

Original Article

Comparative Effects of Technology-, Motivational-, and Metacognitive-based Scaffolding on Male and Female Iranian Adult Advanced EFL Learners' Speaking

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Abstract

There is growing interest in integrating scaffolding in educational decisions everywhere including Iran. Drawing on sociocultural theory, this quasi-experimental study was aimed to determine the effect of technology-, motivational-, and metacognitive-based scaffolding on improving Iranian adult advanced EFL learners' speaking. A sample of 90 advanced EFL learners was selected non-randomly based on their performance on Certificate in Advanced English (CAE) from two language institutes in Tehran, Iran during the summer and autumn semesters of 2019. The selected participants were randomly assigned to three equal groups. IELTS was used to compare their language proficiency at the beginning and the end of the study. Scaffolding provided conditions for learners to highly engage in speaking activities. The results of paired-sample t-tests revealed a significant improvement in the speaking scores of the three study groups. The results of the one-way ANOVA and Scheffe post-hoc tests indicated that motivational-based scaffolding was more conducive to enhance Iranian EFL learners' speaking. The results of this study showed the positive impacts of integrating scaffolding into different language learning strategies, and this may carry pedagogical implications for both language teachers and learners.

Keywords: EFL learners, English speaking, Metacognitive-based scaffolding, Motivational-based scaffolding, Technology-based scaffolding

1. Introduction

Taking nonnative speakers of English into due consideration to develop their speaking skills formulating a well-established approach to teaching them how to become efficient foreign language speakers has obsessed EFL/ESL researchers' thoughts for so long (Leong & Ahmadi, 2017). In this regard, English learners usually complain about the burden and difficulty of language learning despite the existence of plenty of methods for language instruction. For example, Myles (2017) pointed out that what provokes young children is the fun of language learning, not the teaching method. Therefore, a void of another approach to assist learners in becoming more efficient language learners is genuinely felt.

Thus, in this regard, it can be argued that the application of scaffolding as discussed in Vygotsky's Zone of Proximal Development (ZPD) is contributing to formulating a workable approach to language learning. In Vygotskian theory, scaffolding constitutes the main mechanism of internalization and a vital component of developmental activity in the ZPD (Guerrero & Commander, 2013). In this regard, ZPD defines those functions that have not still been matured but are of course in the process of maturation, functions, which reach maturity in the future but currently are in an embryonic state (Vygotsky, 1987). ZPD can also be described as the area between what a learner can do by himself/herself and that which can be attained with the help of a more knowledgeable peer or adult. Scaffolding as presented in Vygotsky's ZPD yield desirable outcomes in language learning; learners have been introduced to find themselves in full control of their learning and they might put themselves on the path of being self-regulated and autonomous. It should be mentioned that self-regulation and autonomy could pretty well contribute to the whole process of second language learning.

Alias (2012) classified scaffolds into three main categories called cognitive, metacognitive, and affective or motivational scaffolds. Alias mentioned that while cognitive and metacognitive scaffolds provide assistance, support, hints, prompts, and suggestions regarding the content, resources, and strategies relevant to problem-solving and learning management, motivational scaffolds involve techniques designed to maintain or improve the learner's motivational state, such as attribution or encouragement.

It was also argued that scaffolds should be presented to stimulate learners' motivation while they attain conceptual knowledge. Chen (2014) elicited from the theory

of the zone of motivational proximal development (Brophy, 1999) as well as self-determination theory (Deci & Ryan, 2008) to pose the possibility of creating scaffolding strategies that promote intrinsic and extrinsic motivation. Belland, Kim, & Hannafin (2013) similarly stated that although all kinds of the scaffold are aimed to make learning tasks more controllable which, in turn, improve success expectancies and contribute to motivation. Scaffolding activities are designed specifically to help learners in keeping their motivation and interest.

Concerning the studies conducted on motivation, Belland et al. (2013) presented an exhaustive list of practical instructions for motivational-based scaffolding (MoBS) through establishing task value, improving mastery objectives, enhancing the sense of belonging, stimulating emotion regulation, promoting success expectancy, and encouraging autonomy. The list consists of seventeen guidelines clarified through one or more scaffolding strategies. For example, Belland et al. (2013), regarding the findings of a study conducted by Thoman et al. (2013), introduced the utilization of peer-modeling to help learners view the task as neither too difficult nor too easy as a classroom scaffolding strategy. This type of scaffolding technique addresses the purpose of improving the attitude of optimal challenge which instead is listed among the guidelines offered for promoting success expectancy.

