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Research Paper

Impact of STAD model of Cooperative Learning on Iranian EFL Learners' Critical Thinking and Motivation

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Abstract

This study investigated the impact of cooperative learning on Iranian high school EFL learners' critical thinking and motivation. To this end, 142 EFL students were selected based on their performance on the Oxford Quick Placement Test (OQPT), and divided into two heterogeneous experimental groups (EG) receiving treatment through STAD model of cooperative learning, and two control groups (CG) without any treatment. To recognize the entry behaviors of the participants, pretests were run. Then, the same educational content was taught to both groups during an educational term. Furthermore, in order to disclose the effect of treatment, a critical thinking post-test similar to the pretest but in rearranged order in options and items, and a motivation post-test were administered at the end of the instruction. The results obtained from the statistical analysis of the scores showed that cooperative learning has a significant effect on the critical thinking and motivation of the participants. The findings of the study are beneficial for EFL learners to improve their small group capabilities.

Keywords: *Cooperative Learning, Critical Thinking, Iranian EFL learners, STAD, motivation*

تأثیر مدل STAD از یادگیری جمعی بر میزان موفقیت کلی یادگیری زبان انگلیسی و خلاقیت زبان آموزان دبیرستانی ایرانی
این پژوهش تلاشی برای بررسی تأثیر یادگیری مشارکتی بر دستاوردهای کلی و خلاقیت فراگیران در بین دانش آموزان ایرانی بود. برای تحقق هدف مطالعه، 142 دانش آموز بر اساس عملکرد خود در آزمون (OQPT) انتخاب شدند. دانش آموزان به دو گروه آزمایشی تحت آموزش از طریق مدل STAD یادگیری مشارکتی و دو گروه کنترل بدون اعمال یادگیری مشارکتی تقسیم شدند. برای تشخیص رفتار ورودی، پیش آزمون ها اجرا شدند. در طول یک دوره آموزشی، محتوای آموزشی یکسان به گروه های آزمایش و کنترل ارائه شد. برای بر ملا نمودن تأثیر STAD، پس آزمون خلاقیت مشابه پیش آزمون اما به ترتیب تغییر یافته در گزینه ها و موارد و همچنین پس آزمون کلی موفقیت کلی در یادگیری زبان انگلیسی در ارتباط با محتوای آموزش داده شده در پایان آموزش برای دانش آموزان هر دو گروه اجرا شد. علاوه بر این، میانگین نمرات موفقیت کلی و خلاقیت به ترتیب از طریق آزمون تی مستقل و ANCOVA یک طرفه مقایسه شد. نتایج نشان داد که یادگیری مشارکتی تأثیر قابل توجهی در موفقیت کلی زبان آموزان انگلیسی زبان انگلیسی و خلاقیت آنها دارد.

واژگان کلیدی: یادگیری مشارکتی، خلاقیت، یادگیری زبان انگلیسی، زبان آموزان دبیرستانی، مدل STAD

Introduction

Cooperative learning (CL) has been defined as an effective teaching strategy in which small teams, each with students of different levels of ability, use a variety of learning activities to improve their understanding of a subject matter and their interpersonal, motivational and critical thinking skills. Numerous studies support the effectiveness of working in small groups in learners' progress. (Barkley, Major, and Cross, 2014; Johnson and Johnson, 1994; Strobel and Van Barneveld, 2009). Through cooperative group work, the learners gain their goals, and develop their communicative skills by practicing collective learning. Slavin (1990) defines CL as a kind of class techniques that heartens students to perform all kinds of learning activities in group or small team, helps study some materials and rewards students for achievements or performance of the entire group, enhances teacher-student, and student-student interactions, promotes students to carry out a cooperative learning efficiently. CL in EFL classes in Iran can enhance learners' motivation. CL motivates students to be energetic participants in the learning process in three ways: first of all, students will put more efforts if they know their work is to be inspected by peers; secondly, students may learn the subject matter in great depth if they are involved in teaching it to fellow students; and the third, students will have self-confidence to cooperate in the target language if they are in an agreeable and calming climate.

