; Pajares & Kranzler, 1985; Pajares & Miller, 1994) and science(Andrew, 1998; Britner, &Pajares, 2001; 2006; Lawson, Banks &Logvin, 2006), to first language reading and writing (Pajares, &Valiante, 1997; Shell, Murphy, &Bruning, 1989; 1995) . Language learning

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is another field that self-efficacy studies have been applied to, yet in a limited number. Both the achievement in general and the achievement in specific skills have been analyzed in relation to self-efficacy.

One of the studies that focus on specific skills in language learning was conducted by Mills, Pajares, and Herron (2006). In this study, the relationship between self- efficacy, anxiety, and gender on the listening and reading proficiency of 95 college students enrolled in a French course in United States was examined. The results of the study indicated that there is a significant relationship between reading self-efficacy and reading proficiency for all students and there is a relationship between listening self-efficacy and listening proficiency only for female students. Chen (2007) investigated the effect of English listening self-efficacy, English anxiety ,perceived value of English language and culture on EFL learners' performances. By completing the questionnaire with four self-report measures, 277 non-English university students from Taiwan participated in the study and the results indicated that English listening self-efficacy predicts English listening performance better than the anxiety, perceived value of English language and culture. Huang and Chang (1996) conducted a study on the relationship between reading and writing self-efficacy and achievement with four ESL students from highest level reading and writing classes. After the interviews, class observations, examination of writing assignments and two questionnaires, it was seen that students' self-efficacy is higher than their learning achievements and the participants' interest and the teacher's support influence their self-efficacy.

Chen and Lin (2009) tried to find out the predictors of achievement in English writing test. 120 students participated into the study by filling out the questionnaire and taking the writing test. The results indicated that high achievers have high level of self-efficacy, yet low level of anxiety. Similarly, Pajares, Johnson and Usher (2007) conducted a study to find out the influence of the sources of self-efficacy on students' writing self-efficacy beliefs. 1256 students from elementary, middle and high schools participated in the study. The results revealed that students' perceived mastery experiences predicted the writing self-efficacy most. Girls had greater self-efficacy and lower anxiety, and elementary school students are more self-efficacious than the students in middle and high school. Moreover, there are other studies mostly focusing on the general success in language learning and self-efficacy.

In a study conducted by Wang (n.d.), relationship between self-regulated learning strategies, self-efficacy beliefs and achievement was proven to be significant by examining the Chinese EFL students. Data were collected by two questionnaires and two written exams and one oral exam. In another study done by Mills, Pajares, and Herron (2007), the influence of self-efficacy and other self- beliefs on achievement was investigated with 303 college intermediate French students. The result displayed that self-efficacy for self-regulation is a strong predictor of the achievement and female student's revealed greater self-efficacy for self-regulation.

In Turkey, the number of studies on the relationship between self-efficacy and achievement or performance of the students is even more inadequate especially inters of language learning. One of those studies was conducted by Radii andAbedini (2009) to investigate the relationship between EFL learners' self-efficacy beliefs concerning listening comprehension and listening proficiency. 61 freshmen undergraduate learners of English participated in the study and the data were gathered by an author-designed self-efficacy questionnaire and a listening pre-test adopted from paper-based Longman TOEFL. The results of the study showed that listening comprehension self-efficacy is significantly related to listening proficiency.

The other study focused on the self-efficacy and success in English was done by Tılfarlıoğlu and Cinkara (2009). The main aim of the study is to uncover out the relationship between self-efficacy beliefs of the EFL students and their general achievement in learning English. The data were collected from 175 students at Gazi University, Foreign Languages Department through the self-efficacy questionnaire adopted from Mills (2006). The results displayed that students with high English self-efficacy are more successful in English. In other words, there is a positive significant relationship between the English self-efficacy and the success of the students in English. Duman (2007) is another researcher who carried out a study to explore the relationship between self-efficacy beliefs and the English performance of high school students. At the end of the study, it was seen that self-efficacy is an important factor in English performance.

