

An Investigation into the Relationship Between Self-Regulation and Critical Thinking Among Iranian EFL Teachers

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Abstract: This study investigated the relationship between Iranian EFL teachers' self-regulation and their critical thinking ability in language institutes. Furthermore, the role played by their length of teaching experience in their self-regulation and the relationship between their age and self-regulation were examined. To this end, 92 EFL teachers were selected according to convenience sampling from different language institutes in Mashhad. They were requested to complete the 'Watson-Glaser's Critical Thinking Appraisal' and the 'Teacher Self-Regulation Scale' anonymously. The findings yielded via correlation supported the theoretical expectation of a linkage between self-regulation and critical thinking. Subsequent data analyses indicated that among the components of critical thinking, 'evaluation of arguments' and 'interpretation' have the highest correlations with teachers' self-regulation. In addition, significant correlations were found between teachers' self-regulation, their teaching experience, and their age. The conclusions and implications of the research are further discussed with reference to earlier findings.

Keywords: Critical Thinking, Self-Regulation, EFL Teachers, Teaching Experience, Age.

1- Introduction

Reforms in the area of education and teaching have emphasized the importance of reflective and critical teaching. The proponents of reflective teaching argue that developing higher-order thinking skills, including critical thinking (CT) ability, is an educational priority for both students and teachers [1]. As far as teachers are concerned, critical reflection entails that teachers "be aware of their belief systems and constantly monitor how far their actions reflect those beliefs or are in keeping with them" [2]. This questioning awareness- as an obvious manifestation of CT ability- helps teachers enhance their teaching effectiveness [3]. Ennis defines CT as "reasonable and reflective thinking that is focused on deciding what to believe or do" [4]. It is apparent that these beliefs are not confined to external world. They can refer to one's internal world as an individual, i.e., people's internal systems and values such as self acceptance, self-actualization, self-efficacy, self-regulation, etc. The focus of this study is one of these factors, i.e., self-regulation. Self-regulation refers to "self-generated thoughts, feelings, and actions that are planned and cyclically adapted to the attainment of personal goals" [5]. In the realm of education, self-regulatory skills have been found to be associated with the students' achievement and motivation [6]. Since research has indicated the students' use of self-regulatory behaviors to be critical for academic

achievement, it is plausible that the teachers' use of self-regulatory behaviors would positively influence teacher practices.

Scholars in the field of teacher education asserted that learning to be self-regulated is crucial for teachers in order to deal with the complexity of the teaching role, which encompasses individual and social aspects [7]. From personal perspective, teachers should equip themselves with self-regulation skills in order to not only follow various goals and tasks, but also sustain and foster their motivation, commitment and effectiveness. From the social perspective, self-regulation assists teachers to construct instructional strategies based on students' specific goals, and "to adjust to the ever more frequent curricular revisions required by the fast pace of technological and cultural change" [7]. To create opportunities for insightful instruction, teachers not only need a solid base of content area knowledge along with classroom management skills, but also have to scrutinize their beliefs, motivation, and self-regulatory factors associated with teaching and learning [8]. Indeed, as Randi maintained, from social cognitive perspective, effective teachers are self-regulated agents who can activate their beliefs to take appropriate actions leading to successful accomplishment of their professional tasks [9].

In accordance with the significance of teachers' self-regulation skills in effective teaching [8-10] and in line with the fact that the ultimate goal of every educational system is effective teaching and learning, exploring the factors which may have some relationships with teachers' self-regulation is of great importance. There are some theoretical

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contentions indicating a dynamic interaction between self-regulation and CT in teaching and learning. For instance, Phan, incorporating these two theoretical orientations within one framework, postulated that "critical thinking, as a cognitive practice, helps in self-regulation in learning and teaching" [10: 228]. He also contended that the elaborate interaction between these two facets contributes to individuals' growth and development. It has been also maintained that instructional interventions to improve problem solving and CT tend to foster metacognition and self-regulation [11]. The main objective of the present study is to examine empirically the association between these two constructs in an EFL context and among EFL teachers.

