



The Relationship between EFL Teachers' Critical Thinking Skills and Vocabulary Learning Strategy Instruction across Gender

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Received: 21-09-2013

Accepted: 24-10-2013

Published: 01-01-2014

doi:10.7575/aiac.ijalel.v.3n.1p.107

URL: <http://dx.doi.org/10.7575/aiac.ijalel.v.3n.1p.107>

Abstract

The purpose of this study was investigating the relationship between Iranian EFL teachers' critical thinking skills and teaching vocabulary-learning strategies to their students. Additionally, it explored the difference of the strength of correlation between critical thinking skills and vocabulary learning strategy instruction across gender. California Critical Thinking Test- form B and Yu-Ling's inventory of teaching vocabulary-learning strategies were administered to 90 Iranian EFL teachers. The results showed that strategy instruction significantly and inversely correlated with analysis ($r=-.27$), inference ($r=-.22$), and inductive reasoning ($r=-.3$) skills, while the correlation was not significant considering evaluation ($r=-.11$) and deductive reasoning ($r=-.089$) skills. Moreover, the difference between correlation of vocabulary learning strategy instruction and inference skill was statistically significant when male and female participants were compared ($Z_{obs}=2.24$).

Keywords: critical thinking skills, vocabulary, learning strategies, EFL teachers

1. Introduction

The way we think affects all aspects of our private and social life and education is not an exception. Human beings think differently and teachers who have key roles in education do so. Recently proper attention has been given to the ways teachers think (Calderhead, 1987) and now teaching is more characterized as a thinking activity (Richards & Farrell, 2005).

Critical thinking is an important concept in education and is generally defined as the ability to think rationally and make good decisions in doing something or believing something (Ennis, 2011). Critical thinking includes special skills to identify a problem, analyze it, and make inferences to solve it. It also requires judging the validity and reliability of assumptions and sources of data, making decisions based on specific reasoning criteria, and applying inductive and deductive logic (Pithers & Soden, 2000; Diestler, 2001).

In the information age, thinking plays an important role in one's success (Huitt, 1998) as a person who thinks critically can ask suitable questions, gather relevant information, and come to reliable conclusions about the world and thus live more successfully (Center for Critical Thinking, 1996). Meaningful education has to prevent learners from unreflective learning and provide them with the tools necessary to understand the world they live in (Chaffee, 1985). In this framework, teaching is defined as "a complex interaction including subject matter, content, teacher and student characteristics, pedagogy, resources, and learning context" (Campbell, 2000, p. 50). Therefore, in highly technical society which is developing moment by moment, and with students who are getting educated in this society, there is a need to teachers who can address students' needs and the time of teachers who blindly follow the syllabus is over (Ghaemi & Taherian, 2011). The educational system is in need of creative teachers who always incorporate better teaching styles and strategies to be more effective and successful.

Critical thinking has a significant role in higher education and is considered one of the main concerns in mainstream education (Halpern, 1999; Gelder, 2005). Critical thinking has also received a significant attention in second and foreign language learning (Atkinson, 1997) as it is suggested that critical thinking and all its possible effects on language learning are well worth investigating (Nour Mohammadi, 2012). However, most research in this regard has explored the effect of critical thinking on language learners (e.g., Faravani, 2006; Barjesteh & Vaseghi, 2012) and literature has not paid much attention to language teachers' critical thinking skills and their effects on language teachers' instructional behavior. Therefore, in the current study the relationship between teachers' critical thinking skills

and vocabulary learning strategy instruction in EFL classes has been investigated. The study seeks answers to the following questions:

1. Is there any relationship between EFL teachers' critical thinking skills and the teaching of vocabulary-learning strategies to their students?
2. Is there any difference between the strength of correlation of critical thinking skills and vocabulary-learning strategy instruction across gender?

1.1 Critical Thinking

There is no standard or universally accepted framework to describe or evaluate the construct critical thinking (Myrick, 2002). Literature offers a variety of definitions for critical thinking that differ to some extent (Atkinson, 1997) but have noticeable overlap if one scrutinizes them carefully (Davidson, 1998).