Due to the widespread availability of technology options, the integration of technology in learning has become a practical and affordable choice so that e-book and multimedia learning was born out of the adoption of this technological advancement (Gertner, 2011). Technology has made information readily more accessible to teachers and pupils than it used to be. Technological advancements have led to a marked increase in the use of learning opportunities and instructions that integrate various media including static text, animated text, aural narratives, static diagrams, pictures, photographs, animations, and video. Using technology-based scaffolding (TBS) appropriately, researchers assist learners' memory by converting abstract concepts into the concrete.

Scaffolding techniques consist of provided adaptable opportunities for students to use their insight, abilities, and strategies in various settings and for different purposes. According to Hogan and Pressley (1997), there are eight principles for scaffolding-based instruction (SBI) that were used as general guidelines in this study. The SBI should pre-engage the learners, create a shared goal, actively recognize learners' needs and

understandings, provide appropriate assistance, keep and follow the target, give feedback, control the disappointment and risk, and help internalization, independence, and generalization to other contexts. Moreover, some other characteristics of SBI include a positive learning atmosphere, positive classroom management, monitoring, problem-solving activities using learning strategies, increasing learners' self-regulation, enhancing the value of doing tasks and learning, and rising learners' hope of success (Raphael, Pressley, & Mohan 2008).

2. Literature Review

2.1. Scaffolding and Theoretical Framework

Scaffolding, as a new approach to language instruction, is mainly rooted in both Vygotsky's sociocultural theory of mind (SCT), on the one hand, and in his concept of the ZPD on the other hand. According to SCT, the process of learners' development is a clue to analyze their cognitive abilities. Scaffolding is a teaching strategy in which the teacher provides peculiar support to accelerate the student's development. With the help of the teacher, the student will achieve new skills and enhance prior knowledge (Vygotsky, 1978). A major justification for including scaffolding as part of learning practice is the Vygotskian theoretical framework of SCT. SCT focuses on social interactions in learning where meaning emanates from the use of mediating tools (Behroozizad, Nambiar, & Amir, 2014). Vygotsky asserts that the effectiveness of learning depends on the nature of the social interaction between two or more people with different levels of skills and knowledge. The term scaffolding was developed by Wood, Bruner, and Ross (1976). Scaffolding is a metaphor indicating the kind of assistance provided by a teacher or peers to support learning. When a learner is unable to understand a concept or do a task, the teacher offers scaffolding to help him/her master the task or concept that is beyond the learner's capability. Moreover, permitting the student to accomplish as many of the unassisted tasks as possible is an important characteristic. It is expected that learners make mistakes but they are minimized with teacher feedback and prompting, therefore, the learners would be able to achieve the task or goal. When the learners manage or grasp the task, the teacher initiates the process of fading that gradually removes the scaffolding, and allows learners to perform independently. Hence, scaffolding is defined as "a bridge used to build upon what students already know to arrive at something they do not know. If

scaffolding is properly administered, it will act as an enabler, not as a disabler” (Benson, 1997, p. 18).

According to Benson (1997), various facilitative techniques contribute to implementing scaffolded instruction. They include breaking the task into smaller pieces and more manageable parts, utilizing thinking aloud protocol or articulating thinking processes when completing a task, cooperative learning, interpersonal communication, concrete clues, question and answer, coaching and cue cards or modeling which promote group work, activating learners’ background knowledge, giving tips, strategies, cues, and procedures. In performing different techniques, teachers must take care of keeping the learner in the process of doing the task while declining the learner’s stress level.

2.2. Motivational-, Metacognitive-, and Technology-based Scaffolding

Alias (2012) argued that most studies conducted in the realm of scaffolding address cognitive and metacognitive-base scaffolding (MeBS). It was suggested implementing motivational scaffolds through the use of strategies that elicit and reward learners’ confidence and make learners’ achievements more explicit. For the same reason, Belland, et al. (2013) and Chen (2014) focused their attention on the lack of research on motivational scaffolds and the need for designing and performing research on scaffolds meeting the learners’ motivational needs. Chen (2014) highlighted the necessity of designing scaffolds that “not only focus on students’ features such as cognitive status but psychological traits that affect their learning” (p. 342).

