

The Impact of Teaching Critical Thinking Skills on Reading Comprehension of Iranian Intermediate EFL Learners

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Abstract—the purpose of the present study was to investigate the impact of teaching critical thinking skills on reading comprehension of Iranian intermediate EFL learners. A sample of 50 students from Arshia Language Institute in Ilam, Iran participated in this study. They were both male and female students who were selected among 80 students based on their performances on PET. The participants were randomly divided into experimental and control groups. First, the two groups were exposed to the pre-test of reading comprehension in order to evaluate their knowledge on reading before the treatment. Based on scores obtained from the Pre-test, no significance differences were observed between two groups. After that the treatment was started and the experimental group was exposed to teaching critical thinking skills. Meanwhile, traditional methods of teaching reading comprehension were used for teaching reading comprehension to the control group. Finally, post-test of reading comprehension was delivered to both groups at the end of treatment to check possible differences. To analyze the collected data, ANCOVA was run using SPSS Software Version 16. The results showed that teaching critical thinking skills positively affect reading comprehension of intermediate EFL learners, but the interaction of gender and teaching critical thinking was not significant.

Index Terms—critical thinking, reading comprehension, autonomy

I. INTRODUCTION

Today, students take reading comprehension tests which are not directly made from students' textbooks, but rather the texts are sometimes beyond their acquired knowledge from

With reference to ability, Lai (2011, as cited in zare et al, 2013) asserts that critical thinkers are successful in analyzing argument, evaluating, and making decision.

According to Ku (2009) autonomy in second language classes is possible when we target learner' potential for learning through critical reflection. Students must criticize information and learn to maximize their skills to judge information, evaluate alternative evidence and discuss with logical reasons. Moreover, critical thinking and critical instruction are two important factors to develop potential for learning through critical reflection. Without active critical thinking no one can succeed in any area (Wanger, 1997).

Due to the fact that “reading comprehension is a complex cognitive process” (Griffith &Ruan, 2005, p. 22), EFL/ESL learners need effective reading skills to master their reading. Despite all attention, investment and efforts in the field of English teaching in Iran, students seem to suffer from many considerable weaknesses in the area of reading comprehension. The problem seems to be rooted in the out of date methodologies used by traditional teachers. According to Paul(1990) in most educational systems, students turn to rote learning resulting in misunderstanding , prejudice, and discouragement in which students use some short term techniques to tackle their short term problems including memorization. Establishing such techniques block students' thinking about what they read.

Students are not born with critical thinking skills. According to Fisher and Scriven (1997; as cited in Malmir & Shoorcheh, 2012) critical thinking skills are required to be taught because students' thinking skills are not adequate to help them encounter the problems they deal with in education and even in their lives. Therefore, it is necessary for educators to concentrate on teaching critical thinking to equip students with essential skills instead of transmitting information.

According to Paul Elder, and Bartell(1997 as cited in Nair et al,2013) critical thinking is defined as” the intellectually disciplined process of actively and skillfully conceptualizing, applying, analyzing, synthesizing, and/or evaluating information which gathered from observation, experience, reflection, reasoning or communication as a guide to belief and action” (p.4).

Mc Peck (1981) considers critical thinking as a skill and propensity to engage in an activity with reflexive skepticism in a given context. Opposing the classical view of critical thinking as the mere acquisition, retention of information and

possession of a set of skills, Paul (2000) believes that critical thinking involves processing those skills and the habit based on intellectual commitment of using them to guide behavior.

There is almost a unanimous agreement that reading is one of the most important skills in second or foreign learning. According to Nuttal (1998), "Reading has been described as the most studied and the least understood process in education" p.2. Regardless, the agreement on the importance of reading comprehension, different views and opinions exist about the definition of reading. Moeini (2002) defines reading as what traditionally regarded as a passive process of reconstructing the author's intended meaning through reconstructing and realizing the printed letters and words. Kaplan (2002) gives a broader definition of reading as a rapid, strategic, interactive and purposeful process that requires adequate knowledge of world, extensive time on task and efficient as well as strategic processing.