Critical Thinking (CT), according to Butler (2012), is one of the most frequently discussed higher order skills, assumed to play a central role in logical thinking, decision making, and problem solving. Rayhanul (2015) states that critical thinking is the ability to analyze and justify the way of thinking and presents some evidence for the ideas, rather than simply accepting the personal reasoning as sufficient proof. He adds that CT can lead to developing learners' judgment, evaluation and problem-solving abilities. Dwyer et al. (2014) believe that the end purpose of education is learning to think, and that critical thinking skills are crucial in nearly any field of study or practice where individuals need to communicate ideas, make decisions, and analyze and solve problems.

It has been viewed by many scholars that CT is not luxury but a basic survival skill (Facione and Facione, 1996). There is a broad body of studies on this, but its relation to the CL is to some extent underemphasized, especially in Iranian context, and particularly among high school EFL learners. Therefore, this study was an endeavor to improve critical thinking through improved social relations in cooperative learning.

Another important issue in the current study was motivation. Motivation is a force that activates, encourages, directs and keeps goal directed behavior (Gonzalez, 2008; Marshal, 2010; Woon, et al., 2016). It is the main factor affecting foreign language learning since it mediates the attitudes toward the target language and the outputs in the process of learning it (Mantiri, 2015; Kazantseva et al., 2016). Despite the fact that a good number of studies have been done on the effect of motivation on learning, the relation between motivation and cooperative learning has been underestimated. The current study was, therefore, conducted to find appropriate and plausible answers to the following research questions:

Q1. To what extent does STAD model of cooperative learning affect Iranian EFL learners' critical thinking?

Q2. To what extent does STAD model of cooperative learning affect Iranian EFL learners' motivation?

Literature Review

International Studies on Critical Thinking and Cooperative Learning

Loesa and Pascarella (2017) in a study investigated the link between cooperative learning and critical thinking. To unfold this issue, they analysed longitudinal data from 1,455 freshmen at

19 institutions throughout the United States. The results of this study advocated that exposure to collaborative learning among those who also were not competent enough at precollege academic preparation is positively associated with gains in critical-thinking skills.

Gokhale, (1995) inspected the usefulness of individual learning versus collaborative learning in enhancing drill-and-practice skills and critical thinking skills. After conducting a statistical analysis on the test scores of forty-eight students, the result indicated that students who participated in collaborative learning outperformed the students who studied individually, and they meaningfully performed better on the critical-thinking test. It was also found that both groups did equally well on the drill-and-practice test. This consequence is in agreement with the learning theories proposed by proponents of collaborative learning.

According to Vygotsky (1978), students will perform better at higher intellectual levels when they are working in cooperative environment than they are working individually. Group diversity in terms of knowledge and experience contributes positively to the learning process. In another study, Bruner (1985) contends that cooperative learning methods increase problem-solving tactics because the students are challenged with different explanations of the given situation. The peer support system makes it possible for the learner to internalize both external knowledge and critical thinking skills and to convert them into tools for intellectual functioning.

Thadphoothon (2005) presented a strong case for supporting critical thinking in language learning through computer-mediated collaborative learning. The computer mediated collaborative learning had an enormous impact on development of students' critical thinking. The learning that accrues participation in cooperative learning promoted the communicative use of English, and encouraged critical thinking among students in practice. It also fortified the proper use of technology. More importantly, both students and teachers can be empowered in this study. However, along with these advantages, some avenues for improvement were evident. The study also obtained that the students' grammatical accuracy was low, in spite of their gorgeous vocabulary and ability to use complex language structures. Some students found working in groups challenging and some never acquired the necessary web skills.

Choy and Cheah (2009) implemented a study on teacher perceptions of critical thinking among students and its influence on higher education. The teachers' perceptions of critical thinking among students affect their behaviors in the class. The study revealed that teachers perceive they are teaching critical thinking to their students and believe that critical thinking will provide the intellectual stimuli that will facilitate critical thinking. The evidence of critical thinking among students was supposed to be their ability to justify their ideas and concepts in their own words.

Devi, et al (2015) in a study explored how CL assists students in learning critical thinking in reading in order to unfold the benefits and challenges during the implementation of CL in one vocational school in Cimahi. They gathered their data by utilizing some instruments including classroom observations, questionnaires, semi structured interview and students' written tests. The outcomes revealed that the implementation of CL facilitated students improve their critical thinking and enhance critical thinking dispositions in reading. They mentioned three traits which contributed to the improvement of students' critical thinking in reading: the encouragement of student-student interaction; the provision of group purposes; and the provision of stimulus to the students' development of thought and ideas.

