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Examining the Effect of Scaffolding Instruction on Critical Thinking Skills of Iranian EFL Learners

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Abstract

In recent years, the importance of thinking skills in education has attracted the attention of researchers. To this end, this study investigated the effect of scaffolding and implicit instructions on the critical thinking skills (i.e., inference, evaluation, analysis, inductive and deductive reasoning) of EFL learners. To this end, 20 EFL learners who were taking an IELTS course at a language institute in two intact classes were chosen as the participants. One group was randomly assigned as the experimental group and their critical thinking skills were scaffolded following Vygotsky's developmental model of the Zone of Proximal Development, and the other group was assigned as the control group and received implicit instruction for promoting critical thinking skills. California Critical Thinking Skills Test Form B developed by Facione and Facione (1993) was used to check the participants' critical thinking skills. The results of the paired-samples t-test displayed that scaffolding and implicit instructions enhanced the EFL learners' critical thinking. The analyses of the independent-samples t-test showed that the experimental group promoted their critical thinking to a greater extent in comparison with the control group. The findings of one-way MANCOVA indicated that by controlling for the pre-tests, scaffolding instruction was more effective than implicit instruction in developing the EFL learners' critical thinking skills.

***Keywords*:** Critical thinking skills, Scaffolding instruction, Implicit instruction, Zone of Proximal Development

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INTRODUCTION

Critical thinking, or the ability to analyze, make an inference, evaluate, and reason both deductively and inductively is seen as an essential higher-order thinking skill in educational settings (Bailin & Siegel, 2003; Larsson, 2021; Li, 2016; Van Laar, Van Deursen, Van Dijk, & De Haan, 2017). Particularly, critical thinking has a paramount role in foreign/second language development (Chamot, 1995; Davidson, 1994; Soodmand Afshar & Rahimi, 2014; Soodmand Afshar, Rahimi, & Rahimi, 2014; Wu, Marek, & Chen, 2013). For instance, Barzdžiukienė, Urbonienė, and Klimovienė (2006) propose that critical thinking contribute to learners' positive achievement in English as a second language (ESL) and English as a foreign language (EFL) learning contexts. As a result, teachers are responsible to promote learners' critical thinking skills.

Bruning, Schraw, Norby, and Ronning (2004) suggest that teachers should "teach students how to think rather than what to think" (p. 180). Similarly, Brookfield (1987) argues that "when students learn to think critically, they learn to pay attention to the context in which their actions and ideas are generated. They become skeptical of quick-fix solutions, of single answers to problems, and of claims to universal truth" (p. ix).

Some studies have attempted to teach critical thinking in mainstream education in general (e.g., Akatsuka, 2021; Larsson, 2021; Marin & Halpern, 2011; Hernstein, Nickerson, de Sanchez, & Swets, 1986; Zohar, Weinberger, & Tamir, 1994) and in EFL contexts in particular (Chapple & Curtis, 2000; Cui, 2020; Davidson & Dunham, 1997; Khabiri & Firooz, 2013; Liaw, 2007; Sanavi & Tarighat, 2014; Yang, Chuang, Li, & Tseng, 2013; Zhao, Pandian, & Singh, 2016). For example, Ebadi and Rahimi (2018) examined the effect of online instruction on critical thinking skills of EFL learners, and found that online instruction outperformed the traditional instruction in improving critical thinking skills. In a similar vein, Esfandiari, Rezvani, and Hadian (2021) also found that argument mapping techniques helped EFL learners improve their critical thinking.

Nevertheless, there are not enough studies in EFL context examining the impact of scaffolding and implicit instructions on different sub-components of critical thinking (i.e., inference, evaluation, analysis, inductive and deductive reasoning). Therefore, the present study is an attempt to apply scaffolding and implicit instructions to the critical thinking skills of EFL learners to find a better and more effective instructional procedure for promoting critical thinking subcomponents.

Scaffolding and the Zone of Proximal Development

The framework of the present study is grounded in Vygotsky's socio-cultural theory (SCT). Vygotsky (1986) reveals that cognitive abilities are not irrevocable. He regards the development of cognitive functions as changes in individuals' thoughts and actions as an outcome of interactive activities. In his socio-cultural theory, he argues that the development of higher forms of consciousness happens by a process of internalization which first occurs as the interaction among students.

Based on this conceptualization, the individuals' zone of proximal development (ZPD) should be determined to help the individuals reach their potential level of capabilities. Vygotsky (1986) defines ZPD as the gap between a learner's abilities which can be displayed by autonomous performance and his/her potential capabilities which can be achieved through accomplishing different leaning issues by a more capable individual's support, like a teacher. That is the learners are not capable independently to achieve the desired learning outcome, but they can achieve their ZPD if relevant assistance, such as mediation (for example, see Asmali, 2018), is provided. Unskilled individuals (e.g., learners) under the guidance of other skilled individuals (e.g., teachers) can appropriate new skills into their consciousness through a process of other-regulation toward self-regulation (Lantolf & Thorne, 2006).

In some interpretations of Vygotsky's socio-cultural theory such a process has come to be known as scaffolding. This term was originally used

by Bruner (1985), who defines scaffolding as a process in which a learner is mediated by somebody else, like a teacher, through a set of steps until the learner can act autonomously.

Wood (1988) maintains that scaffolding is contingent (i.e., the amounts of prompts and hints during the scaffolding depends on the learner's needs), collaborative (i.e., the end result of an activity and/or task is jointly achieved), and interactive (i.e., it includes the interactions among individuals who are mutually engaged to accomplish an activity or task).

