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CONTENTS

The Effect of Active Learning Instruction on the Upper-Intermediate EFL Learners' Critical Thinking Ability

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Abstract

The present study aimed at investigating the effect of active learning instruction on the upper-intermediate EFL learners' critical thinking ability. For this purpose, thirty seven female upper intermediate EFL learners were selected as the participants who randomly distributed into two experimental and control groups. To evaluate the learners' critical thinking ability at the beginning of the term, "Watson Glazer Critical thinking questionnaire" was administered as the pretest. The learners of the experimental group experienced the active learning instruction as the treatment during a term; in contrast, the learners of the control group received the traditional and teacher-fronted instruction. At the end of the term, again "Watson Glazer Critical thinking questionnaire" was applied as the posttest. The results of the independent samples t-tests and Mann-Whitney U test indicated that active learning instruction had significant effect on the learners' critical thinking ability in experimental group.

Keywords: Active learning instruction, critical thinking, EFL learners

Introduction

Recently, interaction between learners and teacher in educational settings is taken into account among educators and researchers. Learner-centered environments provide appropriate opportunities for learners to be involved directly in learning process. Active learning instruction can create such kind of environments to have more engagement of learners. According to Prince (2004), any instructional method that involves learners in the learning process can be considered as active learning instruction. Critical thinking refers to the capability of analyzing and assessing the information; in addition, it is considered as mentally involved, purposeful, and responsible kind of thinking that helps good judgment since it needs to use knowledge, assumptions and competence, also for critical thinking it is required to use self-correction and self-monitoring to evaluate whether thinking is reasonable and reflexive or not; therefore, in critical thinking process the learner has a pause and reflect on the thinking quality (Adeoti and Adeoye, 2012).

Regarding the recent changes and flexibilities in educational process, the learners and teachers should acquired the necessary skills and knowledge for being successful, they should experience new methods, strategies and technologies of

learning from beginning to be successful in modern educational condition (Prensky, 2001). Thus, the definition of learning does not refer merely to the understanding of text or listening to lectures but it is considered as the abilities that require more students' involvement, monitoring of their own learning process and using higher level of thinking (Bransford, Brown, and Cocking, 1999).

It is required that the teachers provide a situation for learners to involve them in the higher levels of thinking includes critical thinking. Although many teachers give importance to promoting of critical thinking in their learners (Albrecht and Sack, 2000), few do not know exactly what kind of thinking it is, how this kind of thinking should be instructed, or how it should be evaluated (Paul, Elder & Batell, 1997). On the other hand according to Huber (1992), active learning instruction is regarded somehow threatening for some students because they do not want to accept the challenges and they prefer to be more passive rather than active in class; some teachers also think that in this kind of instruction they cannot control the class appropriately; therefore, they do not tend to admit that the teaching and learning processes are managed based on the learners' activities. As a result, these kinds of challenges made the researcher interested in investigating the effect of active learning instruction on the upper-intermediate EFL learners' critical thinking ability.

Research Questions

The following research question was investigated in this study:

1. Does active learning instruction have any significant effect on the upper-intermediate EFL learners' critical thinking ability?

Literature Review

Active Learning Instruction

Bonwell and Eison (1991) believe that active learning instruction refers to anything that involves learners in performing and thinking about what they are engaged in. They point out to many techniques, which can be used to get the students involved in learning process such as: problem-solving activities, cooperative learning, experiential learning, writing tasks, computer-aided instruction, speaking activities, class discussion, simulations, role-playing, peer teaching, library assignments, fieldwork, case study methods, independent study, and homework. Although according to them, the teacher should select the special method of active learning based on the different situations, the materials are going to be taught and the learners' level have essential roles in this selection. For making learning process more active, teachers are required to know how to improve the whole experience of learning by providing some type of experiential learning and the appropriate chances for reflective dialog; in fact, they should apply direct types of activities for learning such as class discussion and provoking debates in different subjects to perform the different activities of learning. (Adeoti and Adeoye, 2012). Fink (2003) points out two basic principles should be paid enough attention in selecting the activities of learning. The first principle is that the activities should be selected from

these three parts of active learning; Experience, reflective dialog, and Information and ideas. Experience consists performing, simulating, and observing; Reflective dialog consists providing portfolios, papers and journaling and information and ideas consists the available sources in the class, out of the class, or in the online way.

Characteristics of active learning.