Iranian Studies on Critical Thinking and Cooperative Learning

Mahmoodi and Dehghannezhad (2015) investigated the effect of teaching critical thinking skills on the language learning strategy use of EFL learners across different EQ levels. In their study, 88 EFL learners studying at private English language institutes in Shiraz were delivered 4 sets of instruments: Oxford Placement Test, California Critical Thinking Skills Test (CCTST),

Bar-On Emotional Quotient inventory (EQ-i), and the Strategy Inventory for Language Learning (SILL). The results of the statistical analysis unfolded that teaching CT skills had a significant effect on the LLS use of EFL learners across different EQ levels. However, no significant difference was found between LLS scores of students with high and low EQ levels. Moreover, a significant positive relationship was found between critical thinking and emotional intelligence, and overall language learning strategy and critical thinking. The results of the present study might give discernment to EFL teachers so as to make them aware of using cooperative learning in order to enhance the higher order thinking skills required for a successful language learning context.

Another study was conducted by Rezaei, et al (2011) on critical thinking and language education. The result of their investigation showed that the teachers should make their students a good critical thinker, i.e. to help them obtain both the critical thinking skills and critical attitudes to deal with the ongoing changes. Pertaining to class teaching, teachers' active use of questions, and students' participation in class discussions, teachers should provide learners the most challenging and motivating subjects, and eventually engage students in meaningful critical thinking procedures.

Shirkhani and Fahim (2011) had considerable interest to investigate enhancing critical thinking in foreign language learners and obtained encouraging results. They stated that critical thinking is an integral part of learning among language learners due to its significance in developing effective language learning. Consequently, encouraging critical thinking skills is thought as one of the responsibilities of language teachers that can be fulfilled in cooperative learning.

Ghorbandordinejad and Nourizade (2015), in an enquiry tried to scrutinize the relationship between critical thinking disposition and English learning attainment among Iranian high school EFL learners mediated by emotional intelligence. A number of 264 students (145 males and 119 females) were evaluated for their level of critical thinking disposition and emotional intelligence. Their final English test scores were also used as the measurement of their English achievement. The results revealed a positive correlation between total critical thinking dispositions and its subscales, i.e. engagement, maturity, and innovativeness with English learning success.

Cooperative learning can enhance critical thinking, and critical thinking has an enormous impact on development of language four skills. Vahdani and Tarighat (2014) in a study investigated the impact of teaching critical thinking on the speaking proficiency of Iranian EFL learners in Tehran. They revealed the participants' attitudes towards explicit critical-thinking. To achieve this goal, two groups of female Iranian intermediate EFL learners were compared on their speaking performance, with one group having been trained in critical thinking explicitly and the other as the control group. The outcomes indicated that teaching critical thinking explicitly has a positive and significant impact on the speaking proficiency of Iranian female learners.

Methodology

Design of the Study

This study was a quasi-experimental research (pretest-treatment-post-test) in which the independent variable was cooperative learning (STAD model; that is, Student Team Achievement Divisions in which small groups of students with various levels of ability work together to achieve shared learning goals), and the dependent variables were overall achievement in post-test, motivation, critical thinking, autonomy, creativity, and attitude toward implementing CL.

Participants

One hundred and forty-two EFL students were chosen through stratified sampling, from senior high schools in Chaharmahal and Bakhtiari province, to take part in this study. This sampling method is applicable when the population has mixed characteristics such as educational level, and you want to ensure that every characteristic is proportionally represented in the sample. The participants were all 16-year-old, male Persian-speaking students. In order to make the groups homogeneous and also to identify the entry behavior of the students.

Instruments

The following instruments were exploited for the purposes of the current study:

Oxford Quick Placement Test (OQPT, 2001)

OQPT which was a standardized test was used as a general proficiency test before embarking the research. To meet the assumptions of the current research, it was essential to detect the level of proficiency of the participants. Thus, by administering OQPT, the students' levels of proficiency were determined. This test consists of 60 items developed by University of Cambridge Local Examinations Syndicate. It is divided into two parts: part one contains 40 items: testing situations (five questions), cloze passages (testing prepositions, grammar, pronouns, and vocabulary), (15 questions), and completion items (20 questions). The second part contains 20 items--10 questions on cloze passages and 10 completion type items. All items are in multiple-choice format and their reliability and validity have already been established.

