

**Employing a Cooperative Learning Technique as a Means to Promote  
Iranian EFL Learners' Critical Thinking**

**Masoomeh Estaji \***

*Assistant Professor, Allameh Tabataba'i University*

**Shabnam Moradi Aghdam**

*MA, Islamic Azad University, Science and Research Campus, Tehran*

**Abstract**

The purpose of this study was to examine the effect of learning together model of cooperative learning on Iranian EFL learners' and high and low achievers' critical thinking ability. To this end, a total of 52 students out of a population of 60 English language learners from Simin Language School in Karaj were selected, through a Preliminary English Test (PET), and randomly assigned into two groups of experimental and control. Prior to the treatment, a critical thinking questionnaire as a pretest was administered to the students of both groups. Then a 10-session treatment was conducted to the participants in the experimental group according to the dynamics of the learning together model of cooperative learning. Finally, a posttest of critical thinking questionnaire was provided to both groups. An independent samples t-test was run to compare the mean scores of both groups along with a two-way ANCOVA to investigate the effect of achievement level of the participants on the posttest of critical thinking. The obtained results revealed that the null hypotheses were all rejected, concluding that the learning together model of cooperative learning had a significant effect on the improvement of critical thinking skills of Iranian EFL learners. More significantly, there was a significant difference between the high and low achievers in the groups in terms of their critical thinking mean scores, meaning that in both the experimental and control group, the high proficiency achievers enjoyed higher critical thinking ability.

**Keywords:** Cooperative learning, critical thinking, learning together model, Iranian EFL learners.

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\*Faculty of Persian Literature and Foreign Languages, South Allameh St,  
Modiriat Fly-over, Chamran Highway, Tehran, Iran

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Email: *mestaji74@gmail.com*

## **1. Introduction**

Critical thinking has long been identified as an innovative skill and upshot of learning process that is essential to prepare the students for post-secondary education. EFL/ESL researchers have persistently focused on effective learning strategies that can train good language learners and encourage them to improve themselves as thinkers. One of the academic skills recognized as a determiner of learning is critical thinking (CT). Likewise, one of the effective instructional methods which can enhance and improve learners' critical thinking ability and their problem-solving skills is cooperative learning (CL).

Cooperative learning is a kind of activity guided by the aim or purpose to be accomplished, which suggests a change from the traditional teacher-centered teaching method to a focus on learner-centered learning (Wang, 2009). Additionally, Johnson, Johnson, and Smith (2007) wrote that cooperative learning results in a greater transfer of the content learned from one situation to another, higher-level reasoning, and meta-cognition.

Due to the traditional methods of instruction applied in Iran, most of the students still have not been encouraged to improve themselves as critical thinkers. Furthermore, the Iranian EFL learners' educational background indicates that they have experienced teacher-centered classes with the least students' involvement in the learning process. This confirms that traditional educational strategies based on passive learner role do not meet the learners' needs; therefore, they have to be replaced by problem based, meaningful activities, where a learner is placed in the center of educational processes.

According to some authors (Lipman, 1991; Paul, 1992; Siegel, 1980), the curricula of educational institutions should provide special system to develop the students' ability to think critically. For example, cooperative learning, which has been suggested as the solution to a wide array of educational problems, has often been cited as a means of emphasizing thinking skills and increasing higher-order learning (Slavin, 1995). The cooperative learning method often seems to be a solution to a variety of problems demonstrated by EFL/ESL learners. In addition, the benefits of cooperative learning including higher academic achievement (Tsay & Brady, 2010), problem solving skills (Olivares, 2003), and critical thinking ability (Gokhale, 1995) have been proved in academic fields.

More importantly, cooperative learning experiences according to Johnson and Johnson (1989) promote more positive attitudes toward the instructional experience than competitive or individualistic methodologies. Recent research studies (Basta, 2011) suggest that only in a CL setting will the students have an opportunity to discuss a certain problem with their peers, present and defend ideas, exchange beliefs, and actively engage in the learning process. Furthermore, research suggests that cooperative learning may lead to

gains in thinking skills (Faryadi, 2007; Johnson & Johnson, 1990; Mathews, Cooper, Davidson, & Hawkes, 1995; Qin, Johnson, & Johnson, 1995).

Therefore, the present study selected the Learning Together and Alone model of Johnson and Johnson (1999) as one of the models of CL in order to investigate its effect on enhancing and improving the Iranian EFL learners' critical thinking ability.