Stone (1998) proposed that in order to do scaffolding successfully a more capable person should provide a less capable person with the amount of support required to help them reach their ZPD. He maintains that the required support, which might differ in mode, like verbal hints, physical gestures, and dialogues, is not pre-specified but varies based on the learners' abilities. Wood, Bruner, and Ross (1976) claim that during the scaffolding instruction the tutee (i.e., the learner) performs a task that is above his/her current ability, then the tutor (i.e., the teacher) interferes when the tutee gets into difficulty and needs assistance. They suggest six recommendations that lead to successful scaffolding. The tutors should: (a) make the tutees interested in the task; (b) alleviate the difficulty of the task to make it manageable to the tutees; (c) capitalize on the purpose of the task; (d) capitalize on critical features; (e) control the exasperation of the tutees; and (f) show the tutees the ways to deal with the task.

Scaffolding instruction is believed to be an efficient way to capture EFL and ESL learners' ZPD (Wood et al., 1976). Adoniou and Macken-Horarik (2007), for instance, indicate that scaffolding literacy is effective in ESL teaching. They propose that through scaffolding instruction a great extent of multimodal teaching strategies could be incorporated to support oral language and better understand the context of challenging texts. Similarly, Rahimi (2015) investigated the effect of scaffolding-based instruction on EFL learners' reading strategies. He indicated that reading strategies of EFL learners enhanced through scaffolding instruction. In addition, Cho and Cho (2014) investigating the association between

scaffolding instruction and the academic engagement of learners in an online learning environment, indicated that online scaffolding instruction had a significantly positive association with learners' engagement.

Critical Thinking Skills

Generally, critical thinking is conceptualized as a cognitive component. Critical thinking skills are perceived as higher-order thinking skills, like inference, drawing conclusions and hypotheses; evaluation, checking the credibility of different sentences and arguments; analysis, identifying various inferential relations and interpret the meanings; inductive reasoning, reaching conclusions based on an argument's premises; and deductive reasoning, an argument's premises require the conclusion (Facione, 1990).

Developing critical thinking skills in EFL and ESL learners is regarded as an ultimate purpose in education (Boumediene & Berrahal, 2018; Boumediene, Hamadi, & Fatiha, 2021; Chapple & Curtis, 2000; Ebadi & Rahimi, 2018; Li, 2016; Liang & Fung, 2021; Yang & Chou, 2008). Hence, critical thinking has attracted the EFL and ESL researchers' and teachers' attention in the instructional settings (Akatsuka, 2021; Chapple & Curtis, 2000; Mok, 2010; Li, 2016; Liaw, 2007; Marboot, Roohani, & Mirzaei, 2020; Okolie, Igwe, Mong, Nwosu, Kanu, & Ojemuyide, 2021; Sanavi & Tarighat, 2014; Van Laar et al., 2017; Wang & Henderson, 2014; Wu et al., 2013; Zainuddin & Moore, 2003; Zhao et al., 2016). For instance, Davidson and Dunham (1997) investigated the teachability of critical thinking skills to EFL junior university students. Dividing the students into two classes, one class was taught only content-based intensive English while the other class was taught content-based intensive English and critical thinking skills. For collecting the required data, they administered a critical thinking test in order to check the critical thinking skills development. They proposed that critical thinking skills are teachable, and contribute to learners' success and engagement in educational settings.

In a similar vein, Liang and Fung (2021) examined the effect of exploratory talk and WebQuests on 125 English language students' critical thinking development in an elementary school in Hong Kong. The required data were collected through critical thinking tests, classroom observations, group discussions, writing tasks, and interviews with five English language teachers. The findings indicated that the students applied critical thinking in group discussions. Boumediene et al. (2021) investigated the influence of classroom debating on critical thinking. The results indicated that classroom debating contributed to the students' critical think skills. That is, class debate helped the students think more logically and easily perceive issues and data from different angles.

Itmeizeh and Hassan (2020) also attempted to incorporate critical thinking skills into a new EFL curriculum for EFL learners. They used a 32-item questionnaire to collect the required data from Palestinian teachers, students, policymakers and curricula designers. Reports on supervisors were also carried out to collect further data. The results indicated that most of the courses did not develop EFL students' critical thinking skills. However, they introduced a number of activities and strategies to enhance critical thinking skills.

Okolie et al. (2021) checked teachers' teaching processes through qualitative online survey and interview to see how teachers enhance students' critical thinking skills. The findings showed that teachers applied learner-centered approaches, teaching strategies, and setting issues and questions to improve students' critical thinking skills. Similarly, Marin and Halpern (2011) propose imbedded and explicit instructions as two modes of critical thinking instructions. In imbedded instruction the teacher tries to promote higher-order thinking skills indirectly, while in explicit instruction critical thinking skills are instructed directly. There have been substantial studies that have used one of these methods but little is known about their influence. Marin and Halpern (2011) compared explicit and imbedded instructions of critical thinking skills, assessed by Halpern Critical Thinking Assessment, of high school students. They indicated that students receiving

explicit instruction of critical thinking skills showed more improvements than those who received the imbedded instruction.