Previous studies investigated the impact of motivational scaffolds on learning (Tuckman, 2007), and motivation (Rebolledo-Mendez, du Boulay, & Luckin, 2006). Efklides (2011) presented a model of self-regulation to demonstrate the existence of an interaction between motivation and metacognition as two components of self-regulated learning. The third component of the model is affect. So far, despite the presence of an established theoretical relationship between motivation and metacognition (Efklides), a very scarce number of studies recently investigated the relationship between motivation and metacognition (e.g., Jiang & Kleitman, 2015). Also, “research on motivational or affective scaffolding is relatively scarce” (Alias, 2012, p. 138), and it is necessary to conduct more studies on the utilization of scaffolds to promote motivation in educational environments (Bellad et al., 2013; Chen, 2014). Panadero and Järvelä (2015) called for

studies investigating the factors and conditions that contribute to the promotion of socially-shared metacognition. Therefore, the present study is designed based on the effects of motivational scaffolding and metacognitive activities, as recommended by Belland et al. (2013) on Iranian English language learners' speaking ability

TBS with its interactive nature is a language learning scaffolding in which the computer is used as a tool for presentation, assisting students, and evaluating the materials. The interactivity of TBS lies in providing instant response and assistance for learners' actions. Technology and the internet provide EFL learners with the chance to employ the language that they are learning in reasonable ways in authentic situations. Another benefit of using the internet and computer technology is based upon the opportunities it provides for cooperation and collaboration with one's peers. Additionally, the new technology offers EFL teachers an opportunity to give their learners individual and personalized guidance more effectively with a constantly growing number of available educational resources.

2.3. Empirical Studies

Tan and Tan (2010) used a metacognitive scaffolding strategy to enhance Chinese language speaking skills using audio blogs. The intervention concentrated on scaffolding students in the metacognitive reflection of their English speaking. The students took a systematic method in their reflection: evaluating, monitoring, and planning with a greater amount of attention dedicated to the monitoring strategy. A significant improvement in the mean pre- to post-test oral speaking scores was observed, which demonstrated the advantages of this approach.

Furthermore, developing a content-based CALL tool for training L2 listening through multimedia, Hsu and Chang (2010) examined the effects of automatic hidden caption classification on L2 listening of 51 Chinese students. The system automatically provided instant vocabulary translation and classification to users whenever they paused while watching videos. Listening comprehension and vocabulary test results showed that automatic classification, concealment, and interpretation of words resulted in more listening comprehension.

Sardegna and McGregor (2013) investigated the effects of student-centered instruction combined with teacher scaffolding on learners' pronunciation. The results

showed that the target features were improved because of effective teacher scaffolding. It was proved that teachers developed learners' pronunciation practice by scaffolding students' self-regulated attempts.

Scaffolding creates an interactive learning environment, which decreases the learners' barriers in doing communicative activities, increases their confidence, and helps overcome their embarrassment. In a relatively similar way, Gagné and Parks (2013) used sociocultural theory to investigate scaffolding in cooperative learning tasks by ESL learners. It was found that scaffolded cooperative tasks were capable of engaging in language learning.

Rahmah and Nurjannah (2016) pointed out three features of successful speaking. First, the learners speak as much as possible in the specified time during the activity and participation. Second, the discussions are not directed by a minority of active participants, but all have equal chances to participate. Third, the learners' motivation is high in a way that they are all enthusiastic about speaking.

Yuanhua and Guocai (2016) combined the scaffolding theory with oral English teaching to stimulate the learners' interests and improve their speaking ability in English. The results of the analysis of the content of language teaching in the oral class indicated that the use of scaffolding, from a constructivist perspective, in the oral class is very important and practical in current education research, and can be applied in oral English teaching.

Berenji and Saeidi (2017) compared the cognitive scaffolding, motivational levels, and also academic achievement of 80 EFL students after implementing technology-mediated instruction and found its significant impact on the academic attainment of the students. The results demonstrated that technology-mediated learning led to cognitive scaffolding and the students in the experimental group surpassed the control group in terms of motivation and academic achievement.

Hasan (2018) used MoBS on the obtaining of writing skills in the L2 situation. The results showed that how the teachers, as well as the students, pursued similar trends in understanding the scaffolding technique in the obtaining of writing skills. He found that to solve the issues of weak and inadequate written communication skills of the students, the use of effective motivational scaffolding techniques is the most suitable in the current L2 situations.

Cheung (2018), evaluated the effect of instructors' use of motivational strategies on students' motivation in writing in a mixed-method study. The data were gathered from three hundred and forty-four first-year undergraduate students via classroom observation and surveys. The results demonstrated that the use of strategies in creating students' initial motivation in the classroom strengthened students' perception and self-confidence in the writing course fundamentally.

Ginaya, Aryana, and Somawati (2018) investigated the effects of utilizing scaffolding on the speaking ability of 50 students through the use of a teaching diary, observation sheets, and questionnaires. Findings showed that learners could improve their speaking ability as a result of using the scaffolding technique.

Ahmad et al. (2019) investigated the use of metacognitive scaffolding in a social environment on students' success. They worked based on a framework developed by Jumaat and Tasir (2016). At first, a survey on students' perceptions through Facebook as a base for instructor scaffolding was conducted. Afterward, improvements in students' learning were evaluated after the mediation from metacognitive scaffolding. The results showed that there was a significant difference in students' performance before and after the mediation from metacognitive scaffolding.