According to Redua, Monza and Arzubiga (2001) socio-affective factors which are commonly referred to as monitorial factors are considered amongst the key features of reading. They believe that an engaged reader is one who is monitored, knowledgeable, strategic, and socially interactive in the reading process.

Alyousef (2005) asserts that reading comprehension is "a combination of identification and interpretation skills" p.143.

Grabe (2010) states:

"Comprehension is not a unitary phenomenon but rather a family of skills and activities. A general component in many definitions of comprehension is the interpretation of the information in the text

At the core of comprehension is our ability to mentally interconnect different events in the text and form a coherent representation of what the text is about" (p.39).

It can be seen that the comprehension process needs not only linguistic resources and automatic processing but also higher-order abilities and skills (Grabe, 2010, p. 50) such as assessing situations and monitoring current comprehension processes that are associated with metacognition.

According to Nikoopour et al (2011) a significant relationship exists between critical thinking and the overall direct language learning strategies and cognitive strategies. In other words critical thinkers preferred the cognitive language learning strategies. According to Khorasani and Farimani (2010), the existence of critical thinkers and non-critical thinkers in Iranian setting is that the whole educational program is more teachers centered. Also, according to Fahim et al (2012) the teachers are the authorities of class, because they themselves have been brought up by this old view of education and view education mainly as filling their students' memory banks with bits of information therefore, they are unable to take their students any further than what they themselves are.

Sheikhy (2009, as cited in Kamali & Fahim, 2011) conducted a study exploring the relationship between autonomy, critical thinking ability and reading comprehension of Iranian learners. The results revealed that there existed a significant relationship between critical thinking ability of learners and their performance on reading comprehension. In other words, it was concluded that the higher the critical thinking ability, the higher reading comprehension. Also, the findings of the study showed that critical thinking and autonomy of students were highly correlated.

In another study, Kamali and Fahim (2011; as cited in Ashgharheidari & Tahriri, 2015) investigated the relationship between critical thinking ability, resilience and reading comprehension of texts containing unknown vocabulary items. The results indicated that there was a significant relationship between critical thinking ability, resilience and reading comprehension suggesting that good internal resources such as high levels of critical thinking ability and resilience can affect academic performance, i.e. competence in reading and may be considered as protective factors among L2 learners.

Along the same line, Fahim and Sa'eepour (2011) conducted a research investigating the impact of teaching critical thinking skills on reading comprehension ability as well as the effect of applying debate on critical thinking of EFL learners. The results showed a significant difference between the two groups on critical thinking test. Finally, based on the results, it was concluded that critical thinking skills in EFL context can improve language learning.

To explore the role of critical thinking in other areas, Yarahmadi (2011) conducted a research to investigate the relationship between extraversion personality dimension of Iranian EFL Learners and their critical thinking and concluded that there was a significant relationship between the two variables.

Similarly, Hashemi and Zabihi (2012) in their study on the relationship between Iranian EFL learners' critical thinking and their receptive English language proficiency skills and found a significant relationship.

Nosratinia and Sarabchian (2013) investigated the relationship among EFL Students' five personality traits and predictability of their critical thinking ability. The findings proved the existence of significant relationship between critical thinking and domains of personality.

Moreover, Nosratinia and Zaker (2013) conducted a research to investigate the EFL learners' critical thinking and their autonomy. They came to the conclusion that there was a positive relationship between the two. And finally, Mall-Amiri and Ahmadi(2014) also found a positive relationship between students' critical thinking and meta cognitive strategies.

III. METHODOLOGY

A. *Participants*

A sample of 50 out of 80 students from Arshia Language Institute in Ilam, Iran participated in this study. The participants were both male and female. They were selected based on their performance on a Preliminary English Test

(PET) designed by Cambridge ESOL. Their age ranged from 20 to 33. Based on this test the examinees whose scores fell between 90 and 100 were selected.

B. Instruments

1. Preliminary English test for Homogenization

One of the instruments used in this study was a standard proficiency test, Preliminary English Test (PET). It is a second level Cambridge English Test for speakers of other languages (ESOL).

2 Reading Comprehension Test

Two IELTS reading parallel tests were administered as the pre-test and post test.