1-1 Critical Thinking

The literature related to (CT) reveals that the definition of CT encompasses many dimensions. Historically, Dewey described CT from a philosophical perspective whereby education was meant to provide conditions to cultivate habits or training of the mind [12]. Paul viewed CT as learning how to ask and answer questions of analysis, synthesis and evaluation and "the ability to reach sound conclusions based on observations and information" [13]. More recently, CT has been viewed as more than cognitive skills. Reference regarded CT as the type of thinking used in problem solving, determining probable outcomes, formulating inferences, and making decisions [14]. CT is defined by the American Philosophical Association Project as "purposeful, self-regulatory judgment which results in interpretation, analysis, evaluation and inference and is founded on the conceptual criteria upon which a judgment is based" [15]. Watson and Glaser associated CT with the following abilities:

inferences drawn from factual statements; recognition of assumptions in a series of statements; interpreting whether conclusions are warranted or not; determine if conclusions follow from information in given statements, and evaluating arguments as being strong and relevant or weak and irrelevant [16: 21-23].

The abovementioned definitions of CT ability seemingly demonstrate that CT can be influential in every discipline and occupation, due to its association with facets 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 stated that the central purpose of education is learning to think [12]. As part of that education, learners need to develop and learn to apply CT skills to their academic studies effectively, to the complex problems that they will face in their professions, and

to the critical choices they will be forced to make as a result of the information explosion and other rapid technological changes [17-19].

In L2 context, it seems that attention to CT deserves the additional considerations due to the position of problem-solving, attitudes, and meta-cognitive abilities in L2 classes. Besides, as noted, since "part of the English teacher's task is to prepare learners to interact with native speakers who value explicit comment, intelligent criticism, and intellectual assertion", introducing learners to CT is even more essential for L2 teachers than L1 teachers [20]. It has also been recommended that teachers equip themselves with CT abilities before they engage in teaching [11].

Likewise, more recently, ways in which CT might be interpreted and taught have become highly debated questions for L2 learning scholars and practitioners [21]. 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 [22].

A diverse body of educational research on CT provides support for integrating CT skills into L2 educational curriculum [23,24]. In a similar vein, several studies in the realm of language teachers' effectiveness investigated the role of teachers' CT abilities. For instance, Yang, in a qualitative study, argued the important role that a critically reflective teacher plays in language teaching and learning process [25]. She explained that being enthusiastic, creative and informative in language teaching and learning are three features that a critically reflective teacher should possess. It has been also reported that EFL teachers' CT ability plays a positive role in their student-evaluated professional success [26]. The findings confirmed the hypothesis that there is a significant positive relationship between the two variables.

1-2 Self-Regulation

Self-regulation is defined as "self-generated thoughts, feelings, and actions that are planned and cyclically adapted to the attainment of personal goals" [5]. It involves "cognitive, affective, motivational, and behavioral components that provide the individual with the capacity to adjust his or her actions and goals to achieve desired results in light of changing environmental conditions" [27,28]. According to Pintrich, self-regulation comprises three general classes of strategies: (a) cognitive learning strategies, (b) metacognitive or self-regulatory strategies to control cognition, and (c) resource management strategies [29]. Cognitive and metacognitive strategies include rehearsal, elaboration, and organizational strategies as well as CT and self-regulation. Basic rehearsal strategies

involve reciting or repeating items in a list. Activation of information in working memory entails application of these strategies which appear to influence attention and encoding processes. Elaboration strategies including paraphrasing, summarizing, and analogy-making, play crucial role in storing information in long-term memory by creating internal connections between items. Via organizational strategies, learners select appropriate information and impose structure on the learned materials. CT involves a variety of skills such as identifying the source of information, reflecting on whether that information is consistent with their prior knowledge, and making critical evaluations [30]. Self-regulation strategies refer to awareness, knowledge and control of cognition and include planning, monitoring, and regulating. Theories and practices associated with self-regulation have been extensively applied to educational settings and school learning, leading to the development of self-regulated learning theory. Self-regulation of learning is a process that requires students to get proactively involved in their personal, behavioral, motivational, and cognitive learning endeavors in order to accomplish important and valuable academic goals [31]. Self-regulated learning theory contends that self-regulation develops across four levels: observational, imitative, self-controlled, and self-regulated levels [5]. Observational and imitative levels, relying on external social factors, concentrate on modeling and social guidance, respectively. The last two levels derive from internal skills. At the self-controlled level, learners create internal standards for acceptable performance and become self-reinforcing via positive self-talk and feedback. At the self-regulatory level, individuals develop self-efficacy beliefs, as well as higher-order cognitive strategies, that enable them to self-regulate their learning. Self-regulated learning encompasses three main components- cognition, metacognition, and motivation- which can be further subdivided into several subcomponents [32]. Cognitive component includes simple strategies, problem solving, and critical thinking. Metacognitive component consists of two general components- knowledge of cognition and regulation of cognition- each includes several subcomponents as: declarative, procedural, conditional knowledge and planning, monitoring, evaluation, respectively. Finally, the motivation component comprises two subcomponents: self-efficacy and epistemological beliefs. Empirical studies indicated a significant relationship between academic success and the use of regulatory skills and an understanding of how to use these skills [33, 6]. In a similar vein, it has been found that "self-regulated learners proactively seek out information when needed and take steps to master it. When they

