Comparing the Effect of Online Teacher-Scaffolding vs. Peer-Scaffolding on Iranian EFL Learners' Grammatical Achievement

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Abstract. Collaborative learning of grammar and grammatical understanding through collaborative technology-based scaffolding has recently become a topic of interest to many second language acquisition researchers, language educators, higher education administrators, and stakeholders. In line with this growing interest and situated within a social constructivist perspective, the present research aimed to investigate the effect of online teacher scaffolding and peer scaffolding on Iranian EFL learners' grammatical achievement. To this end, a total number of 40 Iranian EFL learners within the age range of 12-17 participated in this study. This quantitative study used t-tests to compare the relative effectiveness of the two different teaching approaches for improving students' grammatical knowledge in English. Even though the treatment was applied for only a few weeks due to practicality issues, the post-test results indicated that the technology-based peer and teacher scaffolding considerably improved Iranian EFL learners' grammatical knowledge. This research also suggested that although the instruction exerts a positive influence on learners' proficiency level, the difference between these two approaches was not statistically significant. Since scaffolding

is extremely important in the process of teaching L2, educators and instructors can utilize the findings to gain a better understanding of scaffolding in online learning.

1. Introduction

One of the most contentious issues in language education has always been the teaching and learning of grammar. Despite the fact that grammatical knowledge and understanding is one of the most significant instruments for expressing new ideas and thoughts in a second/foreign language (Larsen-Freeman, 2001), it, especially due to its new conceptualizations, has been sidelined in the Iranian educational curriculum (Rahimi, 2009). Furthermore, Dastjerdi and Samian (2011) claimed that Iranian EFL students typically struggle with cohesion and correctness, citing "the learners' poor linguistic awareness as well as faulty knowledge of English grammar, including cohesion and accuracy norms" as reasons (pp. 65-76). Although grammatical accuracy and achievement may not be a pressing aim for some Iranian students, individuals preparing for the demands of academic and professional writing have actual needs to enhance their grammatical accuracy, as it can stigmatize L2 users even when comprehension is not a problem (Hyland & Hyland, 2019). As a result, training that brings these students to a high degree of grammatical refinement is more than a legitimate expectation, given their own expectations and the standards of the admissions, employment, and promotion committees who await them.

While second-language (L2) pedagogy and approaches to second-language acquisition (SLA) have shifted from form-focused (e.g., grammar oriented) to meaning-focused (e.g., communicative) methodologies in recent decades (Afitska, 2015), L2 learners are still under pressure to produce grammatically accurate writing in order to be successful in both academic and professional pursuits (e.g., Afitska, 2015). Many second language acquisition researchers, language instructors, higher education administrators, and stakeholders are interested in collaborative learning

of grammar and grammatical understanding, among other methodologies and approaches. Indeed, the sociocultural theory of learning, which views knowledge as actively generated by learners through interactions in social situations, is profoundly based on collaborative learning (Aljaafreh & Lantolf, 1994). Teachers are no longer the exclusive source of knowledge in the classroom because learning is a socially built process, and collaboration provides a space for learners to dialogically share, revise, and elaborate information and ideas with others to construct knowledge. Teachers must give academic support that allows students to engage in activities that are beyond their current levels of competence, especially for low-achieving students to participate in varied language learning tasks that build teamwork. Learners, therefore, travel through the "zone of proximal development" (ZPD) to acquire these new skills (Vygotsky, 1986). The ZPD is an area where pupils require assistance in order to attempt skills that they are unable to practice on their own (Vygotsky, 1986). In this regard, scaffolding, which has been utilized as a metaphor for scaffolding in building construction, has been thought of as help given to students that is personalized to their needs in achieving learning goals (Sawyer, 2005).