In the Iranian context, Ebadi and Rahimi (2018) explored the role of WebQuest in promoting critical thinking skills (i.e., inference, evaluation, analysis, inductive and deductive reasoning) of EFL learners. Ebadi and Rahimi collected the required data through pre- and post-tests using California Critical Thinking Skills Test Form B in both control and WebQuest groups (WebQuest-based classroom). The findings displayed that the WebQuest group outperformed the conventional group in developing the critical thinking skills of EFL learners. Similarly, Esfandiari et al. (2021) conducted a study to enhance Iranian EFL students' critical thinking through argument mapping techniques. The participating learners were 30 male- and 30 female-Iranian EFL learners at a private language institute. For data collection purposes, California Critical Thinking Skills Test was applied as the pre- and post-tests in two groups. The argument mapping techniques comprised structure reasoning, organization of information, recognizing different assumptions, evidence interpretations, argument evaluation, and communicating the conclusions. The results showed that argument mapping techniques improved the EFL students' critical thinking.

PURPOSE OF THE STUDY

The aforementioned studies showed that critical thinking, which is teachable, and scaffolding are highlighted by researchers in educational settings (e.g., Adoniou & Macken-Horarik, 2007; Marin & Halpern, 2011). Critical thinking skills play a central role in the success or failure of EFL and ESL learners (Ebadi & Rahimi, 2018; Esfandiari et al., 2021; Chamot, 1995; Davidson, 1994), and many techniques have been recommended by researchers to promote critical thinking skills in learners. However, as far as the literature shows, no systematic effort has been made so far to scaffold critical thinking skills. The present study, therefore, investigates the effect of scaffolding and implicit instructions on EFL learners' critical thinking

skills (i.e., inference, evaluation, analysis, inductive and deductive reasoning), so as to find a better instructional procedure for developing the learners' critical thinking skills. The findings may propose new insights into promoting EFL learners' critical thinking skills. Thus, to address the purpose of the study, the following research question is addressed:

> Are there any significant differences between scaffolding and implicit instructions in promoting EFL learners' critical thinking skills?

METHODO

Context of the Study

The mainstream formal schooling system in the context of the study (i.e., Iran) is mainly memorization-based and teacher centered. The teachers are the only authority in the class and occupy the sole position of imparting all the required knowledge/information to the learners. The leaners are the passive recipients of the knowledge/information and are encouraged to memories whatever they receive. Therefore, the learners are not provided with the opportunities to learn how to think critically. EFL learners applying critical thinking skills may be more active in the class, ask more questions, and make the received information meaningful for themselves. Although attempts have been made to conduct a student-centered approach several private language institutes, the learners' higher-order thinking skills, like critical thinking, are still not fostered. Hence, the learners in this study did not know about the concept of critical thinking.

Participants

The target population of the study was learners who learn English as a foreign language in the context of Iran. To meet certain practical criteria of the study, the convenience sampling method (Dörnyei, 2007) was adopted

to choose the learners of the study in a private language institute in Iran. Because of some administrative restrictions, an intact group design was adopted (Hatch & Lazaraton, 1991). There were two intact groups which were randomly taken as the experimental and control groups with ten 17 to 19-year-old learners each. The small number of EFL learners in each group helped us to conduct scaffolding and implicit instructions effectively. As learners in both groups were all male, sex was not regarded as the moderator variable. They were attending an IELTS course, three times a week, to develop their English language knowledge and to master the required language skills for the IELTS examination. They were all at the same proficiency level, as established by the standards of the institute. That is, a proficiency test was administered before grouping the learners in different classes. The present participants were found to be at the same proficiency level. Concerning the homogeneity of the participants in their critical thinking skills and to meet the main requirement of experimental research, The California Critical Thinking Skills Test (CCTST) form B was administered to both groups to control for their pre-tests.

Materials and Instruments

California Critical Thinking Skills Test Form B designed by Facione and Facione (1993) was administered to check the critical thinking of the students. It comprises 34 multiple choice questions of varying levels of difficulty. The CCTST is in five areas of inference, evaluation, analysis, inductive and deductive reasoning. The total score ranges from 1 to 34. The validity measures of the instrument were corroborated by Facione, Facione, Blohm, Howard and Giancarlo (1998) and the reliability was reported to be 0.78 which was acceptable. The CCTST administration took approximately one hour.

New Insight into IELTS which was designed by Jakeman and McDowell (2008) was determined by the language institute for IELTS candidates and used to prepare the learners for the IELTS examination. The

course-book comprises activities, tasks, and exercises for writing, speaking, listening, and reading skills, and the required strategies to deal with them successfully. Hence, the teacher had the opportunities to teach (implicitly) and scaffold critical thinking skills through all activities, tasks, and exercises related to the four English language skills.

Procedures

First, the CCTST form B was given to the EFL learners (i.e., the scaffoldees), as a pre-test, to assess their critical thinking skills (i.e., inference, evaluation, analysis, inductive and deductive reasoning). Next, in the experimental group, the critical thinking skills of the scaffoldees were scaffolded by the teacher (i.e., the scaffolder). Each session, the ZPD of the learners was checked against their ZPD in the previous session by clarifying whether they need explicit or implicit mediations in order to think critically through analyzing, evaluating, inferencing, inductive and deductive reasoning of the information they were exposed to. The assumption was that the more they required explicit mediations, the lower their ZPD (Poehner, 2005).

The critical thinking skills were scaffolded as follows: (a) the learners were encouraged to analyses the data by separating the pieces of the information and recombining it in various ways (i.e., analysis), (b) the learners were encouraged to explain and evaluate the credibility of one's reasoning based on relevant information (i.e., evaluation), (c) the teacher tried to make the learners do their best to comprehend the data, to clarify its meaning, to form a relevant hypothesis, and to draw conclusions (i.e., inference), (d) the learners were stimulated to pop-up some arguments, not through some steps but all of a sudden (i.e., deductive reasoning), (e) the learners were encouraged and stimulated to create some arguments through logical steps, namely step by step (i.e., inductive reasoning).