In early definitions, critical thinking was considered as "learning how to ask and answer questions of analysis, synthesis, and evaluation" (Paul, 1985, p. 37) that "encompasses two interconnected processes, namely, identifying and challenging assumptions, and imagining and exploring others" (Brookfield, 1991, p. 229). Critical thinking was also considered to be "the educational cognate of rationality" (Siegel, 1988, p. 32) and the "reasonable and reflective thinking that is focused upon deciding what to believe and do" (Norris & Ennis, 1989, p. 3). Later more dimensions have been added to the construct and it can be regarded as:

- the scientific method applied by ordinary people to the ordinary world to solve problems (Schafersman, 1991);
- an active and systematic cognitive strategy to examine, evaluate and understand events; make decisions on the basis of sound reasoning and valid evidence (Levy, 1997);
- "reflective thinking involving the evaluation of evidence relevant to a claim so that a sound conclusion can be drawn from the evidence" (Bensley, 1998, p.5); and
- "the use of those cognitive skills or strategies that increase the probability of a desirable outcome,....thinking that is purposeful, reasoned, and goal oriented" (Halpern, 2003, p.6).

Critical thinking is viewed as a process rather than an endpoint or objective (Petress, 2004) that leads to high quality decisions and judgments through analysis, assessment and reformulation of thinking (Giancarlo & Facione, 2007). Critical thinking has been found to be a tool of inquiry and thus it is very helpful both in education and life as a critical thinker is well-informed, open-minded, flexible, honest, careful in making judgments, skillful in seeking relevant information, and focused in inquiry (Diestler, 2001; Halpern, 2003; Petress, 2004).

While some scholars believe that critical thinking is a part of individuals' genetic make-up, research shows that critical thinking skills are both teachable and learnable (Halpern, 1993). It is also suggested that improving critical thinking skills among special groups of students who want to pursue certain professions such as nursing, law, medicine, and teaching is a paramount concern (Bessick, 2008). When teachers are trained on how to improve their critical thinking skills, they can transform these skills to their students by bringing tasks that need critical thinking and reasoning; and by modeling how to solve problems using critical thinking skills (Beyer, 1987).

1.2 Critical Thinking and Language Learning

In the history of educational psychology, close relationships between language and thinking skills have been recognized by theorists and educators (Piaget, 1971; Vygotsky, 1962). Supplemental instruction in critical thinking and abstract reasoning skills are considered as one of the tools that help students to improve learning outcomes at all levels (Stern, 2001).

The importance of promoting higher-order thinking skills in language classrooms has also been the focus of interest among language experts (Chamot, 1995). As students learn critical thinking skills through content course instruction (Fisher, 2001), integrating problem solving activities that need critical thinking in language classes is of vital importance. In this way, how to think rather than what to think is emphasized (Barjesteh & Vaseghi, 2012) and students are encouraged to participate actively in language classes. Research shows that critical thinking skills are related to English overall proficiency (Rashid & Hashim, 2008), reading comprehension ability (Fahim, Bagherkazemi, & Alemi, 2010), vocabulary knowledge (Fahim & Komijani, 2010), and use of language learning strategies (Nikoopour, Farsani, & Nasiri, 2011).

It is also evident that teachers play a key role in promoting students' critical thinking skills as "teaching is a complex activity that is influenced by many elements of teacher quality. Teachers and teacher quality is a powerful predictor of student performance" (Ghaemi & Taherian, 2011, p.9). Therefore, in order to affect students' critical thinking ability, teachers should be trained to improve their thinking skills. Critical thinking instruction helps teachers to make a shift from using mechanical activities to problem solving types in their classes (Bessick, 2008). Possessing critical thinking abilities helps teachers become more successful and effective language teachers (Birjandi & Bagherkazemi, 2010; Ghaemi & Taherian, 2011).

1.3 Vocabulary Learning Strategies

Learning strategies are defined as "behaviors and thoughts that a learner engages in during learning [which are] intended to influence the learner's encoding process" (Weinstein & Mayer, 1986, cited in Ellis, 1994, p. 315) or "behaviors of a learner that are intended to influence how the learner processes information" (Mayer, 1988, cited in

Lessard-Clouston, 1997, p. 11). Learning strategies can be employed in all types of teaching and learning such as mathematics, science, history, languages and even in driving both in classroom settings and in more informal and practical learning environments (Lessard-Clouston, 1997).

Since the early 1980s, a string of research has focused on finding the characteristics of a good language learner. The findings of these studies show that good language learners have distinctive characteristics that differentiate them from other learners; the most important one has been reported to be a high level of language learning strategies awareness and use in processing language input and producing the output (Rahimi & Katal, 2012). Therefore, scholars have tried to specify learning strategies learners use during the process of language learning in reading (Mokhtari & Reichard, 2002), listening (Vandergrift, Goh, Mareschal, & Tafaghodtari, 2006), and speaking (Zhang & Goh, 2006).