encounter obstacles such as poor study conditions, confusing teachers, etc., they find a way to succeed" [34]. It has also been shown that self regulatory strategies enhance effective independent learning areas such as writing, and reading [35,36]. The trends observed with respect to student self-regulation also generalize to teachers. It has been contended that teacher self regulatory strategies can guide students' learning during self-directed practice and promote their skills in developing effective lesson plans [37]. Davis and Gray supported self-regulation as an avenue to professional development [10].

It has also been found that self-regulation has a contributing role in enhancing EFL teachers' sense of self-efficacy [38]. Viewing from another perspective, it seems plausible to presume teachers who lack self-regulatory skills will find it difficult or even impossible to construct the self-regulation of their students.

Because of the potent role of teacher self-regulation in the teaching and learning processes, it seems essential to explore the factors that may contribute to its development. Based on the theoretical contentions stated earlier, CT appears to be one of the constructs associated with self-regulation [11,29]. To empirically examine this assumption, endeavor was made in the present study to investigate the possible relationship between EFL teachers' self-regulation and their CT ability. In addition, the mediating roles of teachers' age and length of teaching experience on self-regulation were examined. In so doing, the following research questions were posed and investigated in the present study:

- 1) Is there any relationship between teachers' self-regulation and CT ability?
- 2) Is there any relationship between teachers' self-regulation and years of teaching experience?
- 3) Is there any relationship between teachers' self-regulation and age?

2- Method

2-1 Participants

A sample of convenience was used for this study. The population sample consisted of Iranian EFL teachers who were teaching English in 6 private institutes in Mashhad in summer 2010. There were no requirements other than that the participants be currently teaching an English course during the summer semester of 2010. The target number of teachers for the study was 100, out of which 92 teachers agreed to participate. There were 53 females and 39 males; their age varied from 20 to 41 years old ($M = 25.31$, $SD = 4.75$) and their teaching experience varied from 1 to 19 years ($M = 5.24$, $SD = 3.94$). They mostly majored in the different branches of English - English Literature (14 B.A, 2

M.A), English Teaching (28 B.A, 19 M.A), English Translation (9 B.A) – and those teachers who didn't major in English were duly qualified to teach it.

2-2 Instruments

2-2-1 Watson-Glaser's Critical Thinking Appraisal (CTA)

To evaluate teachers' CT ability, the 'Watson-Glaser Critical Thinking Appraisal' (CTA) (Form A) was employed. This test comprises 80 items and consists of 5 subtests as follows:

Table 1 The subtests of CTA along with the corresponding descriptions

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

Reliability of the CTA has been determined in three ways [39]. Estimates of the test's internal consistency, stability of the test scores over time and the correlation between scores on alternate forms. Internal consistency was measured using split-half reliability coefficients using the Spearman-Brown formula. Testing stability over time, by administering the test to the same group with an interval difference, indicate an acceptable level of stability (0.73). Regarding validity, the CTA enjoys all areas of face, content, criterion and construction validity [39]. In this study, the English version of the CTA was applied.

The total reliability of the questionnaire in the present study was calculated via Cronbach's alpha which was found to be 0.81.

2-2-3 Teacher Self-Regulation Scale (TSRS)

To assess teacher self-regulation, the researcher utilized the 'Teacher Self-Regulation Scale (TSRS)', designed and validated by Yesim, Sungur & Uzuntiryaki [40]. It was developed based on

Zimmerman's self-regulation model and semi-structured interviews with pre-service and in-service teachers; and consists of 40 items on a 6 point Likert scale ranging from 'strongly disagree' to 'strongly agree'. One item was also included as a filler item which was not used in further analyses. Confirmatory factor analysis yielded the following nine factors [40]:

