

Critical Thinking, Autonomy, and Lexical Knowledge of Iranian EFL Learners

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Abstract—The present study was conducted in order to identify the relationship among autonomy, critical thinking ability, and lexical knowledge of Iranian EFL learners. 114 male and female learners learning English as a foreign language participated in the present study. The obtained data was analyzed by using Pearson correlation coefficient and One-Way ANOVA. The results of the present study indicated that there was a significant positive relationship between autonomy and lexical knowledge of learners. Moreover, the results of One-Way ANOVA revealed that learners with high critical thinking ability level were the most autonomous learners. Furthermore, learners with high critical thinking ability had high lexical knowledge.

Index Terms—autonomy, critical thinking ability, lexical knowledge, Iranian EFL learners

I. INTRODUCTION

The importance of critical thinking can be traced back to Dewey (1933) who believed that the main purpose of education is learning to think. Recently, critical thinking has become one of the major notions in education especially in different research areas related to vocabulary, autonomous learning, and teaching. As Pascarella and Terenzini (1991) point out that:

"critical thinking has been defined and measured in a number of ways but typically involves the individual's ability to do some or all of the following: identify central issues and assumptions in an argument, recognize important relationships, make correct inferences from data, deduce conclusions from information or data provided, interpret whether conclusions are warranted on the basis of the data given, and evaluate evidence or authority" (p. 118).

Moreover, learner autonomy has become more important recently and more learners try to be autonomous. As O'Donnell, Reeve and Smith (2012) suggest, autonomy is one of the internal factors that help learners experience being autonomous, competent, and related to others. According to Ku (2009), promoting learner autonomy needs taking advantage of learner's potentials for learning through critical reflection. In addition, Wagner (1997) believes that people cannot develop knowledge or skills in various areas without engaging in the process of thinking.

Additionally, Fan (2003) argues that shortage of lexical knowledge hampers language learning. Therefore, promoting learner's lexical knowledge has change to a topic of paramount importance which clearly requires more attention for further research. As Verhallen and Schoonen (1993) and Nation (2004) believe, vocabulary learning is a multifaceted process which includes factors such as memorizing words, being able to remember them, and applying them appropriately.

Although many researchers have investigated lexical knowledge, critical thinking ability and autonomy (e.g. Myers and Dyer, 2006; Nation and Meara, 2002; Yahong, 2009), few have examined research on the relationship among them. Therefore, the present study aims to find answers to the following questions:

1. Is there any significant relationship between autonomy and lexical knowledge of Iranian EFL learners?
2. Does critical thinking ability level significantly influence autonomy of Iranian EFL learners?
3. Does critical thinking ability level significantly influence lexical knowledge of Iranian EFL learners?

II. LITERATURE REVIEW

Learner autonomy is learners' ability to make their own decisions instead of being influenced by someone else. Little (1995) defines autonomy as a matter of learning and learning how to learn in formal educational settings. Also, Dickinson (1995) defines autonomy as attitudes of learners towards learning through which they practice taking responsibility for learning. However, Breeze (2000) argues that learner autonomy is an inquiry of attitudes and experience.

According to Benson and Voller (1997) autonomy includes five central categories including inborn capacities which are supposed by institutional education, exercises of learners' responsibility for their own learning, the rights of learners in order to determine the direction of their own learning, sets of skills which can be learned as well as concerned in self-directed learning, and situations in which learners study on their own.

Thanasoulas (2000) points out that many factors such as learner's motivation, attitude, needs, learning styles, language learning strategies and language awareness are significant in promoting learner autonomy. Furthermore, Nation and Macalister (2010) point out that learners should have the capacity to examine "how to learn a language and how to monitor and be aware of their learning, so that they can become effective and independent language learners" (p. 38). Moreover, Nation (2001) believes that "no matter what the teacher does or what the course book presents, ultimately it is the learner who does the learning" (p. 394).

As Scharle and Szabo (2000) maintain, autonomy involves raising awareness, changing attitudes and transferring roles to learners. According to many researchers (e.g. Dam, 1995; Holec, 1981; Little, 1991) believe that autonomy has a major role in education. They agree that learners who are more autonomous are more motivated to learn and achieve knowledge and also have higher senses of self-efficacy in their learning. Holec (1981) believes that fixing the goal, defining the content and development, selecting the processes and methods to be used, monitoring the acquisition procedure as well as evaluating what has been acquired are the main components of self-directed learning.