Since developing language proficiency is the most prominent purpose of EFL learners, it seems that the present study could fill the gap in the literature by providing a more comprehensive picture concerning the use of effective scaffolding strategies. This study would make it feasible to believe more in providing situations in language classes that encourage using scaffolding. Therefore, the present study aimed to find the effect of TBS, MoBS, and MeBS on improving Iranian adult advanced EFL learners' speaking. The following research questions were posed to address the purpose of the study:

1. Does TBS significantly affect Iranian adult advanced EFL learners' speaking ability?
2. Does MeBS significantly affect Iranian adult advanced EFL learners' speaking ability?
3. Does MoBS significantly affect Iranian adult advanced EFL learners' speaking ability?
4. Which type of scaffolding has a more significant effect on Iranian adult advanced EFL learners' speaking ability?

3. Methodology

3.1. Design and Context of the Study

A quasi-experimental research method design was employed to run this study. The independent variables were MoBS, MBS, and TBS and the dependent variable was learners' speaking skills. The participants were both male and female advanced learners. Therefore, the level of language proficiency and gender were control variables. Some extraneous variables were controlled by taking into account some factors such as time of day, location, noise, and researchers' characteristics. The use of three innovative techniques in the classroom provided similar conditions for the participants and it made them not be affected by the innovativeness of the teaching methods. The sampling procedure was carried out in two branches of Jahad language institutes located in Tehran, Iran during the summer and autumn terms by 2019.

3.2. Participants

For this study, 90 advanced EFL learners were selected based on their performance on Certificate in Advanced English (CAE) from a larger sample of 120 students studying in two branches of Jahad private language institutes in Tehran, Iran. These institutes were selected for the research setting, as they were the most available and accommodate ones to the research. The participants were of the advanced level of English language proficiency based on their performance on the CAE. The selected participants were randomly assigned to three groups of MoBS, MBS, and TBS. Each group contained 30 learners. As Table 1 indicates the participants included both male and female students whose ages ranged from 18 to 32. The participants' native language was Persian. All participants were learning English as their foreign language and were enrolled for the 2019 summer and autumn English courses. The participants of the study received scaffolding instruction along with their normal instruction in their course. Also, three expert teachers with a specialization in L2 teaching and two experienced English teachers at Jahad institutes as the raters participated in this study.

Table 1.

Demographic Background of the Participants

No. of Students	90
Age	18-32 years
Gender	45 Females & 45 males
Native Language	Persian
Major	EFL
Institute	Jahad (two branches in Tehran)
Academic Year	2019-2020

3.3. Instruments

The instructional material was Summit 2 student book. The instruments included the Certificate in Advanced English (CAE) and a pretest and a posttest. They are described as following:

3.3.1 Certificate in Advanced English

According to the University of Cambridge ESOL Examinations, the CAE is compatible to investigate the advanced learners' proficiency level. In this study, it was employed to manifest the participants' homogeneity regarding their language proficiency. This test was selected as it belongs to the well-established examination and has therefore undergone thorough validation and also a high-proficiency test was needed for this study. CAE consists of four sections, which cover all language skills including reading, writing, listening, and speaking. The speaking section was used in the present study.

The Speaking section was administered face-to-face. The routine style is two examiners and two candidates. One examiner acted as an interlocutor and assessor, communicating with the candidates, and handling the test. The other acted as an assessor and did not take part in the conversation. Candidates spoke alone (monologue), with the interlocutor, and with the other candidate.

The speaking part was performed in four parts. The first part included a short dialogue between each candidate and the interlocutor. In the second part, each candidate was asked to talk about a set of pictures. In the third part, some pictures and a task were given to the candidates; they were asked to discuss the task, exchange ideas, and make a decision as a result of negotiation. The fourth part was related to the previous part and the

candidates and the interlocutor should discuss subjects about the task in Part 3. The interlocutor managed the discussion and asks questions, which made the candidates discuss issues in further detail than in earlier sections of the test.

The candidates' speaking ability was measured in terms of the following criteria: pronunciation, intonation, initiation, and maintaining of a discussion, the capability to organize thoughts, and the use of proper grammar and vocabulary.

The content validity of the tests was endorsed by three experts with a specialization in L2 teaching. They approved the contents of the test.

3.3.2. International English Language Testing System (IELTS)

International English Language Testing System (IELTS) is the world's most favorite English language proficiency test. The speaking section of two IELTS tests was used as the pretest and the posttest of this study.