Bonwell and Eison (1991) provide the following characteristics for active learning instruction:

- Learners are involved instead of just being passive listeners
- Learners are engaged in the related tasks and activities in the classroom (e.g., the tasks and activities related to listening, reading, writing, speaking, discussing)
- Merely transmitting of the information is less emphasized instead more emphasize on developing learners' skills
- Giving importance to the learners' attitudes and values exploration
- More focus on raising the learners' motivation for participating and doing the related tasks
- Peers' and instructor's immediate feedbacks
- Including the higher level of thinking (analysis, evaluation, and synthesis)

The importance of active learning.

Thomas (1972) believes that the amount of information, which can be retained by students naturally, reduces after ten minutes. In addition, based on the research of comparing lecture versus discussion techniques by McKeachie, Pintrich, Lin, and Smith (1987), in the experiments for measuring the retention of information after the end of a course, measures of problem solving, thinking, attitude change, or motivation for further learning , the results showed more retention of information for discussion methods in comparison with lecture.

Adler (1982) argues that real learning is active rather than passive. In fact, learning is the process of discovery in which the student has the main role, not the teacher. "Students learn what they care about and remember what they understand." (Ericksen, 1984, p. 51)

According to Buehl (2001) active learning activities are used to take learners beyond of their books, sometimes beyond of their seats, their classroom, their school, and sometimes beyond of their familiar ways of thinking. The goal of active learning activities is changing the learners into active participants in their own learning process. Astin (1993) noted that active learner's engagement in the learning process is an important element that is accompanied by learner retention.

Penner (1984); Verner and Dickinson (1967) have shown in their researches that learner's focus and attention in straight lectures naturally reduce after 15-20 minutes, it was shown that by Stuart and Rutherford (1978) even for highly motivated learners in postgraduate level. Another research shows that even if learners can keep their focus and attention during a typical 50-minute lecture, some essential pedagogical processes such as higher level of thinking and changing of

attitude happen more in active forms of learning in comparison with just listening to lectures (McKeachie et al; Pascarella and Terenzini, 1991). The results of a study conducted by Kalem and Fer (2003) revealed the positive effect of active learning atmosphere on students' learning, teaching, and communication processes. In addition, Merwin (2003) developed an active learning-based writing assignment that needed a high level of students' engagement in class activities. In this active learning assignment word game was used and based on the learners' personal ratings; the game provided a better review of the material for learners and developed their perception of their performance.

Critical Thinking

Recently, promotion of teachers' and learners' critical thinking has achieved a central attention in educational processes. Hatcher and Spencer (2005) believe that critical thinking is a required and essential skill because it can facilitate coping with intellectual questions, judging people, methods, and materials and solving problems appropriately.

According to Paul (1988), critical thinking is considered as knowing how to ask and answer the questions in the level of analysis, synthesis and evaluation or in other way it refers to the capability of achieving appropriate results according to the observations and previous information. Halpern (1998) defines critical thinking as the kind of thinking which is used in the process of problem solving, predicting probable conclusions, inferring, and deciding in different situation. Simpson and Courtney (2003) believe that critical thinking does not merely refers to a method to be learned but it refers to a complicated process in which a person is involved. They note that critical thinking is a kind of mind orientation which consists both cognitive and affective factors of reasoning and in this kind of thinking, attitude has an important role in affecting a learner's capability for questioning the assumptions.

In spite of different proposed definitions of critical thinking, there are some areas of agreement such as: inferring by the use of inductive or deductive reasoning (Paul, 1992; Ennis, 1985; Willingham, 2007); decision making or problem solving (Halpern, 1998; Ennis, 1985; Willingham, 2007); having related background knowledge to operate their skills of critical thinking (Case, 2005; Willingham, 2007); assessing and judging (Ennis, 1985; Case, 2005; Lipman, 1988); and analysis and synthesis (Ennis, 1985; Halpern, 1998; Paul, 1992).

Critical thinking skills

Fisher (2001) mentions that recently, critical thinking has changed into an important issue in educational domains and this made the teachers interested in instructing the skills of proper thinking instead of teaching the information and materials.

According to Glaser (1941) as cited in Fisher (2001) some skills of critical thinking were mentioned as followed:

1. distinguishing the problems appropriately
2. Thinking of the related ways to solve the problems
3. Collecting the related information

4. Predicting the possible assumptions and values
5. Understanding and applying the language accurately and clearly
6. Interpreting appropriately
7. Assessing the procedure and performance
8. Comprehending the logical relationships among the events and facts
9. Concluding according to evidences
10. Expressing the beliefs and
11. Judging in the best way based on the proper thinking

Critical thinking elements

Goscik (1990) proposed the following categorization for critical thinking elements:

1) The observation according to which a person can construct the
2) Facts according to whose presence and absence a person can establish the
3) Inferences; to be sure of the inferences a person can form the
4) Assumptions according to which a person can make the
5) Opinions. By considering the opinions and applying the logic principles a person can establish the
6) Arguments for whose challenges a person apply the
7) Critical Analysis for which a person uses all above mentioned elements: the observation, facts, inferences, and so on.