In this framework, vocabulary learning strategies are considered as a subcategory of language learning strategies and are defined as

knowledge about the mechanisms (processes, strategies) used in order to learn vocabulary as well as steps or actions taken by students (a) to find out the meaning of unknown words, (b) retain them in long-term memory, (c) recall them at will, and (d) use them in oral or written mode (Catalan, 2003, p. 56).

Several types of vocabulary learning strategies have been found to be used by good language learners (e.g., Ahmed, 1989; Sanaoui, 1995). Accordingly, some researchers have proposed classifications of vocabulary learning strategies.

Gu and Johnson's (1996) classification, for instance, consists of seven dimensions and categories of learning strategies including metacognitive regulation (selective attention), guessing (using background knowledge), dictionary (looking-up strategies), note taking (meaning-oriented), rehearsal (using word lists), encoding (association/elaboration), and activation strategies. Another classification for vocabulary learning strategy was proposed by Nation (2001). This taxonomy consists of three main strategies, namely: planning (choosing what to focus on and when to focus on it), sources (finding information about words), and processes (establishing knowledge). Similarly, Lin's (2001) taxonomy of vocabulary learning strategies includes three categories of metacognitive strategies (advanced preparation, selective attention, monitoring, self-management), cognitive strategies (written/verbal repetition, segmentation, phonics application, association, resourcing, predicting), and social-affective strategies (asking for help, cooperation).

A comprehensive inventory of vocabulary learning strategies has been developed by Schmitt (1997). He extracted vocabulary-learning strategies from Oxford's (1990) taxonomy of general language learning strategies and categorized them into two groups of discovery and consolidation strategies. While the former includes those strategies that are used to determine the meaning of new words when encountered for the first time (determination and social strategies), the latter contains those strategies that are used to consolidate meaning when encountered again (cognitive, metacognitive, and memory and social strategies). Social strategies are included in both categories since they can be used for both purposes.

1.4 Vocabulary Learning Strategies Instruction

Explicit learning strategy instruction essentially involves the development of students' awareness of the strategies they use, teacher modeling of strategic thinking, student practice with new strategies, student self-evaluation of the strategies used, and practice in transferring strategies to new tasks (Oxford, 1990; Chamot, Barnhardt, El-Dinary, & Robbins, 1999; Grenfell & Harris, 1999; Harris, 2003). It is suggested that teachers should implement explicit strategy instruction in their classes instead of teaching strategies in a separate specific course (Chamot, 2004). "Learners need instruction to widen their range of strategies and use them. This training has the role of changing knowledge into skill. It is the independent use of these strategies which is the ultimate goal of strategy instruction" (Bastanfar & Hashemi, 2010, p. 162).

A number of models for teaching learning strategies in both first and second language contexts have been developed (e.g., Oxford, 1990; Chamot, et al., 1999; Grenfell & Harris, 1999; Graham & Harris, 2003; Harris, 2003) and the role of teacher is of paramount importance in all of them. The teacher has the role of a diagnostician who identifies students' current learning strategies (Cohen, 1998); acts as a trainer, model, and coach who models, names, and explains strategies to students (Chamot, 2005); and ultimately evaluates students' use of strategies (Grenfell & Harris, 1999). Strategy training is a complex process and the way teachers manage strategy instruction guarantees the success of such training (Chamot, 2004).

In spite of the important role teachers play in strategy instruction, very few studies have probed into the role of teachers' characteristics in vocabulary learning strategies instruction.

2. Method

2.1 Participants

The participants of this study were 90 Iranian EFL teachers who worked in high schools of Tehran in academic year 2012-2013. The sample was selected based on the convenient sampling. Of the sample 64 (71%) were female and 26 (29%) were male teachers. Their age ranged from 23 to 56 (mean=32.95).

Fifty-six teachers (62.2%) had BA degrees and 34 of them (37.8%) had MA degrees in TEFL. Their experience of teaching English ranged from 1 to 30 years (mean= 10.06).

2.2 Instruments

The data collection instruments were:

1. California Critical Thinking Skill Test -Form B (CCTST)
2. Yu-Ling's Inventory of teaching vocabulary-learning strategies to students (Yu-Ling, 2005)

2.2.1 CCTST

The Persian version of CCTST- form B was used to assess EFL learners' critical thinking skills as form B of CCTST is suitable to test critical thinking at levels above high school and adults (Facione, 1990).