The following excerpt indicates how the teacher scaffolded the analysis skill while addressing the unreal conditionals.

S: If I take the bus I saved a lot of time.
M: If I take the bus I saved a lot of time.
S: If I took the bus I saved a lot of time.
M: Why?
S: Because it is unreal and we use the past in the if clause.
M: What about the other clause?
S: In the result clause we use would.
S: If I took the bus, I would save a lot of time.
M: Why? Would you say a little more about that?
S: We use the unreal conditionals to express an imagined condition and its imagined result.
M: What is the imagined condition in the example?
S: If I took the bus.
M: Why is that imagined condition?
S: Because in reality I did not take the bus.
M: And its imagined result?
S: I would save a lot of time.
M: Why is that imagined result?
S: Because I did not take the bus in reality, but I wish I took.

In the control group the teacher taught the same critical thinking skills implicitly (i.e., critical thinking skills were taught unconsciously) and scaffolding techniques were not applied in the process of teaching. The teacher taught critical thinking skills without directly informing the students about the skills. However, in the experimental group the hints and prompts were first provided indirectly, if the learner/learners could not apply critical thinking skills through indirect hints and prompt the teacher would provide less indirect and more explicit explanations of critical thinking skills until they came to apply the skills appropriately. Figure 1 shows the processes conducted in the scaffolding instruction class.

Figure 1: The processes carried out for the scaffolding instruction.

Figure 2 shows the processes conducted in the implicit instruction class.

Figure 2: The processes carried out for the implicit instruction.

In the control group, the learners received implicit instruction of critical thinking skills. That is, critical thinking skills were taught indirectly without highlighting them. However, in the experimental group, the learners were scaffolded by first providing implicit feedback and moving toward explicit feedback if need be. This means that in the experimental group the purpose was to help the learners gradually achieve their ZPD in critical thinking skills by providing both implicit and explicit feedback with different degrees. For the post-test, the teacher gave the learners, both experimental and control groups, the same critical thinking skills test.

Data Analysis

A paired-samples t-test was run to see if there was any significant development in EFL learners' critical thinking after applying the instructional procedures in the two groups. Independent-samples t-test was also used to check if there was any significant difference between the two groups' critical thinking.

Moreover, one-way Multivariate Analysis of Covariance (MANCOVA) was used to examine the influence of scaffolding and implicit instructions (i.e., independent variable) on the five skills of critical thinking (i.e., dependent variables), to explain within-group variance (as the critical thinking skills are interrelated), and to remove the effects of pre-tests. As there was more than one covariate, the one-way MANCOVA was run with contrasts and post hoc tests to identify the strength of the effect of each covariate.

RESULTS

Two instructional procedures (i.e., scaffolding and implicit instructions) were run to find a better instructional procedure to promote critical thinking skills in EFL learners. This section presents the results of the paired-samples t-test, independent-samples t-test, and one-way MANCOVA.

First, Table 1 shows the mean differences between the learners' pre-tests in both groups about their critical thinking skills.

Table 1: Descriptive statistics for the mean differences between the pre-tests of both groups.

Section	N	Mean	Std. Deviation	Std. Error Mean
Critical thinking (Experimental group)	10	.1970	.06550	.02071
Critical thinking (Control group)	10	.2210	.06008	.01900
Analysis (Experimental group)	10	.1870	.09056	.02864
Analysis (Control group)	10	.2200	.11595	.03667
Evaluation (Experimental group)	10	.1680	.11526	.03645
Evaluation (Control group)	10	.1620	.14281	.04516
Inference (Experimental group)	10	.2610	.13715	.04337
Inference (Control group)	10	.2970	.10436	.03300
Deductive reasoning (Experimental group)	10	.2330	.08870	.02805
Deductive reasoning (Control group)	10	.2840	.07351	.02325
Inductive reasoning (Experimental group)	10	.1750	.10565	.03341
Inductive reasoning (Control group)	10	.1400	.10435	.03300

As Table 1 indicated, there were slight differences between the pre-tests of both groups on critical thinking skills. Therefore, it was displayed that both groups' critical thinking skills were almost identical and the differences were not significant.

Critical Thinking

First, checking the normality of the data through Kolmogorov-Smirnov (i.e., EFL learners' pre-tests and post-tests on critical thinking skills), and checking for any possible outliers, the results revealed that the data for the

EFL learners' pre-tests and post-tests on critical thinking skills were normal in both groups.

To examine the effects of scaffolding and implicit instructions on EFL learners' critical thinking paired samples t-tests were used. Table 2 showed the mean difference between the learners' critical thinking in both groups and for both pre- and post-tests.

Table 2: Descriptive statistics for the amount of mean difference between the pre-test and post-test of the critical thinking in both groups.

	Mean	N	Std. Deviation	Std. Error Mean
Critical thinking (Ex-pre)	.1970	10	.06550	.02071
Critical thinking (Ex-post)	.4760	10	.04502	.01424
Critical thinking (Co-pre)	.2210	10	.06008	.01900
Critical thinking (Co-post)	.3110	10	.03755	.01187

As Table 2 indicates, in both groups the mean scores for critical thinking in post-tests were higher than the pre-tests.

Table 3 shows the difference in the learners' critical thinking in both groups and for both pre- and post-tests.