Table 2 Nine factors of the TSRS along with the corresponding descriptions

Description	Factor
Process of establishing objectives to guide actions during instruction	1. Goal setting
Beliefs concerning personal interest in the profession	2. Intrinsic interest
Goals to do better than others as a teacher and to have others believe in one's competence	3. Performance goal orientation
Goals to improve competence in teaching and master the teaching task against self-set standards	4. Mastery goal orientation
Process of monitoring one's own performance in teaching and making instructional changes when necessary	5. Self-instruction
Strategies for controlling and regulating affect, mood, and emotions	6. Emotional control
Process of evaluating current teaching performance by comparing it with previously established goals and past performance	7. Self-evaluation
Affective responses following a teaching performance	8. Self-reaction
Getting help from others to resolve problems encountered in teaching process	9. Help-seeking

Scores on the 40 items were averaged to form an overall indicator of the teachers' self-regulation, defined by [40] "as teachers' own self-regulated strategies, which they use during lessons". In this study, the total reliability of the scale, estimated via Cronbach's alpha, was 0.85.

2-3 Data collection

The study was conducted in 6 private Language Institutes (ILI, Marefat, College, Jahad-edaneshgahi, Kish, and Kish Air) in Mashhad, a city in North-east of Iran, in summer 2010. The institutes were selected based on convenience sampling. The researcher herself or her colleagues were teaching in the aforementioned institutes; hence, she benefited from the voluntary participation and cooperation of

the teachers. The CTA test and the TSRS questionnaire were simultaneously distributed which they took home, completed, and then, at the next session, delivered back to the researcher. To receive reliable data, the researcher explained the purpose of completing the questionnaire and assured the participants that their views would be confidential; moreover, both questionnaires were coded numerically and the participants were asked not to write their names on them. They were just required to provide demographic information such as, gender, age, teaching experience, and major.

3- Results

Table 3 summarizes the descriptive results of the two instruments- (TSRS) and (CT) - utilized in this study.

Table 3 Descriptive statistics of CT and TSRS

	N	Min	Max	Mean	SD
CT	92	33	65	49.28	7.4
TSRS	92	120	235	179	23.5

To investigate the relationship between teachers' self-regulation and their CT ability, a Pearson product-moment correlation was applied. The results of correlation revealed that there is a significant

correlation between EFL teachers' self-regulation and their scores in CT ($r = 0.73$, $p < 0.05$).

It was also found that there is a significant relationship between EFL teachers' self-regulation and the five subscales which compose the total CT ability as follow:

Table 4 The results of correlation between subscales of teachers' CT and their self-regulation

Teacher self-regulation

0.471*	F1 (inference)
0.437*	F2 (recognizing unstated assumptions)
0.315*	F3 (deduction)
0.562*	F4 (interpretation)
0.570*	F5 (evaluation of arguments)
0.73*	Total

To analyze the data further, regression analysis was conducted. The results (table 5) indicated that the teachers' total score of CT is a positive predictor of the dependent variable (teachers' self-regulation).

Table 6 illustrates the model summary statistics. The results revealed that the model containing the total scores of critical thinking test can predict 52 percent of the teachers' self-regulation.

Table 5 The results of regression analysis for teachers' CT and self-regulation

Model		Unstandardized Coefficient		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	66.137	11.266		5.871	.000
	Critical thinking	2.292	.226	.730	10.141	.000

Table 6 R square table for CT as the predictor of teachers' self-regulation

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.730 ^a	.533	.528	16.17068

To determine the roles of teaching experience and age in teachers' self-regulation, Pearson product-moment correlations were run. The findings indicated that there is a significant correlation between teachers' years of teaching experience and their self-regulation ($r = 0.61$, $p < .05$). It has also been revealed that there is a positive correlation between teachers' age and their self-regulation ($r = 0.286$, $p < .05$).

4 - Discussion

The present study examined the relationship between Iranian EFL teachers' self-regulation and their CT ability. As the results indicated there is a positive relationship between the two variables in question. In other words, teachers who possess higher levels of CT ability tend to be more self-regulated in their profession. The statistical significance of this finding supports the key theoretical assumptions of the association between CT and self-regulation proposed by [11]. Drawing from theoretical frameworks and available research associated with CT and self-regulation, as distinct disciplinary constructs, substantiated an interplay between these factors [11]. He contended that CT can be plausibly considered as a self-regulatory component in teaching and learning processes on the basis of several lines of reasoning as follows: CT is associated with the use of higher-order strategies- one of which is self-regulating strategies- for scrutinizing and evaluating class activities and materials. In other words, as Phan contended:

The ability to analyze and critique information at a high-order level provides learners with sophisticated and complex competency to engage in deep learning strategies, expend more effort into their learning, and to be more reflective in their planning and organization [11].