These 34 items measure five categories of critical thinking ability namely, analysis (9 items), evaluation (14 items), inference (11 items), deductive reasoning (16 items), and inductive reasoning (14 items). Each is a multiple choice item designed to be scored dichotomously, with one correct answer and three or four distracters. The reliability of this test using KR20 has been reported to be .78 to .80 (Facione, 1990).

Khodamorady et al. (2006) have translated this test into Persian and have reported satisfactory construct validity for the scale. They reported reliability of .62 for the whole test and .71 for analysis, .77 for evaluation, .77 for inference, .71 for deductive reasoning, and .71 for inductive reasoning respectively.

The reliability coefficient of CCTST in the current study was calculated using KR20 and turned out to be .69.

2.2.2 Inventory of teaching vocabulary-learning strategies

Yu-Ling's inventory of teaching vocabulary learning strategies has 30 items that asks EFL teachers to identify which vocabulary-learning strategy they most frequently teach to their students in their English classes (Yu-ling, 2005).

These items explore the instruction of four types of learning strategies by teachers, namely memory strategies (14 items), cognitive strategies (4 items), metacognitive strategies (2 items), and determination strategies (2 items). Each item is anchored on a 6-point Likert scale from 1 (never) to 6 (always). The items of the scale have been abstracted and adapted mainly from the taxonomy of vocabulary learning strategies compiled by Schmitt (1997).

The reliability of the scale was found to be .89 in the current study.

2.3 Procedure

Prior to the study, Yu-Ling's inventory of vocabulary-learning strategies was translated into Persian. It was back-translated and then checked by three TEFL experts to ensure the clarity of wording. The Persian version of CCTST-Form B (Khodamoradi, et al., 2006) was also checked and the wordings of a few items and distracters were changed to make it more suitable for the context and culture of Iran. Both questionnaires were administered among EFL teachers who worked in high schools of the capital, Tehran. Ninety questionnaires were filled completely and were used for the final data analysis.

3. Results

In order to answer research question number 1 and find the relationship between critical thinking skills and teaching vocabulary learning strategies, Pearson Correlation technique was used. As Table 1 shows, strategy instruction is significantly correlated with analysis ($r = -.27, p < .01$), inference ($r = -.23, p < .05$), and inductive reasoning ($r = -.3, p < .01$); but the correlation is not significant considering evaluation ($r = -.11$) and deductive reasoning ($r = -.089$).

Table 1. Correlation Matrix of Strategy Instruction and Critical Thinking Skills

Variables	1	2	3	4	5	6
1. Strategy instruction	1	-.272**	-.112	-.226*	-.089	-.300**
2. Analysis		1	.242*	.516**	.392**	.639**
3. Evaluation			1	.478**	.861**	.479**
4. Inference				1	.627**	.845**
5. Deductive reasoning					1	.441**
6. Inductive reasoning						1

** Correlation is significant at 0.01 level

* Correlation is significant at 0.05 level

In order to answer research question number 2 and find the difference between the strength of correlations of critical thinking skills and vocabulary strategy instruction across gender, Pearson Correlation technique and Fisher's Z were used.

Table 2. Correlation Matrix of Strategy Instruction and Critical Thinking Skills by Gender

Variables	Gender	1	2	3	4	5	6
1. Strategy instruction	Female	1	-.150	-.018	-.065	.035	-.159
	Male		-.516**	-.316	-.542**	-.377	-.541**
2. Analysis	Female		1	.095	.414**	.283*	.547**
	Male			.519**	.726**	.633**	.781**
3. Evaluation	Female			1	.531**	.850**	.493**
	Male				.374	.891**	.457*
4. Inference	Female				1	.678**	.819**
	Male					.517**	.909**
5. Deductive reasoning	Female					1	.439**
	Male						.458*
6. Inductive reasoning	Female						1
	Male						

As the correlation matrix shows, the correlations between critical thinking skills and vocabulary instruction were not statistically significant when female participants were considered; however, the correlations of vocabulary instruction with analysis ($r=-.516, p<0.01$), inference ($r=-.542, p<0.01$), and inductive reasoning ($r=-.541, p<0.01$) were statistically significant among male participants. The result of Fisher's Z transformation showed that the difference in the correlation between vocabulary learning strategy instruction and inferencing skill for the two groups (males and females) was significant. Table 3 summarizes the value of Z_{obs} for the differences among correlations.