## 2. Literature Review

Cooperative learning has been defined as “the instructional use of small groups so that the students work together to maximize their own and each other’s learning” (Johnson & Johnson, 1999, p. 5), which has been contrasted with competitive and individualistic learning. According to Gillies (2007), cooperative learning is the incorporation of students working in groups to accomplish the same goal. However, not all group work is effective cooperative learning. Therefore, the instructor using various techniques should guide cooperative learning; if done properly, cooperative learning can be very successful (Gillies, 2007). In cooperative learning groups, students should work toward accomplishing a shared goal (Johnson & Johnson, 1999). Furthermore, to ensure effective cooperative learning is taking place, individual performance, not just group performance, should be checked frequently to make sure all the students are contributing to the group (Johnson & Johnson, 1999).

A teacher has to establish five essential elements in each lesson so as to have small groups work together successfully (Johnson, Johnson, & Holubec, 1990, 1993):

- a) Positive interdependence;
- b) face-to-face interaction;
- c) individual accountability;
- d) social skills; and
- e) group processing.

Bonk and Smith (1998) identified a number of classroom activities that build on the potential for collaboration to enhance learning. These activities entail think-pair-share, round-robin discussions, student interviews, roundtables, gallery walks, and jigsawing.

Researchers in numerous fields have reported that CL can promote critical thinking, particularly in general education (Abrami et al., 2008; Bonk & Smith, 1998; Heyman, 2008; Nelson, 1994; Paul, 1992; Thayer-Bacon, 2000). Vygotsky (1978) claims that when the students are asked to work in collaborative situations, they become capable of performing at higher intellectual levels than when they are asked to work individually. Critical thinking has been identified as an innovative skill and an outcome of student learning necessary to prepare students for post-secondary education. The

component skills of critical thinking are: Analyzing arguments, making inferences using inductive or deductive reasoning, judging or evaluating, and making decisions or solving problems.

Brookfield (1986), long considered an "expert" on critical thinking, contends that critical thinking is a process. Although his definition includes emotional as well as rational components, and clearly acknowledges the importance of culture and context, it contains the following common characteristics:

- Identifying and challenging assumptions
  - Challenging the importance of context
  - Trying to imagine and explore alternatives
- Reflective skepticism

Johnson and Johnson (1994) declared that

CL is required, whenever learning goals are very important, mastery and retention are important, a task is complex or, conceptual problem solving is desired, divergent thinking or creativity is desired, quality of performance is expected, and higher-level reasoning strategies and critical thinking are needed. (p. 38)

According to Johnson and Johnson (1994), there is persuasive evidence that collaborative teams achieve higher levels of thought and retain information longer than students who work individually. Totten, Sills, Digby, and Russ (1991) have also claimed that shared learning gives students an opportunity to engage in discussion, take responsibility for their own learning, and thus become critical thinkers.

One of the proponents of collaborative or cooperative learning includes Thayer-Bacon (2000), who emphasized the importance of the students' relationships with others in developing critical thinking skills. In their meta-analysis of 117 empirical studies on the effects of instructional interventions for improving the students' critical thinking skills and dispositions, Abrami et al. (2008) also found a small but positive and significant effect of collaborative learning approaches on critical thinking.

The application of cooperative learning to promote thinking skills has also been reported by other researchers; for example, Jacobs (2001) summarizes ten studies that consider the relationship between CL and thinking. He concludes that most studies he reviewed point in one direction: CL is more effective than other modes of instruction for higher-level tasks. However, Jacobs (2001) records that only certain types of CL techniques enhance higher-order thinking. One such technique is called cooperative controversy, revealing that different views foster cognitive development by causing disequilibrium –

a concept introduced by Johnson and Johnson (1992, as cited in Jacobs, 2001). Similarly, Dees (1991) suggests that dealing with controversial issues might be an essential element of CL in promoting thinking skills. Jacobs, Lee, and Ng (1997) looked from theoretical, research, and practical perspectives at what cooperative learning is and how it might play a role in creating thinking classrooms. They also found that cooperative learning can support an environment in which the students feel encouraged to take part in higher order thinking.