Critical thinking is the ability that people utilize in order to analyze facts, create ideas and classify them, make comparisons and inferences, and solve problems. Willingham (2008) believes that critical thinking determines considering issues from various perspectives and permits facts change thought and ideas. Paul, Elder and Bartell (1997) define critical thinking as "the intellectually disciplined process of activity and skillfully conceptualizing, applying, analyzing, synthesizing, and/or evaluating information gathered from, or generated by, observation, experience, reflection, reasoning, or communication, as a guide to belief and action (p. 4).

Beside autonomy, Lexical knowledge has a great role in communication as it is impossible for learners to communicate without knowing the required vocabularies. According to Catalan (2003), vocabulary learning strategies are the "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) to retain them in long-term memory, (c) to recall them at will, and (d) to use them in oral or written mode" (p. 56).

In a distinct study, Kabilan (2000) mentions that learners need to be able to think creatively and critically in order to be proficient in language learning since the communicative approach to language teaching does not even help students to be proficient. However, Schmitt (2000) revealed that acquiring strategies are required for learners to learn on their own. Also Richards and Renandya (2002) believe that learner autonomy is a process which enables learners to distinguish and evaluate their own needs as well as to choose and apply their own strategies in order to learn effectively.

In another study, Mirzai (2008) examined the relationship between lexical inferencing and critical thinking ability of learners. Based on the results, learners with high critical thinking ability were better in lexical inferencing comparing to learners with low critical thinking ability. Nevertheless, Arkoç (2008) conducted a study to find the effect of autonomy on listening comprehension success. Results of the study revealed that there was no significant relationship between autonomous learning and listening comprehension ability of the learners.

In some other studies the interrelationship between critical thinking and learner autonomy have been investigated. Sheikhi (2009) examined the relationship between autonomy, reading comprehension and critical thinking ability of learners. The results revealed that there was a positive relationship between critical thinking and reading comprehension. A significant relationship between autonomy and reading comprehension was also found.

Fahim and Komijani (2011) conducted a study in order to examine the relationship among critical thinking ability, L2 vocabulary knowledge, and L2 vocabulary learning strategies. Based on the results learners' vocabulary knowledge and critical thinking ability were significantly correlated. Moreover, there were positive correlations among learners' critical thinking ability and their self-assessed degree of determination, memorization, cognitive, and meta-cognitive strategies of vocabulary learning.

Additionally, Fahim and Sa'eepour (2011) investigated the effect of teaching critical thinking skills on reading comprehension ability on the one hand, and the effect of applying debate on critical thinking of EFL learners on the other hand. Based on the results, there were significant differences among learner's reading comprehension scores. Nonetheless, the differences among learners' critical thinking scores were not statistically significant.

Strategy training has also been the focus of attention. In a study by Nour Mohammadi, Heidari and Dehghan Niray (2012), the relationship between learner's critical thinking ability and their reading strategy use were examined. Results indicated that there was a low positive correlation between learners' critical thinking ability and their overall use of reading strategies. Moreover, meta-cognitive strategies were the most frequent strategies used by learners.

Some researchers highlighted the significance of reading strategies in relation to critical thinking and autonomy. Hosseini, Khodaei, Sarfallah and Dolatabadi (2012) investigated the relationship among reading comprehension, critical thinking and reading strategies of 70 English university students. Results showed that there was a significant positive relationship between participants' critical thinking ability and their reading comprehension as well as participants' critical thinking ability and reading strategy use. Moreover, cognitive and affective strategies and critical thinking ability were the best predictors of reading.

Likewise, Tabatabaei and Parsafar (2012) examined the effect of learners' self-directed learning on their critical thinking ability. Based on the results, self-directed learning significantly affected learners' critical thinking ability. Similarly, Zarei and Haghgoo (2012) examined the relationship between critical thinking and L2 grammatical knowledge as well as critical thinking and L2 lexical knowledge of Iranian learners. Based on the results, there was not a significant correlation between critical thinking and vocabulary knowledge of learners. The correlation between grammatical knowledge and critical thinking ability of learners was not significant.