Watson-Glaser's Critical Thinking Questionnaire

Watson-Glaser Critical Thinking Questionnaire was used as the pre-test and post-test. This Critical thinking test assesses learners' ability in 5 key areas; that is, assumptions, arguments, deductions, inferences and interpreting information. The questions in each of the 5 sections aim to evaluate the students' ability in a) Arriving at correct inferences b) Identifying when an assumption has been made c) Using deductive reasoning d) Reaching logical conclusions and e) Evaluating the effectiveness of arguments. In order to avoid confusion, the Persian translation of this test was administered to the students. As for the reliability of the test, it was piloted with 30 students who had the similar characteristics as the participants of this study. Cronbach's Alpha reliability coefficient was calculated to be .72--an acceptable level of reliability. This index indicated that the translation version of the questionnaire was reliable. For the sake of internal validity, the participants were requested for feedback on the possible ambiguities and problematic questions. The analysis of the data gathered from the pilot study, using Principal Components Analysis, revealed that the questionnaire was internally valid and the implementation of it was feasible.

John Horsfield's Motivation Questionnaire

This is a questionnaire consisting of five parts and five-point Likert scale. It was used to investigate the students' motivation. The items were in the form of negative and positive statements and the participants graded them from 1 to 5 where 1 means strongly disagree, 2 means disagree, 3 means undecided, 4 means agree, and 5 means strongly agree. Again, the Persian translation of this questionnaire was administered to the participants.

Procedures

Data Collection Procedures

Due to the fact that the major purpose of the study was to disclose the impact of STAD model of cooperative learning on Iranian EFL learners' overall achievement, motivation, and

critical thinking in small groups, some homogenous groups of students were needed. Therefore, OQPT was administered to identify overall language proficiency of the students. The selected participants were assigned to experimental and control groups. Then, following Slavin's (1992) criteria for dividing groups each class was divided into eight groups of four to five students. Each team was assigned a letter from A to H, and asked to create a unique team name corresponding to the letter, and to create a team chant. This was done to encourage team bonding and unity. Each team had their photo taken and these photos were later used as team rewards, where they were publicly displayed whenever any teams achieved "Super Team" status (a team score of 25-30 points). They were all required to complete one part in their textbook at the end of every two weeks, and a STAD quiz was given during the fourth class of each section. Each group was given two practice quizzes containing about twenty questions (mostly from the lesson just learned). After completion, the quizzes were graded by members of another team. Teams were given back their quizzes and the teacher provided some improvements and then team scores were calculated, and inserted into SPSS software for descriptive and statistical analysis.

Data Analysis Procedure

In order to categorize and classify the data, both descriptive and inferential statistics were employed. Moreover, to properly answer the research questions of the study, experimental, and control condition were set up in which the scores of the learners were compared prior to and after the instructional period.

Results

The results obtained from the analysis of the data are presented below.

Critical Thinking

Regarding the first research question of the study, the EG and CG learners' scores on the different subscales of the critical thinking questionnaire (i.e., argument, assumptions, deductions, inferences, and interpretations subsections) had to be compared. Thus, a pre-experiment score and a post-experiment score were first calculated for each of the critical thinking subscales for every participant, and then the post-test scores of the two groups of learners were compared via a one-way MANCOVA, while controlling for any possible differences between them on the pretest. These comparisons are summarized and presented in Tables 1 below:

Table 1

Descriptive Statistics for the Critical Thinking Subscales' Post-test Scores of the EG and CG Learners

	<i>N</i>	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
EG Argument	75	4.30	1.12	-.11	.27	-.92	.54
CG Argument	66	3.56	1.30	.14	.27	-.76	.54
EG Assumptions	75	3.26	1.00	-.56	.27	.26	.54
CG Assumptions	66	2.18	1.05	.46	.27	.27	.54
EG Deductions	75	3.05	.94	-.70	.27	-.41	.54
CG Deductions	66	1.87	.96	.25	.27	-.77	.54
EG Inferences	75	2.88	.92	-.58	.27	-.39	.54
CG Inferences	66	2.10	1.13	.57	.27	.69	.54
EG Interpretations	75	2.28	.87	-.58	.27	-.27	.54
CG Interpretations	66	1.81	.92	.18	.27	-.97	.54