In a quasi-experimental design study, Karami, Pakmehr, and Aghili (2011) examined the effect of collaborative learning on the students' disposition to critical thinking in high schools. The findings showed that there was a significant difference between the pre-test and post-test scores of the students considering their disposition toward critical thinking. Sadeghi (2012) also investigated the effects of cooperative learning on critical thinking in an Iranian university EFL context. The course was taught to experimental group via cooperative learning method and control group through conventional lecturing method. The results showed that cooperative learning had a significant effect on critical thinking in an Iranian academic setting.

Overall, the above-mentioned studies have examined the effects of cooperative learning on the learners' achievement, cognitive reasoning, and critical thinking. Despite their positive influences, to the best knowledge of the researchers, no research study has focused on this pedagogic CL technique to enhance the students' critical thinking. Hence, the present study was carried out to address the following research questions.

1. Is there any statistically significant difference between the effects of learning together model of cooperative learning, compared to the non-cooperative learning method on the critical thinking ability of Iranian intermediate EFL learners?
2. Is there any statistically significant difference between the effects of learning together model of cooperative learning and non-cooperative learning method on the high and low achievers in the experimental group and their counterparts in the control group in terms of their critical thinking ability?
3. Is there any significant interaction between the use of cooperative learning and non-cooperative learning method, proficiency level of the students in the groups, and their critical thinking ability?

### **3. Method**

#### *3.1 Participants*

A total of fifty two students out of a population of 60 English language learners participated in the present study. Only those students whose scores were one standard deviation (SD) above and one SD below the mean (based on

the participants' PET scores) were selected and randomly divided into two groups of control and experimental with 26 in the experimental group and 26 in the control group. They were divided into two groups, 26 in the control group and 26 in the experimental group, with respect to their English proficiency level determined by proficiency English test PET.

The participants were all female EFL students, ranging in age from 15 to 22, enrolled at intermediate level in Simin Language Institute in Karaj, Iran. To control for the differences attributable to nationality and first language, they were all the Persian native speakers learning English as a foreign language. The participants in the two groups were taught by the same teacher in the intermediate level. In the experimental group, the Learning Together Model (LTM) technique as a treatment was implemented for one and a half months (three sessions each week). In the experimental group, the participants were divided into six heterogeneous groups. It should be noted that the heterogeneous groups were selected according to the results of the English proficiency test (PET).

### *3.2 Instrumentation*

In order to investigate the effect of Learning Together Model of cooperative learning on Iranian intermediate EFL learners' critical thinking ability, several instruments were used including: (a) a Preliminary English Test (PET) , (b) a Questionnaire employed as a pre-test and post-test instrument namely Critical Thinking questionnaire developed by Honey (2004), (c) and instructional materials used during treatment and the course book of *Interchange III*, Third Edition by Richards, Hall, and Proctor (2005).

#### *3.2.1 Preliminary English Test (PET)*

A sample of PET proficiency test (Cambridge ESOL examination, 2004) was used as a screening test at the outset of the study to determine the homogeneity of the groups. The sample paper entailed two parts including reading and writing parts. The intended time for exam was an hour and a half. The reading part consisted of 35 items, and the writing part 7 items (including two writing tasks). The reading part involved five parts: Part one consisted of multiple-choice questions; each question takes the form of a public notice or sign containing a short text. In part two, the students read a short text containing the numbered blanks. Part three consisted of a number of short texts. In part four, there were real-life short texts. Finally, part five included a close test. The writing part included five questions of fill-in-the-blanks for part one followed by writing a card to a friend in the second part which ended with two optional questions only one of which had to be answered. Part three consisted of a writing task that the students were to write about 35 to 100 words.

### 3.2.2 Critical Thinking Questionnaire

Honey's (2004) critical thinking questionnaire was used in this study to measure the participants' critical thinking abilities and was administered as both a pretest and posttest with the aim of identifying any possible impact of the treatment on the development of the critical thinking ability of the participants. This questionnaire was developed with the purpose of evaluating the skills of analysis, inference, evaluation, and reasoning (See Appendix). The questionnaire included 30 Likert type questions each followed by five alternatives including Never(1), Rarely(2), Sometimes(3), Often(4), and Always(5). Regarding the scoring scale, each participant's score could range from 30 to 150.