The role of computerized technology was a focal point in this area of research as well. Kasmani and Davoudy (2013) investigated the effect of using audio CDs on reading comprehension of 200 pre-intermediate learners. Results revealed a positive relationship between simultaneous reading and listening comprehension of the participants.

Vocabulary learning and its relation to critical thinking was also emphasized extensively in different studies. Nosratinia, Eftekhari and Sarabchian (2013) for instance, investigated the relationship between learner autonomy and vocabulary learning strategies. Based on the results, there was a significant relationship between EFL learners' autonomy and vocabulary learning strategies. Moreover, social strategy was the best predictor of learner autonomy. Nosratinia and Zaker (2013) conducted another study in order to investigate the relationship between critical thinking ability and autonomy of 182 Iranian male and female learners. The results of the study indicated that there was a significant and positive relationship between critical thinking and autonomy of the participants.

Hassani, Rahmany and Babaei (2013) considered the relationship between journal text reading comprehension and critical thinking of 90 Iranian EFL learners. Results indicated a strong and positive correlation between learners' critical thinking ability and their reading comprehension.

In addition, Fahim and Hoominian (2014) investigated the relationship between critical thinking ability and reading strategies of Iranian EFL learners. The results showed that meta-cognitive and cognitive strategies were the most frequent strategies used by learners. Moreover, there was no correlation between critical thinking ability of learners and their overall use of reading strategies. Besides, Fahim and Haghghi (2014) examined the relationship between EFL learners' academic self-regulation and their critical thinking ability. 90 EFL learners participated in the study. Results indicated that there was a significant positive relationship between self-regulation and critical thinking ability of the learners.

Nosratinia, Abbasi and Zaker (2015) conducted a study in order to investigate the relationship among learners' critical thinking ability, autonomy, and the choice of vocabulary learning strategies. The results revealed significant relationship between learners' autonomy and their critical thinking ability, learners' critical thinking ability and vocabulary learning strategies as well as autonomy and vocabulary learning strategies. Also, autonomy was the best predictor of vocabulary learning strategies. Finally, Azadi, Zare and Khorram (2015) examined the relationship between learners' critical thinking ability and their listening strategies. The results revealed a significant and positive relationship between them. Also, meta-cognitive strategies were the most strategies used by learners.

III. METHOD

Participants

125 Iranian male and female learners learning English as a foreign language at Andisheh-Nou Language School in Qazvin participated in the present study. After taking the results of the Michigan Test of English Language Proficiency into account, the number of the participants was reduced to 114. The learners' age ranged from 16 to 30.

Instruments

The following instruments were used in order to answer the research questions:

1. A Proficiency Test
2. An IELTS Test
3. An Autonomy Questionnaire
4. A Critical Thinking Ability Questionnaire

First, a proficiency test (The Michigan English Language Proficiency Test) was administered in order to homogenize the participants. Second, an IELTS test was administered. Third, a learner autonomy questionnaire including 52 items was given to the students in order to investigate the participants' level of autonomy. The learner autonomy questionnaire was designed and validated by Spratt, Humphreys, and Chan (2002). The questionnaire included four sections examining the participants' views of their responsibilities and those of their teachers (13 items), the participants' confidence in their ability to operate autonomously (11 items), participants' level of motivation to learn English (1 item) and participants' practice of autonomous learning inside and outside of classroom (27 items). The questionnaire was in the form of a Likert scale from "not at all" to "completely" in section one ("not at all", "a little", "some", "mainly" and "completely"), from "very poor" to "very good" in section two, setting 5 to 1 beside the first to the last choices in section three and from "never" to "often" in section four ("never", "rarely", "sometimes", and "often").

Afterwards, a critical thinking ability questionnaire which had been developed by Honey (2000) was administered. The critical thinking ability questionnaire aims at investigating the comprehension, analysis and evaluation skills of the participants. It is a 5-point Likert scale questionnaire ranging from 1 (never) to 5 (always) including 30 items examining the participants' abilities in summarizing, paraphrasing, questioning, note-taking, classifying, researching, discussing, comparing and contrasting, inductive and deductive reasoning, outlining, distinguishing, inferencing and synthesizing.