For all the subscales of critical thinking, the EG post-test mean scores were found to be higher than the CG post-test mean scores, which indicates that the EG learners' argument, assumptions, deductions, inferences, and interpretations were all positively affected by their exposure to the STAD model of CL. The distributions for the pretest and post-test scores of all these subscales were normal since the skewness and kurtosis value for these distributions were smaller than ± 2.00 . To see whether the differences between the EG and CG learners' critical thinking (subscales) scores were of statistical significance or not, the MANCOVA results had to be checked (Table 2).

Table 2

MANCOVA Results for the Critical Thinking Post-test Scores of the EG and CG Learners

Tests	Value	<i>F</i>	Hypothesis <i>df</i>	Error <i>df</i>	Sig.	Partial Squared	Eta
Pillai's Trace	.662	50.92	5.00	130.00	.00	.66	
Wilks' Lambda	.338	50.92	5.00	130.00	.00	.66	
Hotelling's Trace	1.959	50.92	5.00	130.00	.00	.66	
Roy's Largest Root	1.959	50.92	5.00	130.00	.00	.66	

The *p* values under the Sig. column for all the tests turned out to be smaller than .05, yet as the most commonly reported test is the Wilk's Lambda test, the results of this test are reported here: $F = 50.92$, $p < .05$, with an effect size of .66. Thus, it can be seen that the difference between the EG and CG regarding the composite variable of critical thinking was of statistical significance ($p < .05$), and the effect of the treatment applied in this study was very large (.66). To see which of the subscales of critical thinking caused this significant difference between the EG and CG learners' CT post-test scores, Between-subjects Effects were consulted (Table 3):

Table 3

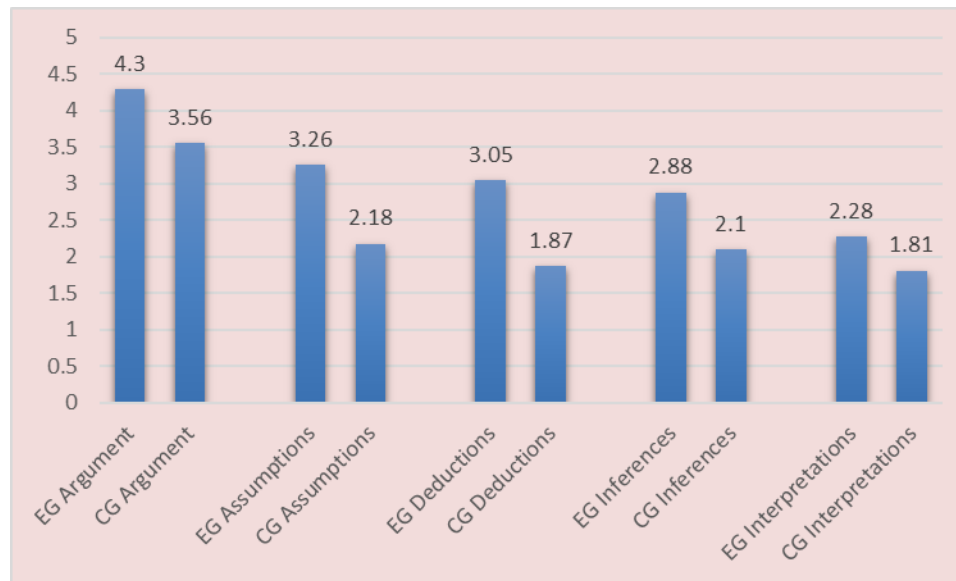
Results of Between-subjects Effects for the Critical Thinking Post-test Scores of the EG and CG Learners

Dependent Variables	Type III Sum of Squares	<i>Sumdf</i>	Mean Square	<i>F</i>	Sig.	Partial Squared	Eta
Argument	22.83	1	22.83	23.00	.00	.14	
Assumptions	42.02	1	42.02	50.35	.00	.27	
Deductions	61.74	1	61.74	109.56	.00	.45	
Inferences	25.04	1	25.04	33.82	.00	.20	
Interpretations	14.91	1	14.91	23.96	.00	.15	

As is shown in Table 3, for all the subscales of critical thinking (i.e., argument, assumptions, deductions, inference, and interpretations), the *p* values were less than the .05 level of significance, which means that the EG learners were significantly superior to the CG learners regarding all the five subscales of CT (because they had been exposed to the STAD model of CL). This result is demonstrated in the following bar graph.