### 3.2.3 Instructional Materials Used for Treatment

The textbook used in this study in both groups was interchange 3 (Richards et al., 2005 third edition), depending on the exact level of the participants. During the experiment, the participants in both groups received the same amount of instruction whereas different method of teaching was used in both groups. During the treatment, there were objectives that the teacher needed to specify in the experimental group namely cooperative learning group. It is important to note that the lesson plan in the experimental group was based on the checklist of teacher's role and templates designed by Johnson, Johnson, and Holubec (1990). The gist of objectives in the cooperative learning group was as follows:

- I. **Specifying Instructional Objectives**
- II. **Decisions**
  - Deciding on the Size of the Group
  - Assigning the Students to Groups
  - Arranging the Classroom
  - Planning the Instructional Materials
  - Assigning Roles
- III. **Task, Goal, Structure, and Learning Activities**
  - Explaining the Academic Task
  - Structuring the Positive Goal Interdependence
  - Structuring Individual Accountability
  - Explaining the Criteria for Success
  - Specifying the Desired Goals
- IV. **Monitoring and Intervening**
  - Monitoring the Students' Behavior
  - Providing Task Assistance
  - Intervening to Teach Collaborative Skills
  - Providing Content Closure to the Lesson
- V. **Evaluating and Processing**

- Evaluating the Quality of Students' Learning
- Assessing How Well the Group Functioned

On the other hand, the participants in the control group used the same material or textbook which was used in the experimental group based on conventional methods of instruction; following the ordinary classes with no cooperative activity or practice. It is important to bear in mind that Interchange 3 (Richards et al., 2005) was the course book whose units were taught in the control group.

### *3.3 Data Collection Procedure*

#### *3.3.1 Stage 1. Pilot Testing*

Before the main administration of the Honey's critical thinking questionnaire as pretest-posttest, the researchers of the study selected 20 intermediate EFL learners as a sample group to pilot the test in order to ensure its reliability for the target sample. The pilot group who were similar at characteristics to the target sample took the test which consisted of 30 items. Then the reliability estimate was carried out, which was found .90 using Cronbach's Alpha, indicating that the original version of pilot study was reliable to be administered in this study.

#### *3.3.2 Stage 2. Homogenizing the Participants*

To homogenize the participants of the study, the researchers selected a population of 60 English language learners (n=60). They were all studying English at the same level who had passed the placement test of language schools before entering the intermediate level. For this purpose, a sample paper of reading and writing of the PET (Cambridge ESOL examination, 2004) was administered as a measure of homogeneity. After scoring the test, based on their scores, those subjects who obtained scores within the range of one standard deviation above and one below the mean participated in this study. Accordingly, the qualified (n=53) students were selected and randomly divided into the experimental group namely cooperative learning group (n=26), and the control group namely non-cooperative group (n=27).

#### *3.3.3 Stage 3. Pre-test Administration*

Prior to the treatment, the piloted Critical Thinking Questionnaire was administered as a pre-test to both groups of the experimental and control in order to examine their level of critical thinking ability. It was used to evaluate the skills of analysis, inference, evaluation, and reasoning of the students. Since the participants in both groups were at intermediate level of language proficiency, the English versions of the two questionnaires were used in this study. Then in the experimental group, the students were divided into small heterogeneous groups using the following formula: One high-achiever is grouped with one low-achiever and two average-achievers in each four-

member group. The rationale for this type of grouping is that it can provide opportunities for the learners to peer-tutor and help each other to accomplish the learning goals. This grouping was done based on their performance on the PET test. On the other hand, in the control group the students stayed non-cooperatively and continued learning individually.

#### *3.3.4 Stage 4. The Treatment Process*

After dividing the students into small heterogeneous groups in the experimental group, the treatment started based on the objectives of the LTM of the cooperative learning for the length time of eight weeks while holding three sessions a week in (one and a half hour) each session. To accomplish the effect of the treatment, the LTM was conducted to the participants of the experimental group based on a lesson plan devised by Johnson, Johnson, and Holubec (1990). Meanwhile, the participants in the control group were taught according to the instructional procedures of their textbooks (New Interchange III) in a non-cooperative method.

#### *3.3.5 Stage 5. Post-Test Administration*

Finally, at the end of the treatment, Honey's questionnaire of critical thinking as posttest was administered to both groups in order to see whether or not the LTM of cooperative learning as treatment had any significant effect on the learners' critical thinking ability.

#### *3.4 Data Analysis*

The statistical analyses in this study consisted of two series of analyses: Descriptive and inferential statistics. For the first part, the data gathered from the PET as a homogenization test, as well pretest and posttest of the groups of participants, were analyzed through descriptive statistics.