C. Material

Based on the purpose of the study, 12 highly controversial topics were chosen by the researchers, they were selected from the ACTIVE Skills for Reading by Anderson (2013). The ACTIVE series also, include critical thinking questions which help students think beyond the texts. The advantage of these books over other similar books is that they are updated and interesting.

D. Procedure

Following the pre-test, the selected topics were given to the experimental group to choose 8 of them based on their interests. As Halvorsen et al (2005) suggest, it is essential to choose topics appropriate to the interests of the students. In order to hold a debate in the classroom, the researchers followed the steps offered by Halvorsen (2005). At first, the topic was introduced to the students and they were given the texts to take home to research on and gather the relevant information. As Willingham (2007, as cited in Fahim & Sa'ee pour, 2011) asserts, research of cognitive science shows that "the process of thinking is intertwined with the domain of knowledge" (p.8). Therefore, it was constantly emphasized that they had to equip themselves with relevant knowledge from media, newspapers, magazines, the internet, books and share the collected data with their friends, classmates, and family members to evaluate the evidence on the issue.

In the next step, the students were divided into small groups to share their ideas and think about the potential arguments that might come from other side. In other words, they were supposed to challenge each other's ideas. After that, the debaters were divided into two groups each having its own position. Initially, one of the students would introduce the topic clearly and define the concepts and terms accurately to eliminate any misunderstanding and misconception about the exact meaning of the words. According to Djuranovic (2003, as cited in Fahim & Sa'ee pour, 2011), defining the terms in debate is very important because they determine the topic of the debate and its limitation.

In the following step, the debaters would present their opinions through argumentation. After exchanging ideas, the teacher would follow up the debate with a summary of the students' opinions.

After each session students were asked to write an overall report of the class and their final views of the issue. In the debate session, the teacher tried to teach the students how to distinguish between facts and judgments or opinions, how to prove their claims based on examples, common sense, statistic and expert opinions.

They learned to start the argument with "I think/believe that.....because.....therefore....." (Krieger, 2005, p2-3, as cited in Fahim & Sa'ee pour, 2011).

III. RESULTS

TABLE I
KOLMOGROV- SMIRNOV AND SHAPIRO-WILK TESTS OF NORMALITY OF THE DATA

Group	Kolmogorov-Smirnova			Shapiro-Wilk			
	Statistic	Df	Sig.	Statistic	Df	Sig.	
PreReading dimension1	EX	.164	25	.080	.960	25	.415
	Cont	.101	25	.200*	.979	25	.854
PostReading dimension1	EX	.188	25	.022	.923	25	.060
	Cont	.121	25	.200*	.974	25	.739

a. Lilliefors Significance Correction

*. This is a lower bound of the true significance.

As it is evident in Table 1 the data or the scores of groups both in the pretest and posttest have been normally distributed ($P > 0.05$ in all cases).

TABLE2
TESTS OF BETWEEN-SUBJECTS EFFECTS SHOWING THE HOMOGENEITY OF THE SLOPE OF REGRESSION LINES

Dependent Variable: PostReading

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	794.538a	3	264.846	110.872	.000	.879
Intercept	3.843	1	3.843	1.609	.211	.034
Group	5.164	1	5.164	2.162	.148	.045
PreReading	504.211	1	504.211	211.078	.000	.821
Group * PreReading	2.417	1	2.417	1.012	.320	.022
Error	109.882	46	2.389			
Total	21835.000	50				
Corrected Total	904.420	49				

a. R Squared = .879 (Adjusted R Squared = .871)

TABLE3
LEVENE'S TEST OF EQUALITY OF ERROR VARIANCES

Dependent Variable: PostReading

F	df1	df2	Sig.
1.721	1	48	.196

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

a. Design: Intercept + Group + PreReading + Group * PreReading

Table 3 shows that the variances of the groups are equal [$F_{(1,48)} = 1.721, P = 0.196, P > 0.05$] indicating that the data or scores of the groups have been distributed normally.