Figure 1

Critical thinking subscales' post-test mean scores of the EG and CG learners



Motivation

Another objective of the present study was to figure out whether the treatment (i.e., teaching through the STAD model of CL) had any significant effects on the EG learners' motivation or not. To this end, the learners' responses to the Likert-scale motivation questionnaire items were added up for every participant, yielding a motivation score for that person. This way, a pre-experiment motivation score (alternatively called motivation pretest score) was obtained for each and every learner, and in like manner, each learner was given a motivation post-test score. The motivation post-test scores of the EG and CG learners were then compared by means of a one-way ANCOVA, which could control for any possible pre-existing differences between the two groups (on their pretests) and compare their post-test scores accordingly. The results are presented in Tables 4 and 5 below:

Table 4

Descriptive Statistics for Comparing the Motivation Post-test Scores of the EG and CG Learners

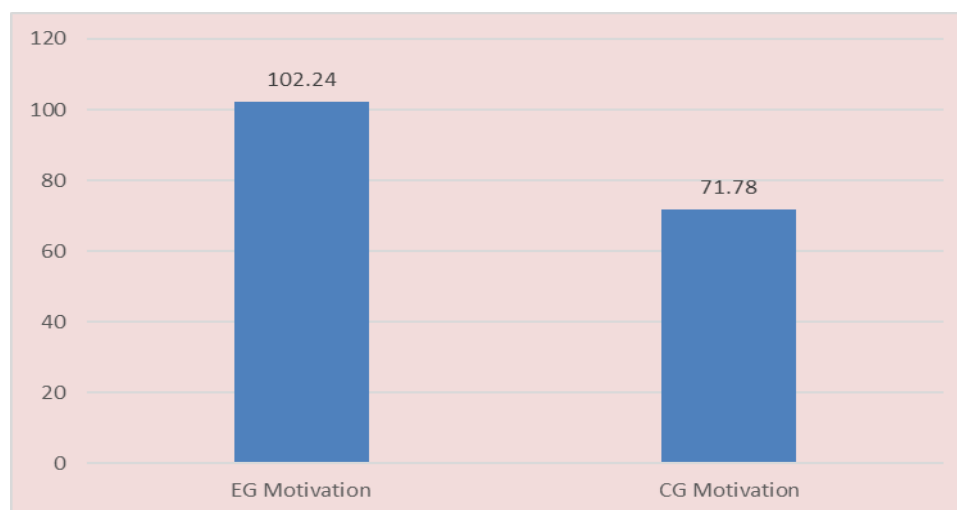
	<i>N</i>	Mean	Std. Deviation	Skewness	Kurtosis		
						Statistic	Std. Error
EG Post-test Motivation	75	102.24	18.47	-.56	.27	.55	.54
CG Post-test Motivation	66	71.78	19.80	-.41	.26	.26	.57

The mean scores for the motivation post-test of the EG learners ($M = 102.24$) and that of the CG learners ($M = 71.78$) are in view in Tables 4-5. The distributions for the motivation post-test scores of both EG and CG learners were normal as the skewness and kurtosis value for these distributions were smaller than ± 2.00 . The comparison of these two mean scores via a one-way ANCOVA is presented in Table 5.

Table 5*On-way ANCOVA Comparing the Motivation Post-test Scores of the EG and CG Learners*

Source	Type III Sum of Squares	Sumdf	Mean Square	F	Sig.	Partial Squared	Eta
Corrected Model	69529.40	2	34764.70	347.78	.00	.83	
Intercept	2730.05	1	2730.05	27.31	.00	.16	
Pretest	36974.14	1	36974.14	369.88	.00	.72	
Groups	12533.02	1	12533.02	125.38	.00	.47	
Error	13794.56	138	99.96				
Total	1174876.00	141					
Corrected Total	83323.97	140					

The information presented in Table 4 and 5 indicate that there was a significant difference between the motivation post-test scores of the EG learners ($M = 102.24$) and the CG learners ($M = 71.78$) since the p value under the Sig. column across the row labeled Groups was found to be smaller than the significance level of .05 ($p < .05$), implying that the EG learners' motivation was positively affected in the wake of being exposed to the STAD model of CL in their English classes. The discrepancy between the EG and CG learners' motivation post-tests could be seen in the following bar graph.