The speaking section consisted of three parts. In the first part (introduction and interview), the examiner introduced himself/herself and asked participants to introduce themselves. The examiner asked ordinary questions on everyday topics such as home, family, work, studies, and interests. In the second part (individual long turn), the examiner gave a task card which asked the participants to speak about a particular topic and it includes the points they can cover in their talk. In the third part (two-way discussion), the examiner asked other questions relevant to the topic of the second part. The questions provided an opportunity for learners to discuss more abstract ideas. The content validity of the tests was evaluated by three experts with a specialization in L2 teaching. They approved the content of the tests. To assure entire reliability, a good testing condition was provided by giving adequate time, responding to all questions before administering the test, and preventing the learners from cheating. The assessment was based on fluency and coherence, grammatical range and accuracy, lexical resource, and pronunciation. Two raters scored learners' speaking ability independently, according to the IELTS rating scale.

To calculate the inter-rater reliability of (total) scores on the pretest obtained by two raters, a Pearson product-moment correlation coefficient was used. The results for the three groups are shown in table 2.

Table 2.

Inter-rater Reliability of the Pretest Speaking Scores for Three Groups

	Pearson Correlation	Sig. (2-tailed)
Pretest Speaking (technology-based)	.985**	.000
Pretest Speaking (metacognitive-based)	.932**	.000
Pretest Speaking (motivational-based)	.996**	.000

**Correlation is significant at the 0.01 level (2-tailed).

The results demonstrated that there was a significant relationship between the pretest scores obtained by two raters in the TBS ($r = 0.98, p < 0.001$), MeBS ($r = 0.93, p < 0.001$), and MoBS ($r = 0.99, p < 0.001$) groups. Thus, the inter-rater reliability of the scores for all groups was significant.

The inter-rater reliability of the performance of all groups on the posttest was measured using the Pearson product-moment correlation coefficient. The results are shown in Table 3.

Table 3.

Inter-rater Reliability of the Posttest Speaking Scores for Three Groups

	Pearson Correlation	Sig. (2-tailed)
Posttest Speaking (technology-based)	.974**	.000
Posttest Speaking (metacognitive-based)	.913**	.000
Posttest Speaking (motivational-based)	.940**	.000

**Correlation is significant at the 0.01 level (2-tailed).

The results of the Pearson correlation confirmed that there was a significant inter-rater reliability between the posttest scores obtained by two raters in the TBS ($r = 0.97, p < 0.001$), MeBS ($r = 0.91, p < 0.001$), and MoBS ($r = 0.94, p < 0.001$) groups.

3.4. Data Collection Procedure

The main study was initiated by administering the language proficiency test. The participants of the study were selected based on their performance on the proficiency test. The second step of the study was the administration of the pretest. The pretest measured the participants' knowledge of speaking before treatment sessions. The pretest was administered to participants of all groups. Then, the treatment sessions were initiated.

In the TBS group, the software was designed by a computer technician consisting of different tasks, which functioned as scaffolding. The participants attended the computer-based section of ten 90-minute sessions. The first session was started with a brief introduction to the computer software to prepare students to do successfully the activities that would be covered within the next sessions. Then the teacher set up to cover the vocabulary section, via the multimodal presentation of the program. For instance, presenting the new vocabulary through its spelling and pronunciation, examples, illustrations (e.g., pictures, drawings, and videos), context (story, action), and so on. The purpose of this phase of instruction included presenting the new vocabulary before starting the new lesson to enhance comprehension and facilitate the learning process.

In the next exercise, the students were required to see the picture and say what the appropriate word is. When the speaker was speaking, each word was accompanied by four pictures with one right answer, and the student was supposed to say the appropriate picture. If the right picture was clicked, a checkmark appeared with a special piece of melody that represented the correct answer; otherwise, a signal represented a wrong answer was displayed to show that the answer was not right. Immediately after each exercise, the next exercise was to be displayed. In the case of mistakes or errors, the new exercises could be presented until the learners responded correctly. It should be mentioned that both the computer and the teacher were the sources of offering appropriate feedback.

The final portion of the instruction was reviewing the newly-presented material through the games. This section was the other modes of presentation to scaffold the learning process. The students talked about the pictures and found their appropriate definitions. Games, crossword puzzles, and word associations allow the learners to practice and reinforce their productive language skills in a fun and interesting way. The teacher helped the students begin the game. First students heard a word, and then they had to write it down on the crossword puzzle based on the size of the word. They solved the crossword puzzle either cooperatively or individually. The students should match the words from the dialog with their synonyms or antonyms on the right side of the screen.

In the MoBS group, the instruction was based on activities, which stimulated learners' motivation. The provided tasks in the class were mainly based on the participants' interests. Before fulfilling the task, some questions were asked by the teacher and peers to

get learners prepared for speaking. When the learners were prepared to answer the questions, they made as few mistakes as possible.