Table 3. The values of Z_{obs}

Correlations	Z_{obs}
Analysis-Strategy instruction	1.7
Evaluation- Strategy instruction	1.2
Inference- Strategy instruction	2.2*
Deductive reasoning- Strategy instruction	1.4
Inductive reasoning- Strategy instruction	1.8

4. Discussion

The goal of the present study was investigating the relationship between EFL teachers' critical thinking skills and vocabulary learning strategy instruction. The findings suggest that teaching vocabulary learning strategies has a negative and significant relationship with analysis, inference, and inductive reasoning skills. In other words, those teachers who are more critical thinkers teach language learning strategies less frequently to their students.

The strongest negative correlation was found between strategy teaching and inductive reasoning ($r= -.3$). It means that those who were better decision makers in the context of uncertainty based on analogies, case studies, prior experience, statistical analyses, simulations, hypotheticals, and familiar circumstances and patterns of behavior chose fewer strategies to teach from the questionnaire that they were asked to fill in. In other words, they evaluate their teaching contexts based on their thinking power and then decide about what to teach.

The next significant correlation was found between strategy instruction and analysis ($r= -.27$). People with strong analytical skills attend to patterns and details, identify the elements of a situation, and determine how those parts interact. Thus, these teachers think that one size does not fit all and the contextual variables should be specified when strategy instruction is going to be implemented in language classes.

A significant correlation was also found between strategy instruction and inference skill ($r= -.22$). Generally, people who have high inference skill draw better conclusions from reasons and evidence. Thus, it can be concluded that more critical thinkers are more careful and critical teachers in choosing the strategies from the given questionnaire. They might better analyze the learning condition and their students' abilities and styles, draw better inferences, and as a result teach other techniques/strategies they find more suitable for their students. They might be better reflective teachers and creatively make new strategies they have inferred to work better for vocabulary learning of their students.

Research shows that the low quality of teaching English as a foreign language in Iran is related to five main factors including student-related, teacher-related, school-related, materials-related, and curriculum-related factors (Rahimi & Nabilou, 2009). As teachers with more critical thinking ability are skillful problem solvers and have exclusive power to identify the problem and choose practical solutions, they may figure out these problems better than teachers with lower critical thinking abilities, and thus avoid strategy instruction. One important challenge Iranian EFL teachers face in their

classes is the lack of time. As teaching vocabulary strategies needs extensive teaching and long-term plan, critical thinkers may prefer to spend the time of the classroom on using other techniques to help their students get better results. This actually has been supported by research, as critical thinking skills help teachers to be more successful and teach more efficiently (Birjandi & Bagherkazemi, 2010; Ghaemi & Taherian, 2011).

Further, it was found that the negative relationship between male teachers' inference skills and vocabulary learning instruction was stronger than that of female teachers. Mixed findings have been reported with respect to the role of gender in critical thinking skills and dispositions (Facione, 1990; Walsh & Hardy, 1999). While some studies show that gender cannot predict individuals' critical thinking skills, it is suggested that women sometimes feel that critical thinking "is synonymous with 'male logic', a thought process they find adversarial uncomfortable, and alienating" (Browne, Kubasek & Harris, 1989, p.227). It has also been found that men are more analytical than women (Facione, Sanchez, & Facione, 1994) and generally score higher in critical thinking skill tests (Leach & Good, 2011). Thus, it is possible that male teachers intentionally avoided strategy instruction as "strategy training is a complex process which requires committed and informed teachers who spend an extended period of time working with learners" (Bastanfar & Hashemi, 2010, p. 161). In other words, male teachers with higher critical thinking ability were more aware of the contextual constraints and challenges of teaching English and thus preferred to use teaching techniques that work better in their context of teaching, instead of strategy instruction.

5. Conclusions

The findings of the present study revealed that vocabulary-learning strategy instruction was inversely related to inductive reasoning, analysis, and inference skills. It was also found that male teachers with higher inference skills used less vocabulary-learning strategies in their classes.

The results show that critical thinking skills can give teachers deep insights into the impact of contextual constraints on their teaching effectiveness. Teachers with higher critical thinking abilities are more careful about choosing teaching techniques and materials that can guarantee effective teaching and better learning outcome. Critical thinking skills also help teachers to utilize more creative thinking and become more productive and innovative in their classes. As creative teachers have a wide repertoire of routines and strategies, they are more flexible and can switch between different styles and modes of teaching during the lesson (Richards, 2013). Thus, they adapt and modify their teaching to better match the learners' needs.

The findings of the study highlight the importance of promoting teachers' higher order thinking to apply critical evaluation that is purposeful, reasoned, and goal oriented. In this way teachers will become more concerned about the type of teaching methodologies or instructional materials they are forced to use and move towards applying a negotiated syllabus in their teaching.

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