Critical Thinker

According to Adeoti and Adeoye (2012), a critical thinker does not merely refer to a person who analyzes, evaluates and interprets some information; he also analyzes the assumptions and inferences related to that information. They believe that a critical thinker applies the mentioned skills optimally in different situations and he generally forms significant questions, manages them appropriately, collects and evaluates related data, applies the abstract concepts, interacts with others influentially and he is usually open-minded.

Gardner and Jewler (2000) believe that one important characteristic of a critical thinker is uncertainty tolerance. A critical thinker does not judge a question until he collect related information to verify the answer.

Critical thinkers generally have enough self-awareness to analyze, interpret and evaluate the related inferences (Adeoti and Adeoye, 2012).

Facione (2004) notes that having "critical spirit" is essential for a person who thinks critically, it means that a critical thinker should have sufficient "probing inquisitiveness, a keenness of mind, a dedication to reason, and a hunger or eagerness for reliable information" (p.6). Colletti (2011) conducted a study in which the impact of completing authentic tasks on the development of critical thinking skills was investigated. The findings of this study revealed that completing the authentic learning task did improve overall critical thinking ability of the learners. In addition, Ghazi Mir Saeed and Nokhbeh Rousta (2013) examined the effect of the problem-based learning on critical thinking ability of Iranian EFL students. The results showed that problem-based learning instruction had a significant effect on EFL learners' critical thinking ability. In another study by Khodabakhsh, Jahandar and

Khodabandehlou (2013) in which the impact of critical thinking tasks on paragraph writing ability of Iranian EFL learners was investigated, the results indicted the positive significant effect of using critical thinking tasks on the EFL learners' paragraph writing ability.

Methodology

Participants

For this study, thirty seven female upper intermediate EFL learners were selected as the participants who randomly distributed into two groups, the experimental group consisted of 19 and the control group comprised of 18 EFL learners. The educational background of the selected participants varied from high school to bachelor degree and their age ranged from 14 to 38.

Instrumentation

To gather the related data for the present study, the "Watson-Glaser Critical Thinking Appraisal" (CTA) was administered. The questionnaire consists of 5 subtests including 80 items as follows (Watson-Glazer Critical thinking booklet, 2002, p15):

1. Inference including 16 Likert scale items with alternatives T as true, PT as probably true, ID as insufficient data, PF as probably false and F as false. 2. Recognizing Unstated Assumptions including 16 two scaled questions with alternatives made and not made. 3. Deduction including 16 two scaled questions with the alternatives follows and does not follow. 4. Interpretation including 17 two scaled questions with the alternatives follows and does not follow. 5. Evaluation of Arguments including 15 two scaled questions with the alternatives strong and weak.

This questionnaire was piloted among 21 upper intermediate EFL learners. Its reliability was calculated via Cronbach's alpha and was 0.79.

Procedure

To achieve the purpose of this study, thirty seven female upper intermediate EFL learners randomly distributed into two groups, the experimental group consisted of 19 and the control group comprised of 18 EFL learners. To evaluate the learners' critical thinking ability at the beginning of the term, "Watson Glazer Critical thinking questionnaire" was administered as the pretest. The learners of the experimental group experienced the active learning instruction as the treatment during a term which took about 20 sessions. As the active learning instruction, the teacher of experimental group applied different kinds of tasks for different language skills and components, she used peer teaching to instruct some parts of related book. For this purpose, the teacher of experimental group assigned some learners to teach the predetermined parts of the book interactively after about three sessions during which the learners got familiar with the type of instruction. In addition, the teacher included some library assignments for the learners of the experimental group as a part of active learning instruction. In contrast, the learners of the control groups received the traditional and teacher-fronted instruction with low level of learners' involvement. At the end of the term, again "Watson Glazer Critical

thinking questionnaire" was applied as the posttest for both control and experimental groups' learners.

Data analysis

To address the research question of the study some statistical procedures were conducted. At first, the descriptive statistics were conducted to the scores of pretest, posttest, and gain scores (the difference between pre-test and post-test scores). Then, to investigate the difference of the mean scores in critical thinking between control and experimental groups on pretest, posttest and gain scores an independent-samples t-test for the scores with normal distribution and Mann-Whitney U test for the scores with non-normal distribution were conducted to the data.