The topic of the tasks presented to the participants was selected in a way it was interesting and enjoyable to the learners. They include broad perspectives such as personality, family, daily life, eating habits, physical appearance, and professional life. Tasks were done to make sure that all participants could tackle them with their present vocabulary knowledge and they were around their current level of proficiency. The learners were given 5 minutes to think about the topic and brainstorm. The seats were arranged in a U-shape to create a pleasant and comfortable atmosphere in the class. This arrangement facilitated the movement of the learners around the classroom and made their conversations more interactive. They discussed the topic together. Peer scaffolding was used to make learners feel free and comfortable in the presence of their peers to be supported in speaking. The feedback let the participants decline their anxiety and enhance their confidence in the speaking activity. The teacher used a friendly and cooperative manner to make learners feel free in speaking, avoid anxiety in expressing their ideas, and help them to increase their motivation towards speaking. In each session, the learners were asked to speak and do some activities simultaneously, such as classifying the issues, judging them, and sequencing the events. Songs and rhymes were also used to motivate and activate the participants. Songs could facilitate learning language as their repetitive nature might enhance the learners' use of turn-taking during speaking and simple structures of English (Arfaei Zarandi & Rahbar, 2014). The learners were allowed to select the next speaker in the classroom discussions. It could help them to raise their confidence in using turn-taking in their conversations. The instructor gave chances to students to utilize their insight, aptitudes, and procedures in various settings and for multiple purposes.

In the MeBS group, scaffolded instruction of speaking was integrated into metacognitive strategies. It was designed to assist learners in planning, monitoring, and evaluating as core components of metacognitive scaffolding. For planning, in each session, the purpose of instruction was clarified to the learners. For example, the learners were asked to produce a story within the framework set up by the task. They were provided with what they need to create a story. In practice, they retell a story provided by the teacher. Their time limit was also determined. The students read and listened to the story which progresses in length and difficulty throughout each text as they look at a sequence of

comic-strip style illustrations. For monitoring, the teacher asked some questions to check the learners' understanding through discussion and negotiation regarding the presented topics. The learners' ambiguities were clarified. For evaluation, the participants were asked to retell the story by summarizing, presenting, and identifying the issues vividly. The stories corresponded to the participants' level of language proficiency.

3.5 Data Analysis Procedure

Inter-rater reliability analysis was performed using Pearson correlation to see the extent to which two sets of participants' scores rated by two raters on pretest and posttest were correlated. For inferential statistics, SPSS version 20.0 was used, and run different statistical techniques to answer the research questions.

To address the first three research questions of the study in finding the effect of the TBS, MoBS, and MeBS on Iranian advanced EFL learners' speaking ability, three paired sample t-tests were performed.

To address the fourth research question of the study in finding which type of scaffolding has a more significant effect on Iranian advanced EFL learners' speaking ability, one-way ANOVA and Scheffe post-hoc tests were conducted among the posttest speaking scores of learners in the three groups of the study.

4. Results

The participants of the study were randomly assigned to three equal groups of TBS, MoBS, and MeBS consisting of 30 learners. Then, they took IELTS as the pretest. Two experienced raters scored the activities. The mean pretest scores given by the two raters are shown in Table 4.

Table 4.

Mean Scores of the Participants on the Pretest

		N (Subjects)	Speaking
Pretest (technology-based)	Rater 1	30	4.22
	Rater 2	30	4.36
Pretest (motivational-based)	Rater 1	30	4.15
	Rater 2	30	4.04
Pretest (metacognitive-based)	Rater 1	30	4.40
	Rater 2	30	4.04

To ensure that there was no significant difference among the groups regarding their language learning skills at the beginning of the study, the one-way ANOVA was run. The results are provided in Table 5.

Table 5.

One-Way ANOVA on the Pretest Scores of the Three Groups

ANOVA					
Pretest					
	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	1.242	2	.248	.181	.969
Within Groups	156.750	87	1.375		
Total	157.992	89			

The results showed no significant difference among the three groups regarding their performance on the pretest ($F = .181, p > 0.05$). After the treatment sessions, the participants received IELTS as a posttest. The mean scores of the participants are shown in Table 6.

Table 6.

Mean Scores of the Participants on the Posttest

		N (Subjects)	Speaking
Posttest (technology-based)	Rater 1	30	7.33
	Rater 2	30	6.41
Posttest (motivational-based)	Rater 1	30	6.21
	Rater 2	30	4.38
Posttest (metacognitive-based)	Rater 1	30	5.18
	Rater 2	30	5.05

To address the first research question of the study in finding the effect of the TBS on Iranian advanced EFL learners' speaking ability, a paired sample t-test was performed between the scores of the TBS group in the pretest and the posttest. The results are shown in Table 7.