The Persian version of the questionnaire which was translated and validated by Naeini (2005) was utilized in the present study.

Procedures

In order to achieve the purpose of the present study, the following procedures were followed. First, a general proficiency test was administered in order to be certain about the proficiency level of the students. The participants had one hour to answer the questions. Second, an IELTS test was administered in order to investigate the vocabulary knowledge of the participants which took 90 minutes. Third, the participants were asked to complete an autonomy questionnaire and a critical thinking ability questionnaire. They had 1 hour to complete these two questionnaires.

The scores of the participants on the general proficiency test were summarized. The scores of those who achieved more than one standard deviation away from (above or below) the mean were excluded from all the subsequent analyses. Then, the obtained data were analyzed for further statistical analyses.

Data Analysis

In order to analyze the data and to answer the research question number one, which is the relationship between autonomy and lexical knowledge of Iranian EFL learners, one Pearson Correlation procedure was used. Then, to answer the research questions number two and three, which is the effect of participants' critical thinking ability level on their autonomy and the effect of critical thinking ability level of the participants on their lexical knowledge, two one-way ANOVA procedures were used.

IV. RESULTS

Investigation of the First Research Question

The first research question sought to investigate the relationship between autonomy and lexical knowledge of Iranian EFL learners. Therefore, a correlation procedure was run to answer this question. Table 1 presents the results of the correlation procedure for autonomy and lexical knowledge of learners.

TABLE 1.
CORRELATION BETWEEN AUTONOMY AND LEXICAL KNOWLEDGE OF IRANIAN EFL LEARNERS

		Autonomy	Lexical Knowledge
Autonomy	Pearson Correlation	1	.983**
	Sig. (2-tailed)		.000
	N	114	114

As Table 1 shows, there is a significant relationship between autonomy and lexical knowledge of Iranian EFL learners ($r = .983$, $p < .01$).

Investigation of the Second Research Question

The second research question sought to find out whether critical thinking ability influences Iranian EFL learners' autonomy. Therefore, participants were divided into three equal groups of high, medium, and low level of critical thinking ability based on their scores of the critical thinking questionnaire. One-Way ANOVA was run to examine the effect of critical thinking ability level on the autonomy of learners. Table 2 shows the descriptive and test statistics. Based on Table 2, the high critical thinking ability group has the highest mean (mean = 213.24), followed by the medium critical thinking ability group (mean = 122.21), and the low critical thinking ability group (mean = 65.03). Moreover, F-value is statistically significant ($F = 466.321$, $p < .01$). Therefore, the differences among three critical thinking ability groups in autonomy are significant.

TABLE 2.
DESCRIPTIVE AND TEST STATISTICS FOR THE ANOVA ON CRITICAL THINKING ABILITY AND AUTONOMY OF IRANIAN EFL LEARNERS

	N	Mean	Std. Deviation	95% Confidence Interval for Mean	
				Lower Bound	Upper Bound
High	38	213.24	24.327	205.24	221.23
Mid	38	122.21	23.935	114.34	130.08
Low	38	65.03	14.183	60.36	69.69
Total	114	133.49	64.845	121.46	145.52
F = 466.321		Sig = .000			

To locate the differences among the three critical thinking ability groups, the post hoc Scheffe test procedure was run, presenting the following results:

TABLE 3.
POST HOC MULTIPLE COMPARISONS OF CRITICAL THINKING ABILITY AND AUTONOMY OF IRANIAN EFL LEARNERS

(I) Critical Thinking Ability	(J) Critical Thinking Ability	Mean Difference (I-J)	Sig.	95% Confidence Interval	
				Lower Bound	Upper Bound
High	Mid	91.026*	.000	78.88	103.17
High	Low	148.211*	.000	136.07	160.36
Mid	Low	57.184*	.000	45.04	69.33

*. The mean difference is significant at the 0.05 level.

Figure 1 shows the differences among the three critical thinking ability groups conspicuously.