TABLE4
DESCRIPTIVE STATISTICS

Dependent Variable: PostReading

Group	Mean	Std. Deviation	N
EX	22.72	3.542	25
Cont	18.20	3.808	25
Total	20.46	4.296	50

Table 4 indicates the mean score and standard deviation of the groups on the posttest (post reading). The mean score and standard deviation of the experimental group are 22.72 and 3.542; while those of the control group are 18.20 and 3.808 respectively. Based on this descriptive statistics independent variable has been effective so that it had caused the experimental group outperform the control one although a sound judgment cannot be made based on descriptive statistics.

TABLE5
TESTS OF BETWEEN-SUBJECTS EFFECTS SHOWING THE MAIN EFFECT OF THE TREATMENT

Dependent Variable: PostReading

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	792.121a	2	396.061	165.762	.000	.876
Intercept	6.091	1	6.091	2.549	.117	.051
PreReading	536.741	1	536.741	224.640	.000	.827
Group	471.985	1	471.985	197.538	.000	.808
Error	112.299	47	2.389			
Total	21835.000	50				
Corrected Total	904.420	49				

a. R Squared = .876 (Adjusted R Squared = .871)

Table 5 shows that the main effect of the experiment, that is, the effect of group (independent variable or teaching critical thinking) on the posttest scores (dependent variable or reading comprehension) has been significant [$F_{(1,47)} = 197.538, P = 0.000, P < 0.001$]. Thus, the first hypothesis of the study_ teaching critical thinking skills positively affect reading comprehension of the learners _ is verified. The effect of independent variable has been 0.808, that is, 080% of the change on the dependent variable has been due to the effect of the independent variable.

TABLE6
ESTIMATED MARGINAL MEANS

Group		Dependent Variable:PostReading			
Group		Mean	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
dimension1	EX	23.742a	.327	23.084	24.401
	Cont	17.310a	.319	16.669	17.951

a. Covariates appearing in the model are evaluated at the following values: PreReading = 16.98.

Based on Table 6 the estimated marginal mean of the experimental group is 23.742; while that of the control group is 17.370. Figure 8 supports the information in Table 6.

TABLE7:
LEVENE'S TEST OF EQUALITY OF ERROR VARIANCES OF SCORES ON THE POSTTEST BASED ON GENDER
Dependent Variable:PostReading

F	df1	df2	Sig.
1.032	3	46	.387

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

a. Design: Intercept + PreReading + Group + Gender + Group * Gender

As Table 7 shows the variances of the scores of the male and female participants in both groups have been equal [$F_{(3,46)} = 1.032, P = 0.387, P > 0.05$]

TABLE8
DESCRIPTIVE STATISTICS

Dependent Variable:PostReading				
Group	Gender	Mean	Std. Deviation	N
EX	M	24.00	3.961	14
	F	21.09	2.119	11
	Total	22.72	3.542	25
Cont	M	20.07	3.518	14
	F	15.82	2.750	11
	Total	18.20	3.808	25
Total	M	22.04	4.185	28
	F	18.45	3.609	22
	Total	20.46	4.296	50

Table 8 shows that the mean score and standard deviation of the male participants in the experimental group have been 24 and 3.961 respectively; while those of the female ones have been 21.09 and 2.119. On the same line the mean score and standard deviation of the male in the control group have been 20.07 and 3.5018; however, those of the female ones have been 15.82 and 2.750.

TABLE9
TESTS OF BETWEEN-SUBJECTS EFFECTS SHOWING THE HOMOGENEITY OF REGRESSION LINES

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	813.542a	4	203.385	100.710	.000	.900
Intercept	9.805	1	9.805	4.855	.033	.097
PreReading	394.596	1	394.596	195.392	.000	.813
Group	440.858	1	440.858	218.299	.000	.829
Gender	14.488	1	14.488	7.174	.010	.138
Group * Gender	5.197	1	5.197	2.573	.116	.054
Error	90.878	45	2.020			
Total	21835.000	50				
Corrected Total	904.420	49				

a. R Squared = .900 (Adjusted R Squared = .891)

Table 9 shows that the effect of interaction of group (i.e., independent variable) and gender on the dependent variable has not been significant [$F_{(1,45)} = 2.573, P = 0.116, P > 0.05$]. The effect size has also been 0.05%, therefore, the second hypothesis of the study _ the interaction of teaching critical thinking skills and gender positively affect learners' reading comprehension _ is rejected.