Table 7.

Paired Sample Test between the Pretest and Posttest Scores in the TBS Group

Pair		Paired Differences					T	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
1	Posttest - Pretest (technology-based)	3.96	1.12	1.117	20.680	25.252	14.54	29	.000

As seen in Table 7 the difference between learners’ speaking scores in the pretest and posttest is significant, ($t = 14.54, p < .001$). The results showed that there was a statistically significant difference in the pretest and posttest speaking scores of the participants in the TBS group in such a way that the speaking ability of the learners was enhanced through the use of TBS in the classroom. Therefore, the use of TBS was effective in developing EFL learners’ speaking ability, and the first research question of the study was verified.

To address the second research question of the study in finding the effect of MeBS on Iranian advanced EFL learners’ speaking ability, a paired sample t-test was performed between the pretest and posttest scores of the learners. The results are shown in Table 8.

Table 8.

Paired Sample Test between the Pretest and Posttest Scores of the Participants in the MeBS Group

Pair		Paired Differences					T	Df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
1	Posttest - Pretest (metacognitive-based)	3.66	2.42	1.117	20.680	25.252	18.67	29	.000

The results of the paired samples t-test indicated that there was a significant difference ($t = 18.67, p < 0.001$) in the pretest and posttest speaking scores of the

participants in the MeBS group in such a way that the speaking ability of the learners was enhanced through the use of MeBS in the classroom. Thus, the use of MeBS was effective in developing EFL learners' speaking ability, and the second research question of the study was verified.

To address the third research question of the study in finding the effect of MoBS on Iranian advanced EFL learners' speaking ability, a paired sample t-test was performed between the pretest and posttest scores of learners. The results are shown in Table 9.

Table 9.

Paired Sample Test between the Pretest and Posttest Scores of the Participants in the MoBS Group

		Paired Samples Test					t	Df	Sig. (2-tailed)
		Paired Differences							
Pair	Posttest	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
1	Speaking (Motivational-based) - Pretest	2.25000	.96655	.21613	1.79764	2.70236	10.411	29	.000

The results showed that the difference between learners' speaking scores in pretest and posttest was significant ($t = 10.41, p < .001$). The results showed a statistically significant difference in the pretest and posttest speaking scores of the MoBS group in such a way that the speaking ability of the learners was enhanced through the use of MoBS in the classroom. Thus, the use of MoBS was effective in developing EFL learners' speaking ability, and the third research question of the study was verified.

To address the fourth research question of the study in determining which type of scaffolding has a more significant effect on improving Iranian advanced EFL learners' speaking ability, a one-way ANOVA was conducted among the posttest speaking scores of the learners in three groups. The results are shown in Table 10.

Table 10.

One-Way ANOVA on the Posttest Scores of the Three Groups

ANOVA					
Posttest (Speaking)					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	11.433	2	5.717	3.003	.008
Within Groups	108.500	57	1.904		
Total	119.933	59			

The results indicated that there was a significant difference ($F = 3.003, p = .008$) among the posttest scores of the three groups in terms of speaking ability. The Scheffe post-hoc test was performed to find the source of differences. The results are shown in Table 11.

Table 11.

Scheffe Post-hoc Test on the Posttest

Multiple Comparisons						
Dependent Variable: Posttest (Speaking)						
Scheffe						
(I) Groups	(J) Groups	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Technology-based Scaffolding	Metacognitive-based Scaffolding	.70000	.43629	.084	-.3966	1.7966
	Motivational-based Scaffolding	-.35000	.43629	.006	-1.4466	.7466
Metacognitive-based Scaffolding	Technology-based Scaffolding	-.70000	.43629	.084	-1.7966	.3966
	Motivational-based Scaffolding	-1.05000	.43629	.003	-2.1466	.0466
Motivational-based Scaffolding	Technology-based Scaffolding	.35000	.43629	.006	-.7466	1.4466
	Metacognitive-based Scaffolding	1.05000	.43629	.003	-.0466	2.1466

As Table 11 exhibits, post-hoc comparisons using the post-hoc test indicated that the mean score for speaking in the MoBS group was significantly different from the TBS and MeBS groups. However, the performance of the TBS group in speaking tests was not significantly different from the MeBS scaffolding group. In other words, the MoBS group outperformed the other groups regarding their performance on the posttest. Therefore, the fourth research question of the study was verified.