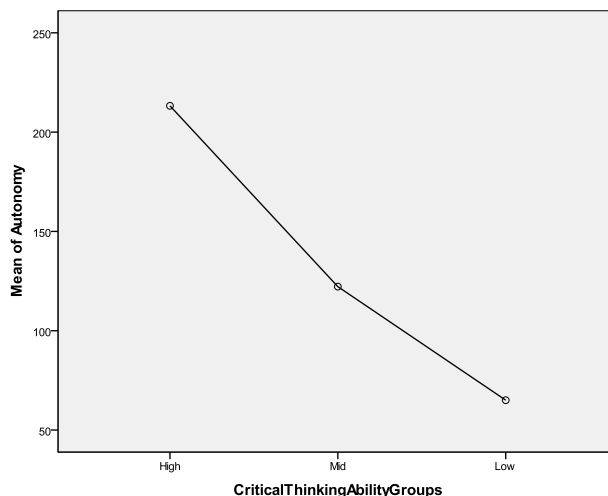


Figure 1. The Differences among the three critical Thinking Ability Groups and Autonomy of Iranian EFL Learners

Investigation of the Third Research Question

The third research question sought to see whether critical thinking ability influences Iranian EFL learners' lexical knowledge. Therefore, participants were divided into three equal groups of high, medium, and low level of critical thinking ability based on their scores of the critical thinking questionnaire. One-Way ANOVA was run to examine the effect of critical thinking ability level on the autonomy of learners. Table 2 shows the descriptive and test statistics. Based on Table 4, the high critical thinking ability group has the highest mean (mean = 52.76), followed by the medium critical thinking ability group (mean = 41.61), and the low critical thinking ability group (mean = 29.61). Moreover, F-value is statistically significant ($F = 431.544$, $p < .01$). Therefore, the differences among three critical thinking ability groups in lexical knowledge are significant.

TABLE 4.
DESCRIPTIVE AND TEST STATISTICS FOR THE ANOVA ON CRITICAL THINKING ABILITY AND LEXICAL KNOWLEDGE OF IRANIAN EFL LEARNERS

	N	Mean	Std. Deviation	95% Confidence Interval for Mean	
				Lower Bound	Upper Bound
High	38	52.76	3.332	51.67	53.86
Mid	38	41.61	3.522	40.45	42.76
Low	38	29.61	3.453	28.47	30.74
Total	114	41.32	10.090	39.45	43.20
F = 431.544		Sig = .000			

To locate the differences among the three critical thinking ability groups, the post hoc Scheffe test procedure was run, presenting the following results:

TABLE 5.
POST HOC MULTIPLE COMPARISONS OF CRITICAL THINKING ABILITY AND LEXICAL KNOWLEDGE OF IRANIAN EFL LEARNERS

(I) Critical Thinking Ability	(J) Critical Thinking Ability	Mean Difference (I-J)	Sig.	95% Confidence Interval	
				Lower Bound	Upper Bound
High	Mid	11.158*	.000	9.20	13.11
High	Low	23.158*	.000	21.20	25.11
Mid	Low	12.000*	.000	10.04	13.96

*. The mean difference is significant at the 0.05 level.

Figure 2 shows the differences among the three critical thinking ability groups clearly.

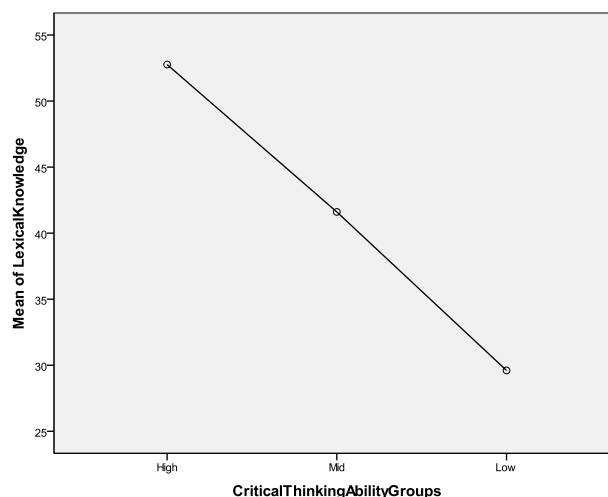


Figure 2. The Differences among the three critical Thinking Ability Groups and Lexical Knowledge of Iranian EFL Learners

V. DISCUSSION

The present study sought to investigate the relationship between autonomy and lexical knowledge of Iranian EFL learners, the effect of critical thinking ability level on learners' autonomy and the effect of learners' critical thinking ability on their lexical knowledge. One of the findings of the present study was that there was a significant and positive relationship between learner autonomy and lexical knowledge of Iranian EFL learners. This outcome is in line with a number of previous studies (Dam, 1995; Holec, 1981; Little, 1991) who found that learners who had higher degrees of autonomy were more motivated to learn and achieve knowledge and also had higher senses of self-efficacy in their learning.