As for inferential statistics, an "independent samples t-test" and a Two-way ANCOVA were run on the mean scores of the two groups on the pretest and posttest to determine whether the LTM of cooperative learning had any effect on the critical thinking ability of Iranian intermediate EFL students.

### **4. Results and Discussion**

#### *4.1 Descriptive Statistics of the Pretest and Posttest Scores*

The participants of both the experimental and control group were administered a critical thinking questionnaire which served as the pretest and posttest. The changes made, by the learners participating in the study in their critical thinking, are described in this section. Table 1 presents the results of descriptive statistics for the two groups in terms of their means on the pretest and posttest of the critical thinking. Particularly, this table reveals the mean scores, standard deviation, and standard error of the mean for both the experimental and control group.

Table 1  
*Descriptive statistics for the participants' critical thinking pretest and posttest scores*

		<i>Mean</i>	<i>N</i>	<i>Std. Deviation</i>	<i>Std. Error Mean</i>
Experimental	Experimental pretest	102.69	26	14.14	2.77
	Experimental posttest	117.30	26	10.55	2.07
Control	Control pretest	100.07	26	11.57	2.26
	Control posttest	101.23	26	11.64	2.28

Based on the results, the mean scores of the participants in the experimental and control group at the pretest stage were 102.69 and 100.07 respectively which changed to 117.30, 101.23 in the posttest. Evidently, there is some difference between the pretest and posttest of each group; however, this difference was checked for statistical significance via running paired-samples t-tests.

#### *4.2 Descriptive Statistics of the High and Low Achievers*

In order to compare the high and low achievers in the experimental and control group, their mean scores on critical thinking posttest were compared. Table 2 presents the results of descriptive statistics for high and low achievers in the groups in terms of their mean scores on the posttests of critical thinking.

Table 2  
*Descriptive statistics for high and low achievers' posttest scores across the groups*

<i>Group</i>	<i>Achievement group</i>	<i>Mean</i>	<i>Std. Deviation</i>	<i>N</i>
Experimental	High achievement	123.54	8.59	13
	Low achievement	111.08	8.61	13
	Total	117.31	10.55	26
Control	High achievement	110.46	7.33	13
	Low achievement	92.00	6.65	13
	Total	101.23	11.64	26
Total	High achievement	117.00	10.28	26
	Low achievement	101.54	12.31	26
	Total	109.27	13.67	52

The results of descriptive statistics carried out in the study indicate that the mean scores of the high and low achievers in the experimental group on the posttest of critical thinking were 123.54 and 111.08 respectively. On the other hands, the high and low achievers in the control group obtained the mean scores of 110.46 and 92.00 respectively.

#### *4.3 The Results of the Paired Samples T-Test and Two-way ANCOVA*

The first research question of the study examined if there is any statistically significant difference between the effects of learning together model of cooperative learning compared to the non-cooperative learning method on the

critical thinking ability of Iranian EFL learners at intermediate level. In order to answer the first question of this study, first two paired-samples t-test were employed to compare the difference between the pretest and posttest of each group separately. This allowed comparing the gain scores of the participants in the experimental group with the gain score of the participants in the control group in terms of their critical thinking ability. Further, it resulted in determining to what extent the groups had improved their critical thinking ability. Table 3 presents the paired samples t-test results comparing the pretest and posttest means of each group separately.

Table 3  
*Paired samples test for the group's pretest posttest of critical thinking*

	<i>Paired Differences</i>						<i>T</i>	<i>Df</i>	<i>Sig. (2-tailed)</i>
	<i>Mean</i>	<i>Std. Deviation</i>	<i>Std. Error Mean</i>	<i>95% Confidence Interval of the Difference</i>					
				<i>Lower</i>	<i>Upper</i>				
Pair 1 Experimental pretest- Experimental posttest	-14.61	8.47	1.66	-18.03	-11.19	-8.79	25	.00	
Pair 2 Control pretest - Control posttest	-1.15	3.97	.779	-2.76	.45	-1.47	25	.15	

Evidently, only in the experimental group is the posttest mean significantly higher than that of the pretest ( $p < .05$ ). This finding indicates that apparently the treatment in the experimental group had a significant effect on the critical thinking ability of the student. Therefore, an analysis of covariance (ANCOVA) was run to control the pretest scores and their differences in the groups as the covariate in order to make a fair comparison between the posttest of the two groups. Table 4 reveals the main ANCOVA results, providing a summary of the test of "Between Subjects Effects".