These studies mentioned above give a great deal of information on self-efficacy and its relationship with performance in language learning. By examining all these, conclusion that can be reached is that self-efficacy is an undeniable factor in learning.

Tierney (2002) believes that self-efficacy is an individual's belief in their ability to create some innovative consequences. The self-efficacy does not limit to an especial situation or a certain behavior (Sherer& Maddux, 1982) and regulates human performances by cognition, motivation, decision making and thoughtful process (Benight& Bandura, 2004).

In general, self-efficacy as a motivational construct has a main role in the development of CT. In abroad theoretical framework, Whitehead considers learners' motivations and interests as important factors affecting their

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CT (Myers, 1992). From the one hand, students' positive attitudes to and beliefs in their abilities result in their motivation and in the other hand, non-motivation is an obstacle to CT.

As self-efficacy beliefs are described as the main components of behavior, especially those of behavioral change, they can effectively predict CT abilities (Sang, Valcke, Braak&Tondeur, 2010). Wanga and Yi Wub(2008) found that self-efficacy is a good predictor of using high level learning strategies, such as CT. Bandura and Lock(2003) believe that self-efficacy creates motivation and improves performance. Such self-efficacy-imposed motivation results in the improvement of CT skills. Since self-efficacy as a motivational factor mainly affects CT and the lack of sufficient motivation is an obstacle to CT development, this study aimed to investigate the possible relationship between students CT and self-efficacy.

Regarding the role of self-efficacy beliefs in academic achievements, the same also goes for students in various academic and educational contexts. A substantial body of literature supports the relationship between students' self-efficacy beliefs for academic tasks and objectives and their academic performance on such diverse academic behaviors as, mathematics-specific self-efficacy (Pajares & Miller, 1995), computer training (Gist, Schwoerer& Rosen, 1989), exam performance (Vrugt, Langereis & Hoogstraten, 1997; Yeperen, 2006), essay writing (Pajares& Johnson, 1996), and language learning (Wong, 2005).

A correlational analysis of EFL University Students' that has emerged from these studies is in line with Pajares's (2000) contentions that students with high levels of self-efficacy beliefs move toward difficult tasks as obstacles to be surmounted rather than as menaces to be shunned. They have greater intrinsic motivation, select challenging purposes and keep strong commitment to them, and while facing a failure, they increase and continue their endeavors. Additionally, after setbacks, they restore their confidence faster and ascribe them to acquirable issues such as inadequate attempt or insufficient knowledge and skills. For efficacious students, failure is a healthy stimulus causing them to work harder. In opposition, students with low self-efficacy view things as tougher than they really are.

This belief, in turn, fosters stress and hopelessness and brings inability in how best to solve a problem. Such students usually attribute their failure to factors that are inborn, permanent, and not acquirable such as low ability. For them, failure reminds them of their incapability. Low efficacious students typically predict low grades for themselves even before they participate in an examination (Pajares, 2000).

Based on the prominent role that students' self-efficacy plays in their academic achievements and success, it seems necessary to seek for the factors that may have a relationship with or/and can influence students' efficacy beliefs. CT (CT) seems to be among the ones that may have correlation with students' efficacy beliefs.

A substantial theoretical and empirical base now exists in the literature to demonstrate the association of CT with students' academic success (among them are Lee &Loughran, 2000; cited in Phan 2010; Kealey, Holland & Watson, 2005).

The contention is that higher-order thinking skills enhance higher order learning skills leading to higher levels of language proficiency (Renner, 1996). One would conclude just by reasoning that if one possesses the ability to reflect leading to achievement and the development of expertise, one should believe that s/he could more effectively learn and perform expected behaviors to desired levels. In other words, his/her beliefs about efficacy in that specific domain will be boosted. In a similar vein, more recently, an emerging body of research indicated the association of each of these constructs with individuals' success in L2 contexts (e.g. Birjandi & Bagherkazemi 2010; Davidson & Dunham, 1997; Ghanizadeh & Moafian, in press; Wong 2005).