Moreover, the results of this study are compatible with those of Sheikhi (2009) who found a significant relationship between autonomy and reading comprehension of learners. The present study supports findings of Nosratinia, Eftekhari and Sarabchian's (2013) study who found a significant relationship between EFL learners' autonomy and vocabulary learning strategies. Also, this finding is compatible with those of Nosratinia, Abbasi and Zaker (2015) who found that autonomy and vocabulary learning strategies were significantly correlated.

The other finding of the present study was that critical thinking ability level significantly affected learners' autonomy. In other words, learners with higher level of critical thinking ability were the most autonomous learners. This finding is in line with the finding of Tabatabaei and Parsafar's (2012) study. They found that self-directed learning significantly affected learners' critical thinking ability. Also, the findings of the present study lend support to those of Nosratinia and Zaker (2013) who reported that there was a significant and positive relationship between critical thinking and autonomy of the participants. Moreover, this study is compatible with Fahim and Haghghi's (2014) study who found a significant positive relationship between self-regulation and critical thinking ability of the learners. Furthermore, this study is well-matched with the study which has been conducted by Nosratinia, Abbasi and Zaker (2015). They reported that there was a significant relationship between learners' autonomy and their critical thinking ability.

The other conclusion of the present study was that the level of critical thinking of learners significantly affected their lexical knowledge. In other words, learners with higher critical thinking ability had higher lexical knowledge. This result is compatible with Sheikhi (2009) who found that there was a positive relationship between critical thinking and reading comprehension. The findings of this study can support the findings of Nosratinia, Abbasi and Zaker's (2015) study who found that learners' critical thinking ability and their vocabulary learning strategies were significantly correlated.

Additionally, the results of the present study is compatible with the results of Mirzai's (2008) study who found that learners with high critical thinking ability were better in lexical inferencing than learners with low critical thinking ability. Moreover, this study is in line with Fahim and Komijani's (2011) study who found that learners' vocabulary knowledge and critical thinking ability were significantly correlated.

In addition, the present study is in line with Nour Mohammadi, Heidari and Dehghan Nirya's (2012) study. They reported that there was a low positive correlation between learners' critical thinking ability and their overall use of reading strategies. Also, these findings lend support to those of Hosseini, Khodaei, Sarfallah and Dolatabadi (2012) and Hassani, Rahmany and Babaei (2013), who found a significant positive relationship between participants' critical thinking ability and their reading comprehension.

At the same time, the results of the present study contradict a number of previous studies (e.g. Arkoç 2008; Fahim and Sa'eepour, 2011; Zarei and Haghgoo, 2012). Likewise, the findings are in contrast to those of Arkoç (2008) who found that there was no significant relationship between autonomous learning and listening comprehension ability of the learners. Also, this study is in contrast with the study of Fahim and Sa'eepour (2011) who found no significant

differences among learners' critical thinking scores. Moreover, the findings of the current study contradict the study of Zarei and haghgoo (2012) who found no significant correlation between critical thinking and vocabulary knowledge of learners as well as grammatical knowledge and critical thinking ability of learners.

VI. CONCLUSION

The present study aimed at investigating the relationship among autonomy and lexical knowledge of Iranian EFL learners, the effect of critical thinking ability level on learners' autonomy, and the effect of learners' critical thinking ability on their lexical knowledge. One of the findings of the present study was that there was a statistically significant and positive relationship between learner autonomy and lexical knowledge of Iranian EFL learners.

The other finding of the present study was that critical thinking ability level significantly affected learners' autonomy. In other words, learners with higher level of critical thinking ability were the most autonomous learners. The other finding of the present study was that the level of critical thinking of learners significantly affected their lexical knowledge. In other words, learners with higher critical thinking ability had higher lexical knowledge. The positive interrelationship among the above-mentioned factors requires more attention on behalf of researchers in this field.

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