Table 3: Paired Samples t-test for the difference between the pre-test and post-test of the learners' critical thinking in both groups.

	Mean	Std. Deviation	Std. Error Mean	t	df	Sig. (2-tailed)
CT-Ex	-.27900	.04254	.01345	-20.738	9	.000
CT-Co	-.09000	.05657	.01789	-5.031	9	.001

As Table 3 shows, significant differences were found between the learners' critical thinking in the pre-tests and post-tests. As a result, the two instructional procedures (i.e., scaffolding and implicit instructions) significantly promoted the learners' critical thinking.

Independent-samples t-test was applied to identify the pre- and post-tests differences between the two group's critical thinking. Table 4 reveals

the differences between the pre- and post-tests of the two groups' critical thinking.

Table 4: Independent samples t-test for the difference between the pre-test and post-test of both groups.

	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
CT (pre)	.130	.722	-.854	18	.404	-.02400	.02811
CT (post)	.722	.407	8.901	18	.000	.16500	.01854

As Table 4 indicates, no significant differences were found between the pre-tests of both groups' critical thinking. However, there were significant differences between the post-tests of both groups' critical thinking.

Critical Thinking Skills

To examine the effects of the independent variable (i.e., scaffolding and implicit instruction) on the dependent variables (i.e., critical thinking skills) the final one-way MANCOVA was run. Table 5 indicates the mean differences between the post-tests of both groups before controlling the pre-tests.

Table 5: Descriptive statistics for the mean differences between the post-tests of both groups before controlling the pre-tests.

	Group	Mean	Std. Deviation	N
Analysis (Post-test)	Experimental	.4510	.09632	10
	Control	.3300	.07333	10
Inference (Post-test)	Experimental	.5040	.11384	10
	Control	.3780	.07099	10
Evaluation (Post-test)	Experimental	.4670	.12815	10
	Control	.3020	.11708	10
Deductive (Post-test)	Experimental	.4280	.07052	10
	Control	.3660	.07575	10
Inductive (Post-test)	Experimental	.4520	.13661	10
	Control	.3020	.11708	10

Table 6 presents the MANCOVA results which compared the post-test scores by controlling for the pre-test scores.

Table 6: Tests of between-subjects effects for the influence of covariates and the independent variable on the dependent variables.

Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.
Analysis (post)	.078	1	.078	10.372	.007
Inference (post)	.093	1	.093	21.359	.000
Evaluation (post)	.054	1	.054	8.471	.012
Deductive (post)	.029	1	.029	6.929	.021
Inductive (post)	.036	1	.036	4.841	.046

As the results in Table 6 reveals, by controlling for the pre-tests, the direct effect of scaffolding was significant for all critical thinking skills (i.e., inference, evaluation, analysis, inductive and deductive reasoning).

Finally, Bonferroni adjustment was used to correct the degrees of freedom, to adjust the confidence interval, and to account for multiple pairwise tests. Table 7 presents the results for pairwise comparisons to test which differences between the two groups are significant.

Table 7: Pairwise comparisons for comparing the means of both groups.

Dependent Variable	(I) Section	(J) Section	Mean Difference (I-J)	Std. Error	Sig.[b]
Analysis (Post-test)	E	C	.136*	.042	.007
	C	E	-.136*	.042	.007
Inference (Post-test)	E	C	.149*	.032	.000
	C	E	-.149*	.032	.000
Evaluation (Post-test)	E	C	.114*	.039	.012
	C	E	-.114*	.039	.012
Deductive (Post-test)	E	C	.084*	.032	.021
	C	E	-.084*	.032	.021
Inductive (Post-test)	E	C	.093*	.042	.046
	C	E	-.093*	.042	.046

Following the estimated marginal means.

*. Significant at.05.

b. Bonferroni, adjusting the multiple comparisons.

As Table 7 reveals, regarding all the dependent variables the difference between the two groups was significant, and the experimental group outperformed the control one. Therefore, scaffolding was found to be a better way to promote the EFL learners' critical thinking skills than its implicit instruction counterpart.

DISCUSSION

The present study examined the impact of scaffolding and implicit instructions on EFL learners' critical thinking skills (i.e., inference, evaluation, analysis, inductive and deductive reasoning). The results displayed that critical thinking skills significantly developed through scaffolding and implicit instructions and scaffolding instruction was more influential in promoting all the critical thinking skills than implicit instruction.

The findings of the present study are in line with the findings of Ebadi and Rahimi's (2018) research findings in which they indicated EFL learners' critical thinking improvements in five areas of inference, evaluation, analysis, inductive and deductive reasoning after applying peer-mediation procedures in a WebQuest classroom. The findings in this regard are also in line with those of Wass et al. (2011) who found scaffolding techniques to be effective in developing critical thinking. The findings could be also in agreement with the findings of Marin and Halpern (2011), Hernstein et al. (1986), and Zohar et al. (1994) who showed that critical thinking could be developed by both explicit and implicit instructions.

The success of applying scaffolding techniques in this study provided evidence that teaching critical thinking skills were feasible for advanced EFL learners. The findings indicate that critical thinking skills could be promoted in the classroom if the teacher scaffolds the critical thinking skills of the learners. The teacher could help the learners, who are regarded as the less capable learners, to reach the zone of the proximal development area in critical thinking skills. The less capable learners also

developed critical thinking skills by modelling the behavior of the teacher and also the expert peers.