Results

The descriptive statistics for two control and experimental groups at the pre-test are displayed in Table 1.

Table 1. Descriptive statistics of the experimental and control groups in critical thinking ability at the pre-test

		N	Min	Max	Mean	SD
Pre-test CT	Experimental	19	26	56	37.10	9.42
	Control	18	29	54	38.50	6.60

A Kolmogorov-Smirnov test was applied to ensure the normality of the distribution of the scores in pretest, posttest, and gain scores. According to this test, there was normal distribution of scores in each group ($p > .05$) except for the critical thinking gain scores of the control group. ($p < .05$) (see Table 2).

Table 2.Test of normality for the experimental and control groups in critical thinking ability at the pre test, posttest and gain scores

Tests of Normality							
		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	group	Statistic	df	Sig.	Statistic	df	Sig.
Pre CT	experimental	.146	19	.200*	.905	19	.059
	control	.145	18	.200*	.947	18	.375
Post CT	experimental	.177	19	.119*	.952	19	.430
	control	.147	18	.200*	.951	18	.441
Gain CT	experimental	.123	19	.200*	.970	19	.773
	control	.309	18	.000	.849	18	.008

An independent-samples t-test was run to compare the mean scores of the experimental and control groups at critical thinking pre-test.

Table 3. Independent-samples t-tests for the experimental and control groups' critical thinking ability at the pretest

	Levene's Test for Equality of Variances		t-test for Equality						
								95% confidence interval of the Difference	
	F	sig	t	df	sig. (2-tailed)	Mean Difference	std. Error Difference	Lower	Upper
Pretest CT Equal variances assumed	2.574	.118	-.518	35	.607	-1.394	2.690	-6.85	4.06
Equal variances not assumed			-.523	32.31	.604	-1.394	2.66	-6.82	4.032

As Table 3 displays, there is no significant difference [t (35) = -.518, p = 607 (two-tailed)] between the mean scores of the experimental (M=37.10, SD=9.42) and control (M=38.5, SD=6.60) groups at the pretest critical thinking. This result revealed that the learners were homogenous at the begging of the term and the selected groups were suitable for a quasi-experimental research in the terms of critical thinking (p> .05).

Table 4 indicates the descriptive statistics for the experimental and control groups in critical thinking ability at the post-test.

Table 4. Descriptive statistics of the experimental and control groups in critical thinking ability at post-test

		N	Min	Max	Mean	SD
Pre-test CT	Experimental	19	32	70	50	8.74
	Control	18	30	54	39	6.92

Also the descriptive statistics for the experimental and control groups in critical thinking ability at the gain scores was displayed in Table 5.

Table 5. Descriptive statistics of the experimental and control groups in critical thinking ability at gain scores

		N	Min	Max	Mean	SD
Pre-test CT	Experimental	19	2	28	13.15	7.09
	Control	18	-1	5	1.11	1.40

An independent-samples t-test was used to compare mean scores of the experimental and control groups in critical thinking ability at the post-test. 05 (see Table 6).

Table 6. Independent-samples t-tests for the experimental and control groups' in critical thinking ability at the posttest

	Levene's Test for Equality of Variances		t-test for Equality						
								95% confidence interval of the Difference	
	F	sig	t	df	sig. (2-tailed)	Mean Difference	std. Error Difference	Lower	Upper
Post-test CT Equal variances assumed	.747	.393	3.989	35	.000	10.38	2.60	5.10	15.67
Equal variances not assumed			4.015	33.96	.000	10.38	2.58	5.12	15.64

The p-value (.000) was lower than the significance level of .05. It can be concluded that there is a significant difference [t (35) = 3.989, p = .000 (two-tailed)] between the mean scores of the experimental (M=50, SD=8.74) and control (M=39, SD=6.92) groups at the posttest critical thinking. The difference indicates the effect of active learning instruction on the upper intermediate EFL learners' critical thinking ability; therefore, the hypothesis that active learning instruction has no significant effect on the upper intermediate EFL learners' critical thinking ability was rejected. The effect size, calculated via eta squared, was found to be 0.31. This figure shows the strength of connection between the dependent (post-test critical thinking scores) and independent (active learning instruction) variables is almost large size (Dornyei, 2007).

To compare the mean scores of the experimental and control groups' critical thinking gain scores, Mann-Whitney U test from non- parametric tests was conducted because the distribution of the control group's critical thinking gain scores was non-normal.