Figure 2*Motivation post-test mean scores of the EG and CG learners*

Discussion

Addressing Research Question one

To answer the first research question on the effect of using STAD model of cooperative learning on critical thinking potential of Iranian high school EFL learners, the EG learners' scores on the different subscales of the critical thinking questionnaire (i.e., argument, assumptions, deductions, inferences, and interpretations subsections) were examined. A paired-samples t test, and one-way ANCOVA were conducted. The statistical analysis of the data demonstrated that treatment was effective and the critical thinking post-test scores for experimental learners improved in all subscales of the critical thinking.

Supporters of CL assert that the active interaction of ideas within STAD model of learning not only increases critical thinking but also promotes interest among the students.

According to Johnson and Johnson (1986), there is convincing evidence that CL groups achieve at higher levels of thinking and hold information longer than students who work individually. The joint responsibility for learning gives students a strong desire to participate in discussion, therefore; when they take into account the responsibility of their own learning, they become critical thinkers. This is reiterated by the results of the current study.

The results of this study are also in line with Gokhale, (1995) who inspected the usefulness of individual learning versus cooperative learning on critical thinking skills. After conducting a statistical analysis on the test scores of forty-eight students, the result indicated that students who participated in CL outperformed the students who studied individually, and they profoundly accomplished better on the critical-thinking test. Furthermore, the results verify the studies done by Vygotsky. According to Vygotsky (1978), students will perform better at higher intellectual levels when they are working in CL than they are working individually. Group diversity in terms of knowledge and experience contributes positively to the learning process. The results are likewise in line with those of Bruner (1985) who asserted that CL methods increase problem-solving tactics because the students are challenged with different explanations of the given situation, and with those Devi, et al (2015) who explored how CL assists students in learning critical thinking in Cimahi.

Addressing Research Question 2

The results of the study designated that there was a significant difference between the motivation pretest and post-test scores of the EG learners, denoting that their motivation was augmented in the wake of being exposed to the STAD model of CL in their English classes. This finding supports that of Tran (2019) who examined the impact of cooperative learning on the motivation for 72 second-year Vietnamese higher education students.

The results here are in line with those of Namaziandost, et al. (2019) who scrutinized the use of CL in English language classrooms to improve Iranian students' speaking skills and motivations. After the implementation of CL techniques, the results of their research showed surprising improvement in the students' central motivation. The results are also in close relation with those of Tombak, and Altun (2016) who investigated the effects of CL on students' motivation and student products at university level, and support previous research studies (Sahin, 2010) which revealed that the CL tasks enhance better motivation for learners. All in all, it can be claimed that the implementation of cooperative learning in high school level classes definitely leads to the improvement of metacognitive awareness and motivation.

Conclusions

Based on the results of the study, it can be concluded that the learners hold a generally optimistic view towards implementation of CL in the educational environment. This is possibly for the reason that when they work in small groups, they feel they can rely on others for help and this gives them the confidence to solve learning problems and enjoy their learning.

In the current study, cooperative learning provided the students with chances to scrutinize, produce, and assess ideas cooperatively. The relaxed and stress-free situation facilitated discussion and communication. These small group interactions helped them to learn from each other's knowledge, abilities, and experiences. They actually got competent enough to recognize the wrong solutions from the plausible ones, i.e., their critical thinking was extremely improved. It can also be concluded on the basis of the obtained results that the implementation of CL is contributes to the enhancement of motivation, because it encourages the learners to achieve more a result of trying hard, attending class regularly, praising efforts of others, and receiving help from one's group mates. In fact, in a CL context, they know that they can get feedback and

assistance when making their contributions as non-threatening as possible; that is, by creating a self-governing, peaceful and non-threatening atmosphere, the learners are motivated to be courageous enough to participate in group activities.

As a final word, the findings of current study can be supportive for teachers, learners, and curriculum developers interested in the potential of CL in high school EFL learners. However, successful implementation of CL will necessitate substantial teacher planning. Likewise, instruction of precise CL skills to students is significant.

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