Although learners in both groups showed improvements in critical thinking skills, the improvements were higher for the scaffolding instruction group. The findings are in line with Vygotsky's developmental model of ZPD. Vygotsky (1981) claims that learners' abilities are not obtained from independent performance. He argues that the learners' abilities would come to light if scaffolding instruction be conducted in the class. He further claims that scaffolding instruction can identify the learners' abilities and it could help them deal with their language learning issues.

Following Vygotsky's (1986) ZPD, learners are first provided with implicit feedback. If learners receiving implicit feedback are not able to deal with their language issues, the learners are provided with less implicit and more explicit feedback so as to successfully deal with their language issues. Vygotsky's (1986) ZPD follows the tenet that less capable individuals are provided with the aforementioned gradual feedback by more capable individuals. That is, more capable students and the teacher provide the less capable students with the required mediations or feedback so that the less capable learners can deal with the issue.

In line with this study, Van de Pol and Elbers (2013) suggest that teacher scaffolding is regarded as quite effective in developing student learning. Adoniou and Macken-Horarik (2007) further argue that scaffolding instruction is appropriate for English language teaching which can be in consistent with the findings of the present study. Teachers as more capable individuals are able to help less capable individuals (i.e., learners) achieve their ZPD. Vygotsky (1981) claims the initial production in social interaction led to the psychological processes. He further suggests that learning occurs in interaction.

Furthermore, there is a close association between inter-personal activity and intra-personal activity and the former happens before the latter (Vygotsky, 1981). That is, following Bruner (1985), Asmali (2018), and Lantolf and Thorne (2006), students are first involved in inter-personal

activities (in this study, critical thinking activities) to help each other develop their skills, then they gradually internalize those skills and act independently (in this study, they became independent critical thinkers).

Scaffolding, in the present study, constructed ZPD for the learners, and promoted critical thinking skills. As a result, inter-personal activities between the learners (less capable) and the teacher (i.e., the more capable) developed intra-personal activities in learners (i.e., the promotion of critical thinking skills in the present study). This development in the learners' critical thinking skills made them consider different perspectives of that issue, challenge various conceptions, and check for any possible alternatives so that to come to a reasonable and meaningful understanding (Halvorsen, 2005).

Zainuddin and Moore (2003) suggests that if the language becomes manageable, students can apply higher levels of critical thinking and understand more difficult issues. He also claims that in order to develop critical thinking in students, teachers first have to make instruction comprehensible to students who are still grappling with their new language. Hence, complex pieces of information must be broken down using easier language and apply scaffolding strategies before cognitively demanding information can be accessible to them.

In addition, the scaffolding instruction follows learner-centered techniques. That is, learners are involved in different activities with other learners to improve their skills and abilities. In line with the present study, Okolie et al. (2021) claim that learner-centered approaches and teaching strategies can improve critical thinking skills effectively.

The findings also indicated that critical thinking skills could be significantly developed through implicit instruction. The findings are in agreement with those of Hernstein et al. (1986) and Zohar et al. (1994) who showed that critical thinking can be developed by both explicit and implicit instructions. The findings of this study are in line with the findings of Marin and Halpern (2011) who compared explicit and imbedded instructions of critical thinking skills. Although they indicated explicit instruction of

critical thinking skills as more effective, they claimed that imbedded instruction could indeed be effective in increasing critical thinking skills. In the scaffolding instruction class depending on the learners' ZPD, both indirect (i.e., implicit) hints and prompts and direct (i.e., explicit) explanations were provided to contribute to their ZPD.

It could thus be argued that critical thinking skills could be teachable (Esfandiari et al., 2021) and they can be improved through both implicit and scaffolding instructions. However, scaffolding instruction is a more effective way to help EFL learners get their ZPD in critical thinking skills.

CONCLUSION AND IMPLICATIONS

The present study set out to check the influence of scaffolding and implicit instructions on EFL learners' critical thinking skills. The findings indicated that scaffolding and implicit instructions had a significant and positive influence on the EFL learners' critical thinking skills. Specifically, scaffolding instruction outperformed implicit instruction in increasing the critical thinking skills of EFL learners.

Scaffolding instruction as an influential way to increase critical thinking skills in learners, might help teachers to develop their learners' learning more effectively. Particularly, EFL teachers are recommended that they should apply scaffolding techniques to develop EFL learners' critical thinking skills, which is considered an important goal of education (Bailin & Siegel, 2003), more effectively. EFL learners, specifically less capable learners, can use the findings of the present study. The more capable EFL learners can scaffold the less capable learners' critical thinking skills to reach their ZPD. The more capable learners or teachers may first provide the less capable learners with implicit critical thinking mediations. If the leass capable learners are not able to address the critical thinking issue by the received implicit mediations, the teacher or more capable learners can provide less implicit or more explicit critical thinking mediations in order to help the less capable learners achieve their ZPD in critical thinking skills.

EFL educators are also recommended to acknowledge the usefulness of scaffolding techniques in promoting the critical thinking skills of EFL learners. The findings might further contribute to material and textbook designers to make textbooks that include techniques to easily conduct scaffolding instruction in order to increase critical thinking skills.

Despite the positive outcome of the study, there were some limitations that may guide researchers to carry out further research. For example, the researchers did not use random selection. In addition, although the number of learners in each group was small, which allowed the teacher to scaffold all the learners appropriately, it might lack generalizability to the larger population. The researchers should conduct a similar study and adopt group randomization and a larger number of EFL learners for generalization. In addition, future researchers can scaffold critical thinking skills using online platforms, like wiki (Rahimi & Fathi, 2021), blog (Fathi & Nourzadeh, 2019) and check the attitudes of EFL learners (e.g., Nasri, Shafiee, & Sepehri, 2021).