Although studies on self-efficacy and CT have examined these two constructs separately and contributed in parallel to effective learning and teaching literature, they have rarely been investigated jointly in the domain of foreign language learning and teaching, except for the one conducted by Moafian and Ghanizadeh (2010) on Iranian EFL teachers.

Pajares (2002c) contended that males and females do not differ significantly in their sense of selfefficacy beliefs. In a similar vein, Tschannen -Moran and Woolfolk Hoy's (2002) study revealed that gender differences do not significantly predict individual's self-efficacy beliefs. In contrast, a study by Imants and De Brabander (1996) yielded a weak, but significant positive correlation between gender and teacher self-efficacy. CT was defined by the American Philosophical Association Project as purposeful and self-regulatory judgment which results in interpretation, analysis, evaluation and inference and is founded on the conceptual criteria upon which a judgment is based (Facione & Facione, 1996). As it can be seen, despite the long history of CT tradition, there is no single and agreed-upon definition for what constitutes CT. However, almost all the scholars of CT conceptualized it as a higher-order thinking ability associated with the reflectivity and evaluation. 2.5 CT and gender Traditional beliefs and stereotypes have conclusively suggested that men are superior at analytical thinking, so are better critical thinkers.

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Scientifically speaking, however, the issue of gender differences in CT has remained an area of controversy among researchers. Some studies reject gender differences on CT measures and some are in favor of the influential role of gender differences in CT skill. For instance, Kuhn's (1992) findings revealed that argumentative thinking does not differ with sex.

Semeric (2010) also reported that the relationships between gender and subdimentions of CT were almost zero. The studies of Myers and Dyer (2006) and Moafian and Ghanizadeh (2010) also confirm this finding. In these two studies, it was found that there were no differences between the CT skills of male and female students (Myers & Dyer, 2006) and teachers (Moafian & Ghanizadeh, 2010). On the other hand, Simon and Ward's (1974) results indicated that men performed better than women on the Watson-Glaser test, and this was due to their better performance in the subscales of Inference and Evaluation of Arguments. King, Wood and Mines (1990) also found that gender differences lead to different results on CT measure. Areas of CT influence Despite the controversy over a unified definition for CT, there is a general consensus that CT can be influential in almost every discipline and occupation, due to its association with abilities such as problem solving and decision-making. In educational setting, it is widely accepted that learning to think is one of the most important goals of formal schooling. Dewey (1933) stated that the central purpose of education is learning to think. As part of that education, learners need to develop and learn to apply CT skills to their academic studies effectively (Kealey, Holland & Watson, 2005), to the complex problems that they will face in their professions (Yeh, 2004), and to the critical choices they will be forced to make as a result of the information explosion and other rapid technological changes (Oliver &Utermohlen, 1995). In L2 context, it seems that attention to CT deserves the additional considerations due to the position of problem-solving, attitudes, self-regulation, and metacognitive abilities in L2 classes.

Likewise, more recently, ways in which CT might be interpreted and taught have become highly debated questions for L2 learning scholars and practitioners (Thompson, 2002). A shift has occurred from viewing learning primarily as rote training to conceptualizing learning as a constantly evolving process of discovering, questioning, and reformulating hypotheses (Pennycook, 1994). CT skills have also recently gained attention in research related to student attitudes and achievement and a diverse body of educational research reported the importance of promoting higher-order thinking skills and the positive influence of CT on learners' achievement in EFL contexts (e.g. Davidson & Dunham, 1997; MacBride &Bonnette, 1995). Reconsidering the sources of efficacy expectations, one may plausibly infer that this sense of language learning success, as a manifestation of mastery experience, may tend to promote self-efficacy for L2 learning. So, it is reasonable to assume that there may be a relationship between L2 learners' CT and efficacy beliefs.

Conflict of interest
The authors declare no conflict of interest.

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