Table 7. Mann-Whitney U for the experimental and control groups' critical thinking ability at gain scores

Test Statistics[a]				
	Mann-Whitney U	Wilcoxon W	Z	Asymp. Sig. (2-tailed)
listening gain scores	7	178	-5.02	.000

a. Grouping Variable: group

The p-value (.000) was lower than the significance level of .05 (p< .05). Therefore, it can be concluded that there was significant difference [U=7, Z=-5.02, p=.000(two-tailed)] between the mean scores of the experimental and control groups' critical thinking at gain scores. Thus, the effect of active learning instruction on the upper intermediate EFL learners' critical thinking ability was positively significant. The effect size was .82 and this magnitude indicted the strong association between the dependent (gain scores of critical thinking) and independent (active learning instruction) variables.

Discussions

The present study aimed at investigating the effect of active learning instruction on the upper-intermediate EFL learners' critical thinking ability. To compare the means scores of two control and experimental groups at pretest, posttest, and gain scores independent samples t-tests and Mann-Whitney U test were applied. The results revealed that upper-intermediate EFL learners' critical thinking was positively affected by applying active learning instruction in the class. It means that the more learners involved in learning process, the more their critical thinking was improved. The reason of this result can be explained as the direct mental and physical engagement of learners in learning process can provoke them to think more effectively and precisely in each step of learning rather than just listening to the teacher as the commander of class. Also active learning instruction and activities provided enough motivation for learners to be involved in learning process.

The finding of this study is consistent with the results of many researches indicating the significance of active learning instruction and learners' engagement in learning process. For example Merwin (2003) provided an active learning-based writing assignment that needed a high level of students' engagement in class activities. In this active learning assignment word game was used and based on the learners' personal ratings; the game provided a better review of the material for learners and developed their perception of their performance. Another study by McKeachie, et al. (1991) indicted that even if learners can keep their focus and attention during a typical 50-minute lecture, some essential pedagogical processes such as higher level of thinking and changing of attitude happen more in active forms of learning in comparison with just listening to lectures. In addition, Ghazi Mir Saeed and Nokhbeh Rousta (2013) investigated the effect of the problem-based learning which is a kind of active learning on critical thinking ability of Iranian EFL students. The results showed that problem-based learning instruction had a significant effect on EFL learners' critical thinking ability. Kalem and Fer (2003) conducted a research whose main purpose was to investigate the effects of the active learning instruction on learners' learning, teaching and communication processes. The results indicated that active learning instruction had positive effect on the learners' learning, teaching, and communication processes. Also, Colletti (2011) conducted a study in which the impact of completing authentic tasks on the development of critical thinking skills was investigated. The findings of this study revealed that completing the authentic learning task did improve overall critical thinking ability of the learners.

Conclusion

According to Halvorsen (2005) any materials and subjects which provoke critical thinking make the environment of educational setting more purposeful, meaningful and consistent. In such situations, learners more engaged actively in learning process when they feel that they are learning collaboratively and cooperatively. This study aimed at providing energetic, active and motivating environment for the

learners of experimental group to encourage them participating in class activities and tasks. The results revealed that this kind of atmosphere in comparison with the teacher-fronted environment had positive significant effect on the learners' critical thinking ability. Simons (1997) mentions that in active learning the learners make decisions by the help of a teacher; They try to make sense of what they perceive; they have their own time plan, own objectives and learning activities; they themselves evaluate their learning progress and they are responsible for their learning and understanding. Namely, this kind of learning changes passive learners to active ones and helps them to think more critically and analytically in learning process.

In this study, the effect of active learning instruction on the upper-intermediate EFL learners' critical thinking ability was investigated; consequently, the findings imply some pedagogical implications for EFL teachers, practitioners, material developers and syllabus designers. EFL teacher trainers and teachers should get familiar with different methods and techniques to make the learners more involved in learning process and to improve their critical thinking ability. Since, according to Simon (1997), in active learning the learners think analytically on errors and successes and this can improve their inferential capabilities and facilitate their deep understanding. Material developers should consider the different dimensions and benefits of active learning instruction and critical thinking in designing the related materials for EFL learners. In addition, syllabus designers should take into account the creation of stress-free and cooperative atmosphere for learners to improve, apply and reveal their potential abilities. There were some limitation with which the researcher faced in conducting the study. One of them was the small sample size (n=37) of the study; therefore, this research can be replicated with a larger sample size to achieve more reliable results. Moreover the relatively short duration of the study limited the researcher to include more aspects and activities of active learning instruction as the treatment in the study. Other limitations of the study refer to the participants' ages, personal variables, limited educational context and their family background. This study can be carried out for different level of proficiency and other personal variables such as self-efficacy, motivation, self-confidence, etc. Also, the present study can be replicated in the university and high school instead of private language institutes.

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