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References

Adoniou, M., & Macken-Horarik, M. (2007). Scaffolding literacy meets ESL: Some insights from ACT classrooms. *TESOL in Context*, *17*(1), 5-11.

Akatsuka, Y. (2021). A Pedagogical Approach to Foster Critical Thinking Skills in Japanese EFL Learners: Focusing on the International Baccalaureate's

Pedagogical Framework. In *Educational Reform and International Baccalaureate in the Asia-Pacific* (pp. 37-56). IGI Global.

Asmali, M. (2018). Perspectives and practices of academics and students of English language teaching post-graduate programs within the mediation theory. *International Journal of Educational Psychology*, *7*(1), 42-67.

Bailin, S. & Siegel, H. (2003) Critical thinking. In N. Blake, P. Smeyers, R. Smith & P. Standish (Eds), *The blackwell guide to philosophy of education* (pp. 183-193). Oxford, Blackwell.

Barzdžiukienė, R., Urbonienė, J., & Klimovienė, G. (2006). Developing critical thinking through cooperative learning. *Studies about Languages, 9*, 77-84.

Boumediene, H., & Berrahal, F. K. (2018). Fostering critical thinking among EFL students through web communication tools. *Internet Journal for Cultural Studies, 5*, 26-32.

Boumediene, H., Hamadi, N. A., & Fatiha, B. K. (2021). Classroom debate to enhance critical thinking skills. *Des Sciences Sportif Et Sociales, 4*(7), 441-457.

Brookfield, S. D. (1987). *Developing critical thinkers: Challenging adults to explore alternative ways of thinking and acting*. San Francisco: Jossey-Bass.

Bruner, J. (1985). Child's talk: Learning to use language. *Child Language Teaching and Therapy*, *1*(1), 111-114.

Bruning, R. H., Schraw, G. J., Norby, M. M., & Ronning, R. R. (2004). *Cognitive psychology and instruction*. Upper Saddle River, NJ: Meril Prentice Hall.

Chamot, A. (1995). Creating a community of thinkers in the ESL/EFL classroom. *TESOL Matters*, *5*(5), 1-16.

Chapple, L., & Curtis, A. (2000). Content-based instruction in Hong Kong: Student responses to film. *System, 28*, 419-433.

Cho, M. H., & Cho, Y. (2014). Instructor scaffolding for interaction and students' academic engagement in online learning: Mediating role of perceived online class goal structures. *The Internet and Higher Education*, *21*, 25-30.

Cui, R. (2020). "Developing Students' Critical Thinking in a Chinese EFL Classroom". Unpublished doctoral diss., Nanyang Technological University, Singapore.

Davidson, B. (1994). Critical thinking: A perspective and prescriptions for language teachers. *The Language Teacher, 18*(4), 20-26.

Davidson, B., & Dunham, R. (1997). Assessing EFL student progress in critical thinking with the Ennis-Weir Critical Thinking Essay Test. *JALT Journal, 19*(1), 43-57.

Dörnyei, Z. (2007). *Research methods in applied linguistics*. Oxford: Oxford University Press.

Ebadi, S., & Rahimi, M. (2018). An exploration into the impact of WebQuest-based classroom on EFL learners' critical thinking and academic writing skills: a mixed-methods study. *Computer Assisted Language Learning*, 1-35. https://doi.org/10.1080/09588221.2018.1449757

Esfandiari, M. A., Rezvani, E., & Hadian, B. (2021). Impact of critical thinking instruction through argument mapping techniques on Iranian male and female EFL learners' critical thinking ability and reading skill. *Research in English Language Pedagogy, 9*(1), 70-89.

Facione, P. A. (1990). *The California critical thinking skills test (CCTST): Form A*. Millbrae, CA: California Academic Press.

Facione, P. A., & Facione, N. C (1993). The California critical thinking skills test: Form A and form B, test manual. *Callifornia Academic Press*.

Facione, P.A., Facione N. C., Blohm, S., Howard, K., & Giancarlo, C. (1998). The California critical thinking skills test manual. *California Academic Press*.

Fathi, J., & Nourzadeh, S. (2019). Examining the effects of writing instruction through blogging on second language writing performance and anxiety. *Issues in Language Teaching, 8*(1), 63-91.

Halvorsen, A. (2005). Incorporating critical thinking skills development into ESL/EFL courses. *The Internet TESL Journal, 11*(3), 1-5.

Hatch, E., Lazaraton, A., 1991. *The Research Manual: Design and Statistics for Applied Linguistics*. Heinle & Heinle Publishers, Boston, Massachusetts.

Hernstein, R. J., Nickerson, R. S., de Sanchez, M., & Swets, J. A. (1986). Teaching thinking skills. *American Psychologist, 41*(11), 1279.

Itmeizeh, M., & Hassan, A. (2020). New approaches to teaching critical thinking skills through a new EFL curriculum. *International Journal of Psychosocial Rehabilitation, 24*(7), 8864-8885.

Jakeman, V., & McDowell, C. (2008). *New insight into IELTS: Student's book pack with answers and CD*. Ernst Klett Sprachen.

Khabiri, M., & Firooz, M. (2013). The comparative effect of practicing cooperative learning and critical thinking on EFL learners' writing. *Issues in Language Teaching, 1*(2), 371-394.

Lantolf. J. P., & Thorne. S. L. (2006). *Sociocultural theory and the genesis of second language development*. Oxford University Press.