5. Discussion

The present study was designed to investigate the effect of the TBS, MeBS, and MoBS on Iranian advanced EFL learners' speaking ability. To terminate the response to the first research question concerning the effect of TBS on Iranian advanced EFL learners' speaking ability, the results showed a statistically significant improvement of the speaking posttest scores in the TBS group. The results of this study corroborated with those of Berenji and Saeidi (2017), who measured the effect of technology-based instruction on cognitive scaffolding, academic performance, and motivation. The amount of cognitive scaffolding was considered through a critical ethnography approach. The learners' motivational level was measured by the Course Interest Survey (CIS). The results demonstrated that technology-based instruction through cognitive scaffolding enhanced learners' motivation and academic achievement. Furthermore, this result confirmed the results of a study developed by Hsu and Chang (2010) who developed content-based listening through multimedia, and showed that it was effective in more listening comprehension.

To find a reasonable answer to the second research question of the present study regarding the effect of MeBS on Iranian advanced EFL learners' speaking, the results showed that the use of MeBS was effective in developing EFL learners' speaking ability. Scaffolding provided conditions for learners to highly engage in speaking activities. These results are consistent with Tan and Tan (2010) who found that metacognitive scaffolding plays an important role in improving students' reflection and self-assessment. The results of this study approved those of Ahmad et al. (2019) who showed that there is a significant difference in students' performance before and after the mediation from metacognitive scaffolding.

In response to the third question of the study about the effect of MoBS on Iranian advanced EFL learners' speaking ability, the results revealed that the speaking ability of the learners was enhanced through the use of MoBS in the classroom. Also, the results of the post-hoc test showed that MoBS was the most effective type of scaffolding instruction in enhancing EFL learners' speaking ability (fourth research question). The results of the present study support those of Hasan (2018) who examined the impact of motivational scaffolding on the acquisition of writing skills in L2 situations. This study suggested there is a need to make changes in the use of motivational scaffolding in the current L2 situations. The results are in line with Cheung (2018) who investigated the effect of instructors' use of motivational strategies on students' motivation. The results revealed that the instructors' use of strategies in generating students' initial motivation in the classroom radically enhanced students' positive attitude self-confidence. The results of this study support those of Ginaya, Aryana, and Somawati (2018), who explored the effects of scaffolding on learners' speaking ability. The results showed learners' improvement in their speaking ability. The improvement achieved by the learners is also supported by the fact that the application of scaffolding can also improve the students' learning motivation and interest so that they can interact actively during the entire process of learning. This study is in line with the study by Gagné and Parks (2013), who used videotaped recordings of the cooperative learning, classroom observation, and interviews to show the importance of scaffolded cooperative tasks in language learning. The results revealed that the learners were capable of providing varied scaffolding to peers as they engaged in cooperative learning tasks.

The success of MoBS is the distinctive feature of the results of this study. This result can be justified from the sociocultural perspective as MoBS can bridge the gap between the learners' capabilities and those of a more knowledgeable person; therefore, the social interactions through speaking activities could help learners develop higher psychological functions within the ZPD. The learners could construct their knowledge with their peers and teacher. The learners intellectually imitated the teacher's mental processes by understanding the feedback they received from teachers and utilized it in their speaking. When English language instruction is decoded by using scaffolding activities, language learning will be easier. Scaffolding was conducive to language learning since it facilitated the learning process by providing lots of assistance to students in authentic contexts and

connecting their background knowledge with the texts, and increasing interaction among learners.

6. Conclusion

To create effective instruction through scaffolding, two standards should be considered. Fundamentally, the primary measure is that instructional materials intended to suit singular contrasts should consolidate the utilization of coordinated media. In this manner, we should never assume that particular media will be put to a similar reason or have the same impact on all learners. The second rule that should be considered is that the determination of the style of introduction ought to be founded on how it best backings the students. In this way, an instructional planner should make the right instinct concerning which strategy for introduction is increasingly appropriate for a given learning circumstance.

Utilizing MoBS, teachers can train more cooperative learners who can be more efficient and successful social members. It is also suggested that MoBS is conducive to student learning even though there is a change in teaching method. The success of scaffolding instruction might be ascribed to two notable points: first, its effect on learning processes of language, and second, its role in building a different and challenging context of language learning both for the learners and teachers. In turn, scaffolding can bring about lots of benefits for EFL contexts. Scaffolding enabled the learners to go beyond what has been learned. In the MoBS group, providing assistance, learners' interest, and a calm environment were the keys to learners' success in doing their activities. In this way, in addition to the teacher, the students could help one another in their learning community. Scaffolding created an interactive learning environment, which declined the learners' barriers in doing communicative activities, increase their confidence, and remove their embarrassment.

To provide concrete scaffolding to facilitate foreign language learning, the teacher offered linguistic support to students, addressed their language and background knowledge, and provided student interactions to learn the English language. Syllabus designers and material developers should consider using exciting and relevant scaffolded activities in their instruction to enhance learners' motivation to devote the essential mental effort to learn the foreign language.

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