The first row of the table 4 presents the results on the test of homogeneity of the regression slopes, indicating that there is a significant correlation between the covariate and the grouping of the students into the experimental and control groups. However, this violation of assumption cannot be very serious since ANCOVA is robust against this violation when the group sizes are equal. Moreover, the second row of the table indicates that the experimental and control groups were indeed different on the pretest ( $p < .05$ ). However, the last row demonstrates that the experimental group is indeed significantly larger ( $p < .05$ ) than the control group in critical thinking mean scores with a large effect size even when the pretest differences are taken into account;  $F(1, 47) = 86.95$ ,  $p < .05$ ,  $\eta^2 = .64$  which reveals a large effect size.

Table 4

*Results of analysis of covariance for the groups critical thinking ability*

<i>Source</i>	<i>Type III Sum of Squares</i>	<i>Df</i>	<i>Mean Square</i>	<i>F</i>	<i>Sig.</i>	<i>Partial Eta Squared</i>
Group * Pretest	201.30	1	201.30	6.80	.01	
Pretest	1564.94	1	1564.94	52.89	.00	.53
Group	2572.50	1	2572.50	86.95	.00	.64
Achievement group	14.97	1	14.97	.50	.48	.01
Group * Achievement group	207.87	1	207.87	7.02	.01	.13
Error	1390.44	47	29.58			
Total	630408.0	52				
Corrected Total	9540.23	51				

a. R Squared = .854 (Adjusted R Squared = .842)

Likewise, Table 5 indicates that the results of the adjusted posttest critical thinking mean of the experimental group (116.39) are significantly higher than that of the control group.

Table 5

*Pairwise comparisons to assess the differences in the adjusted means across groups*

<i>Group</i>	<i>Mean</i>	<i>Std. Error</i>	<i>95% Confidence Interval</i>	
			<i>Lower Bound</i>	<i>Upper Bound</i>
Experimental	116.39 <sup>a</sup>	1.07	114.23	118.55
Control	102.14 <sup>a</sup>	1.07	99.97	104.30

a. Covariates appearing in the model are evaluated at the following values: Pretest = 101.38.

The results of the paired samples t-test and two-way ANCOVA indicated that there was a significant difference between the experimental and control group's mean scores on the posttest of critical thinking. As a result, it can be concluded that the learning together model of cooperative learning, as an instructional method improved the EFL learners' critical thinking ability. Thus, the first null hypothesis of the study was rejected.

The second research question of the study investigated if there is any statistically significant difference between the effects of learning together model of cooperative learning and non-cooperative learning method on the high and low achievers in the experimental group and their counterparts in the control group in terms of their critical thinking ability. Besides, the third question assesses whether there is any statistically significant interaction between the use of cooperative and non-cooperative learning method, proficiency achievement level of the students in the groups, and their critical thinking ability. Since in the research questions 2 and 3 the proficiency achievement level of the students, divided into high achievers and low achievers in the two groups, has been addressed, an analysis of covariance

(ANCOVA) was also required to take into account the effect of this variable as well.

Table 4, which was presented earlier to respond to the first question of the study, provides the two-way ANCOVA results along with the test of homogeneity of the regression slopes, indicating whether there is any significant correlation between the covariate and the grouping of the students in the experimental and control groups. This table also supplies some information that can be helpful in further interpretation and exploration of the second and third research questions of the study. For instance, the fourth row of the table demonstrates that there is no significant difference between the high and low achievement groups in terms of the critical thinking posttest means in the experimental group and control group only when taken separately ( $p > .05$ ). However, the fifth row indicates that there is a significant interaction between the types of treatment and proficiency achievement level of the groups, which means that the proficiency achievement level of the students in the groups has a significant effect on the improvement of the critical thinking ability of Iranian intermediate EFL learners. Therefore, the second and third hypotheses of this study were rejected. In other words, there was a significant difference between the high and low achievement groups in terms of the critical thinking posttest means in the experimental group and control group when compared to one another rather than taken separately as it was mentioned in advance. Therefore, the results reveal that in both the experimental and control group high proficiency achievers are of higher critical thinking on the posttest; however, in the control group the difference between the high and low achievers is much larger than that in the experimental group.