IV. DISCUSSION

As a result of data analysis we found that there is a significant positive relationship between critical thinking skills and students' reading comprehension proficiency. One explanation, perhaps, is that students might have benefited from class discussion. Critical thinking involved all learners in presenting their own ideas through accessing the prior knowledge and information; it foster active learning through mental activity and spontaneous discussion in finding new opinions, ideas and views. Applying critical thinking skills in class helps students reach synergy through peer learning, access their current level of knowledge, its depth and context, organize their thoughts and reach group consensus, be responsible and reflective for their own learning, and finally be creative and innovative in the learning process which in turn facilitates critical thinking. This finding is verified by many studies in the literature.

Similarly, Nikpour, Farasani & Nasiri (2011, as cited in Nour Mohammadi,2012) found a positive relationship between Iranian EFL learners' critical thinking and their use of direct language learning strategies including cognitive, metacognitive and compensation strategies.

Also, the results of the current study revealed that the effect of interaction of group (i.e., independent variable) and gender on the dependent variable was not significant. Therefore, based on the table 9 the second hypothesis of the study-the interaction of teaching critical thinking skills and gender positively affect learners' reading comprehension – was rejected. This finding is supported by (Thompson, 2001) as cited in Fahim (2011) who found that gender had no predictive value of critical thinking or learning style. (Pienaar, 2000; as cited in Fahim, 2011) conducted a South African study of adolescents' critical thinking in the context of political issues, and found that gender had no significant relationship with critical thinking ability.

However, the results appear to be in contrast to a view that has almost become general: the assumption that female students are in general more successful in language learning than their male counterparts (Sunderland, 2000).

V. CONCLUSION

The outcomes of the current study may be gleaned in the form of three important points. First, the existing literature emphasizes the crucial role of critical thinking strategies in learning. Second, the first research question_ does teaching critical thinking skills significantly affect Iranian intermediate EFL learners' reading comprehension? _ was answered positively and its corresponding directional hypothesis was verified implying that the effect of the treatment has been significant. In other words, the critical thinking skills which were taught to the participants had amplified their reading ability.

Third, the second research question _ does the interaction of gender and teaching critical thinking skills significantly affect Iranian Intermediate EFL learners' reading comprehension?_ was answered negatively and its corresponding directional hypothesis was rejected implying that gender had not enhanced the effect of critical thinking skills on the learners' reading comprehension.

VI. PEDAGOGICAL IMPLICATIONS

Reading is considered as one of the essential skills for university and institute students studying English as foreign language (EFL). These students need to master reading for different reasons and purposes. The findings of the present study provide empirical support for the effectiveness of implementing and teaching critical thinking skills in EFL reading classrooms.

Exposing learners to critical thinking skills, produces a language learning environment which can have a real impact on learning. Also, the findings of the study can inspire the syllabus and material designers to include critical thinking issues both in students' textbooks and in teacher training courses. Learners are in the urgent need of textbooks that invoke their critical thinking and meet their coming needs. Also, teachers should be trained to change their attitudes toward students and themselves (Kabilan, 2000).

The application of challenging topics in language classroom shows the importance of domain of knowledge in critical thinking. As it is stated in ADSA (2006, as cited in Fahim & Sa'eepour, 2011)"Familiarity with the issue is the key aspect of preparation for debate....." (p.10). Also According to Pierce (2005), "debate can improve the four skills of the students-speaking, listening, reading and writing"(p.4).

Test developers are also recommended to develop tests to affect the quality of teaching as well as the students' ability and skills to be creative in their performance on tests. As a practical and popular model for test developing in critical thinking, Bloom's Taxonomy (1956, cited in Kennedy et al., 1991) can be used which the requirement for testing in critical is thinking program.

VII. THE LIMITATION OF THE STUDY

Since the study was conducted in an institute and each term lasted for about three months, we did not have enough time to work more on critical thinking skills with students. We wish we had more time to spend on debates. Also, at first, it was difficult to persuade participants to take part in the study.

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