Larsson, K. (2021). Using essay responses as a basis for teaching critical thinking–A variation theory approach. *Scandinavian Journal of Educational Research, 65*(1), 21-35.

Li, L. (2016). Thinking skills and creativity in second language education: Where are we now? *Thinking Skills and Creativity, 22*, 267–272.

Liang, W., & Fung, D. (2021). Fostering critical thinking in English-as-a-second-language classrooms: Challenges and opportunities. *Thinking Skills and Creativity, 19*, 97-111.

Liaw, M. (2007). Content-based reading and writing for critical thinking skills in an EFL context. *English Teaching & Learning, 31*(2), 45–87.

Marboot, K., Roohani, A., & Mirzaei, A. (2020). Investigating Iranian EFL students' metacognitive online reading strategies, critical thinking, and their relationship: A mixed-methods study. *Issues in Language Teaching, 9*(1), 151-182.

Marin, L. M., & Halpern, D. F. (2011). Pedagogy for developing critical thinking in adolescents: Explicit instruction produces greatest gains. *Thinking Skills and Creativity, 6, 1-13.*

Mok, K. H. (2010). *The search for new governance of higher education in Asia*. Palgrave Macmillan.

Nasri, M., Shafiee, S., & Sepehri, M. (2021). An Investigation of Iranian Intermediate EFL Learners' L2 Motivation and Attitude in a Computer-Assisted Language Learning Environment. *Issues in Language Teaching, 10*(1), 355-389.

Okolie, U. C., Igwe, P. A., Mong, I. K., Nwosu, H. E., Kanu, C., & Ojemuyide, C. C. (2021). Enhancing students' critical thinking skills through engagement with innovative pedagogical practices in Global South. *Higher Education Research & Development*, 1-15.

Poehner, M. E. (2005). *Dynamic assessment of oral proficiency among advanced L2 learners of French*. Unpublished dissertation. Pennsylvania State University, University Park.

Rahimi, M. (2015). Scaffolding reading strategies of EFL learners. *International Journal of Educational Investigations*, *2*(8), 71-77.

Rahimi, M., & Fathi, J. (2021). Exploring the impact of wiki-mediated collaborative writing on EFL students' writing performance, writing self-regulation, and writing self-efficacy: a mixed methods study. *Computer Assisted Language Learning*, 1-48.

Sanavi, R. V., & Tarighat, S. (2014). Critical thinking and speaking proficiency: A mixed-method study. *Theory and Practice in Language Studies*, *4*(1), 79-87.

Soodmand Afshar, H., & Rahimi, M. (2014a). The relationship among emotional intelligence, critical thinking, and speaking ability of Iranian EFL learners. *Teaching English Language*, *8*(1), 31-59.

Stone, C. A. (1998). The metaphor of scaffolding its utility for the field of learning disabilities. *Journal of learning disabilities*, *31*(4), 344-364.

Van de Pol, J., & Elbers, E. (2013). Scaffolding student learning: A micro-analysis of teacher–student interaction. *Learning, Culture and Social Interaction*, *2*(1), 32-41.

Van Laar, E., Van Deursen, A. J., Van Dijk, J. A., & De Haan, J. (2017). The relation between 21st-century skills and digital skills: A systematic literature review. *Computers in Human Behavior*, *72*, 577-588.

Vygotsky, L. S. (1981). The genesis of higher mental functions. In J. V. Wertsch (Ed.), *The concept of activity in Soviet psychology* (pp. 144-188). Sharpe.

Vygotsky, L. S. (1986). *Thought and Language*. MIT Press.

Wang, Y., & Henderson, F. (2014). Teaching content through Moodle to facilitate students' critical thinking in academic reading. *Asian EFL Journal*, *16*(3), 7740.

Wass, R., Harland, T., & Mercer, A. (2011). Scaffolding critical thinking in the zone of proximal development. *Higher Education Research & Development*, *30*(3), 317-328.

Wood, D. J. (1988). *How children think and learn*. Basil Blackwell.

Wood, D. J., Bruner, J. S., & Ross, G. (1976). The role of tutoring in problem solving. *Journal of child psychology and psychiatry*, *17*(2), 89-100.

Wu, W. C. V., Marek, M., & Chen, N. S. (2013). Assessing cultural awareness and linguistic competency of EFL learners in a CMC-based active learning context. *System*, *41*(3), 515-528.

Yang, Y. T. C., & Chou, H. A. (2008). Beyond critical thinking skills: Investigating the relationship between critical thinking skills and dispositions through different online instructional strategies. *British Journal of Educational Technology*, *39*(4), 666-684.

Yang, Y. T. C., Chuang, Y. C., Li, L. Y., & Tseng, S. S. (2013). A blended learning environment for individualized English listening and speaking integrating critical thinking. *Computers & Education*, *63*, 285-305.

Zainuddin, H., & Moore, R. A. (2003). Enhancing critical thinking with structured controversial dialogues. *The Internet TESL Journal*. Retrieved July 10, 2007, from http://iteslj.org/Technique/Zainuddin-Controversial.html

Zhao, C., Pandian, A., & Singh, M. K. M. (2016). Instructional strategies for developing critical thinking in EFL classrooms. *English Language Teaching*, *9*(10), 14-21.

Zohar, A., Weinberger, Y., & Tamir, P. (1994). The effect of the biology critical thinking project on the development of critical thinking. *Journal of Research in Science Teaching*, *31*(2), 183-196.