The purpose of this study was to examine the effect of learning together model of cooperative learning as compared to non-cooperative learning group on the improvement of critical thinking ability of Iranian EFL learners. Due to the traditional instruction methods in Iran, most of the EFL learners are not able to improve themselves as critical thinkers. Therefore, since the traditional educational strategies, with the learners being the passive recipients of information, do not meet the learners' needs, they should be replaced by problem-based and meaningful activities and approaches, where the learner is placed in the center of educational processes. As a replacement, a cooperative learning method as an effective instructional method was applied in this study which encouraged the students' problem solving skill, higher level of reasoning, and critical thinking ability.

In particular, the results of the analysis in this study revealed that the learning together model of cooperative learning, as an instructional method, improved the EFL learners' critical thinking ability. This is indeed consistent with the studies conducted by Karami et al. (2011), Sadeghi (2012), Rashtchi and Sadraeimanesh (2011), Abrami et al. (2008), Heyman (2008), Thayer-Bacon (2000), Bonk and Smith (1998), Nelson (1994), and Paul (1992). These

studies have found that the cooperative learning methods result in improving the students' critical thinking ability after treatment. Therefore, it could be said that the result obtained in this study, with regard to the effect of the proposed teaching method on the critical thinking ability of the students, has been confirmed by various other studies. Similarly, in research studies accomplished in the 1980s (Gabbert et al., 1986; Johnson et al., 1981; Johnson et al., 1980), it was found that cooperative learning led to higher use of reasoning strategies and critical thinking than competitive learning. According to Blumenfeld et al. (2006), the use of collaboration in learning environments can develop the students' cognitive engagement. In contrast, the obtained results are in conflict with Smith's (1984) study, which revealed no statistically significant difference between treatment groups using the cooperative learning approach.

Moreover, this study attempted to investigate if the EFL student's proficiency achievement level has any significant effect on the improvement of their critical thinking ability; further, whether there is any significant interaction between the types of treatment, proficiency achievement level of the students in the groups, and their critical thinking ability. To this end, a two-way ANCOVA was run and the results revealed that high-achieving students improved their critical thinking ability not only in the experimental group even when the treatment was teacher-centered. However, when the students were taught based on Learning Together Model (LTM) of cooperative learning, the effect of being a high achiever might be less significant than when there was no such treatment. This result is partly consistent with Johnson, Johnson, and Smith (1998), who found that cooperative learning improves higher individual achievement than do competitive approaches (effect size = 0.49) or individualistic ones (effect size = 0.53). Likewise, the findings of the study indicated that there is a significant interaction between the use of cooperative learning and non-cooperative leaning method, proficiency achievement level of the students in the groups, and their critical thinking ability.

Based on the results achieved in this study and their consistency with other studies conducted previously, the application of learning together model of cooperative learning in the classroom should be emphasized or probably should become a necessity in EFL contexts. Obviously, the quality of implementing this method is indispensable.

## **5. Conclusions and Implications**

The purpose of this study was to investigate if there is a difference between the effects of learning together, as one of the models of cooperative leaning, compared to the non-cooperative learning method, on the improvement of critical thinking ability of EFL learners at intermediate level. In addition, this study sought to determine whether there is a difference between the high or low achievers in the group in terms of their critical thinking ability. The

interaction of the treatment types, the participants' level of achievement, and their critical thinking ability was examined as well.

Based on the results of the present study, it can be claimed that learning together as one of the models of cooperative learning methods can lead to improvement in the critical thinking ability of EFL learners. In most cases, the cooperative learning techniques allow the students to think critically and at higher levels of cognition to complete the task (Johnson & Johnson, 2008; Kagan, 1989). Moreover, there is a significant difference between the high and low achievers in terms of the critical thinking posttest means in the experimental group and control group when compared to one another.

Thus, the findings of this study could probably help the EFL/ESL teachers, learners, materials designers, and curriculum developers apply cooperative learning methods to develop the learners' critical thinking ability. Cooperative learning allows for higher-level reasoning and meta-cognition, and transfer of content material learned from one situation to another (Johnson, Johnson, & Smith, 2007). Similarly, LTM of cooperative learning leads to the development of active learning and meaningful interaction among the learners, not to mention the enhancement of higher level reasoning and critical thinking ability.