By the same token, individuals' metacognitive ability before, during, and after task involvement seems to be promoted by CT ability [41,42,11].

Besides the theoretical affirmation, the findings of the present study are in line with previous empirical studies, though limited to L1 contexts and concerning professions other than teaching. In the domain of nursing, for instance, indicated that development of self-regulatory strategies could assist nurses to foster CT abilities [42]. She argued that self-regulatory strategy of clinical evaluation through reflection and self-assessment may serve as framework for the enhancement of CT ability. In the field of education and instruction, argued that effective programs for developing CT abilities need to support meta-cognitive abilities for assisting self-regulation activities [43]. In the domain of L2 context especially language institutes where teachers are in dire need to monitor, evaluate and regulate their thoughts and actions due to the position of

constant evaluation, observation and inspection by institute authorities, newly qualified teachers, students and parents, it seems that attention to these two factors deserves additional considerations. Furthermore, the dynamic and interactive nature of classes in language institutes entail equipping teachers with abilities associated with self-regulation strategies, or alternatively CT in order to enable them to plan beforehand and evaluate afterwards.

As indicated earlier, among the CT components, evaluation of arguments and interpretation were found to have the highest correlations with teachers' self-regulation. This finding seems plausible given that one of the sources of self-regulation-as formulated by-stems from creating internal standards for acceptable performance and monitoring of the associated behavior [5]. This also attests to Pintrich's reasoning that the self-monitoring strategy of self-regulation underpins the development of the skills of reflection [44]. This suggests the more the teachers engage in evaluation process and discrimination among degrees of truth or falsity of inferences or assumptions; the more they will possess self-regulation strategies.

Regarding the other two research questions, the results indicated a positive correlation between EFL teachers' self-regulation and years of teaching experience, as well as age. In other words, teachers' self-regulation of their teaching practices tends to increase over time and with every year of teaching. This finding corroborates Zimmerman's contention that self-regulation is not an acquired skill, but is shaped and developed through participation in environments that provide individuals with repeated opportunities to be in control of their own learning [5]. Pintrich also posited that individuals can learn how to regulate their cognitive activities [44]. He believed that self-regulation is neither a measure of mental intelligence that is unchangeable after a certain point in life nor a personal construct that is genetically based or formed early in life. In contrast, individuals learn self-regulation through experience.

5- Conclusions

Taken together, several conclusions can be drawn from the findings of this study. First, promoting EFL teachers' CT abilities is linked to the enhancement of self-regulation. This alternatively may serve as a basis for taking control of their teaching, setting goals, monitoring progress, reflecting on outcomes, and fostering intrinsic motivation, given that as maintained, motivational goals of choice, effort, and persistence are major aspects of self-regulation [5]. If the purpose of professional development is to create teachers who are motivated and goal directed and who are able to monitor their own behavior in order to adjust and solve problems, then we are striving to construct effective teaching through

which all areas of schooling may be positively influenced. Furthermore, as maintained by Banduras' social cognitive theory, student learning can take place through modeling, whether peer or teacher modeling [45]. This in turn highlights the role of teachers' abilities to model and exhibit self-regulation in their teaching. By so doing, they not only achieve benefits for themselves, but they also provide the requisite model for their students to learn similar skills. Viewing from another perspective, as indicated by previous research, teachers have significant roles to promote self-regulated learning behaviors of the students [5,44,7]. Contrary to previous ideas, it is believed that self-regulation process such as goal setting, using strategy and self-evaluation can be taught by parents, peers and teachers [5]. For this reason, it is important for teachers to have behaviors related with self-regulation training and accordingly develop their own self-regulatory strategies and to consider the associated implications for their teaching practices.

What's more, the aforementioned discussion is entirely compatible with Vygotsky's social constructivist theory that postulates developing self-regulation is an immediate priority in the field of education [46]. According to this view, a proficient and skilled individual is capable of self-regulated functioning, resulting from a shift of "collaborative inter-mental activity to autonomous intra-mental activity" [47]. So, it can be plausibly concluded that by promoting teachers' self-regulation and accordingly that of students we are indeed ensuing professional development signifying social constructivism.

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