The use of LTM of cooperative learning will help the teachers ask questions at higher cognitive levels; structured in a way that promotes thinking critically about the problem. Therefore, the teacher as the instructor, facilitator, and advisor can create an atmosphere which arouses the learners' interest in the subject and activities. Likewise, LTM of cooperative learning will have implications for the students in that they work with their partners and ask each other for help; accordingly, they can improve their attitude toward teamwork. If the students are presented with the idea that they are working to attain common goals, they will start cooperating more effectively. Thus, they will show high level of enthusiasm, curiosity, and involvement in being taught through cooperative learning tasks.

Overall, a well-structured framework of cooperative learning proposed by the teacher will enable the students to learn more effectively and think more critically than the traditional language learning methods. If cooperative learning serves as a solution to the educational problems, planning beyond the classroom by the teacher is indispensable. Particularly, the teacher's accountability is crucial in implementing such an approach efficiently inside the classroom. Besides, the teaching materials selected for the classroom play a significant role in the implementation of cooperative learning. Therefore, syllabus designers and textbook writers can design tasks requiring cooperative learning activities; thus, encouraging the students to work in groups and share their ideas in a range of tasks aiming at higher involvement of the learners as well as improvement of critical thinking.

While the study results provided support for the use of cooperative learning techniques in the classroom, additional research studies may be required to generalize the results to other population groups like the teachers who can use the cooperatively-oriented methods with the learners of all ages and at all levels of proficiency. Likewise, more research is required to further examine the impact of cooperative learning techniques on the students with different cognitive levels or competency. Similarly, the students in this study were encouraged to use the cooperative learning techniques in order to provide the opportunity for cooperation which may promote their higher-order thinking. In the future studies, the language can focus on the students' use of the cooperative learning techniques for several other important learning outcomes, such as metacognition, motivation, collaboration, and creativity. Based on the findings of this study, various educational systems like schools and language institutes can use cooperative learning methods with an emphasis on the learning together model in order to enhance the students' critical thinking ability. Finally, further research needs to be considered on how best to implement the cooperative learning strategies in a methodological fashion to ensure that the students acknowledge and understand the learning materials.

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**Appendix**  
**Critical Thinking Questionnaire**

The English version of Critical Thinking Questionnaire (Honey, 2004). Here are 30 statements exploring things you might or might not do when critically thinking about a subject. Simply read each description and click on the box to indicate how often you do it. The choices are:

- Never
- Rarely
- Sometimes
- Often
- Always

Be sure to mark every item.

1. I make notes on the important elements of people's arguments or propositions (e.g. the topic, issues, thesis and main points).
2. I test the assumptions underpinning an argument or proposition.
3. I state my reason for accepting or rejecting arguments and propositions.
4. I put material I have read or seen into my own words to help me understand it.
5. I distinguish between facts and opinions.
6. I double-check facts and opinions.
7. I check other people's understanding of issues
8. I search for parallels and similarities between different issues.
9. I use a set of criteria against which to evaluate the strength of the arguments or proposition.
10. I summarize what I have heard or read to ensure I have understood properly.
11. I break down materials so that I can see how ideas are ordered and raised.
12. I assess the credibility of the person presenting the material I am evaluating.
13. I play devil's advocate in order to improve my grasp of an argument or proposition.
14. I set aside emotive language to avoid being swayed by bias or opinionated statements.
15. I evaluate the evidence for an argument or proposition to see if it is strong enough to warrant belief.
16. I explore statements for ambiguity to ensure I do not misconstrue their meaning.
17. I challenge proposals and arguments that appear to lack rigor.
18. I weigh up the reliability of people's opinions.

19. I ask questions to reinforce my understanding of issues.
20. I establish the assumptions that an argument rests upon.
21. I draw conclusions from data I have analyzed in order to decide whether to accept or reject a proposition or argument.
22. I solicit input from other people to broaden my understanding of subject.
23. I analyze propositions to see if the logic is sound.
24. I set aside my prejudices to evaluate arguments in a dispassionate objective way.
25. I distinguish major points from minor points.
26. I look for what isn't there rather concentrate solely on what is there.
27. I reach my own conclusions rather than let myself be swayed by opinions of others.
28. I research a subject to enhance my understanding.
29. I establish the underlying purpose of an argument or proposition.
30. I consider new information to see whether I need to re-evaluate a previous conclusion.