Teachers in the modified role use scaffolding to assist students in building their own knowledge and encourage effective learning. Scaffolding is initially installed, then changed, with the severity increased or decreased depending on the demands and responses of the pupils, and then removed when no longer required (Sawyer, 2005; Van de Pol, Volman, & Beishuizen, 2010). Numerous empirical studies have examined the usefulness of scaffolding from a variety of perspectives that affect learners, including engagement, perception, interactions, behavior, performance, and results (e.g., Reingold, Rimor, & Kalay, 2008; Sharma & Hannafin, 2007). Thus, educational researchers are paying close attention to the benefits and effectiveness of scaffolding in order to discover acceptable techniques for providing successful scaffolding for students. Despite the fact that new technologies and the use of electronic curricula provide essential learning interaction and teacher training, incorporating scaffolding into online-learning environments, which is currently in high demand around the world, is considered difficult due to the high reliance

on teachers and students (Simons & Ertmer, 2005). It's especially crucial to note that students in some circumstances where technology-enhanced language learning isn't the norm may be unaware of the available scaffolding that teachers have purposefully developed and supplied. Consequently, people may be hesitant to take advantage of this assistance (Simons & Ertmer, 2005). This highlights the importance of analyzing scaffolding's efficiency in such situations, as well as suggesting appropriate recommendations to assist students in making the most of the scaffolding available (see Danli, 2011). There has been little research that has looked into the effectiveness of scaffolding in EFL contexts like Iran. Hence, closing this gap is an ambitious objective for this research.

1.1. Research questions
The current study attempted to assess the effect of online peer scaffolding on the development of grammar proficiency, as well as to determine whether there are any significant differences in the improvement of grammatical ability between using online teacher scaffolding and using online peer scaffolding. As a result, the following research questions were formulated in this study.

RQ1: Does online peer scaffolding have any significant influence on the grammar achievement of Iranian EFL learners?

RQ2: Does online teacher scaffolding have any significant influence on the grammar achievement of Iranian EFL learners?

RQ3: Is there any significant difference in terms of grammar achievement as a result of the application of various kinds of online scaffolding, teacher and peer mode, among Iranian EFL learners?

2. Literature Review

2.1. Collaborative learning
Students in elementary and secondary education have shown that collaborative learning is a successful instructional strategy across topic areas, aptitude levels, ethnic origins, and grade levels (Barron, 2003; Mastropieri, Scruggs, Spencer, & Fontana, 2003). These findings imply that cooperative instructional strategies in postsecondary settings may

be advantageous to children with specific learning challenges. They are also simple to employ in a college classroom because they require minimum instructor participation. Resta and Laferrire (2007) evaluated the research literature on the implementation of student collaboration in higher education over the last two decades. Peer learning, peer tutoring, cooperative learning, collaborative learning, and small-group learning are some of the terms used to describe small groups engaging in education. This could be due to the fact that educational researchers have a variety of purposes, goals, and views, making it difficult to distinguish between various approaches.

The literature frequently uses the phrases cooperative learning and collaborative learning interchangeably. Despite their differences, Strijbos, Kirschner, and Martens (2004) found that cooperative and collaborative learning had a number of similarities. They went on to define cooperative and collaborative learning with a definition that incorporated these commonalities: (a) Learning is an active process. (b) Rather than being a "sage on the stage," the teacher is usually more of a facilitator. (c) Teaching and learning are collaborative endeavors. (d) Students participate in activities in small groups. (e) Students take ownership of their learning. (f) Students examine their own beliefs and mental processes. (g) Through the give-and-take of consensus-building, students gain social and team skills.

The preceding definition (Strijbos et al., 2004) is consistent with Johnson and Johnson's (1996) notion that collaborative and cooperative learning both use a small-group instructional design in which students collaborate to maximize their own and each other's learning. A successful collaborative learning group, according to Johnson and Johnson (1990), has the following characteristics: (a) a clearly defined goal, (b) a cooperative structure, (c) shared responsibility, (d) individual responsibility and accountability, (e) member communication, (f) decision-making consensus, (g) interpersonal skills, and (h) acceptance and support for group members. The first four are task-related traits, whereas the final four are group member characteristics.

2.2. Scaffolding based on modalities

Belland (2014) discussed the three basic modalities of scaffolding iden-
tified by educational scholars, including (a) one-to-one scaffolding, (b)
peer scaffolding, and (c) computer/paper-based scaffolding. "The three
modalities are not mutually exclusive," the author wrote, "but rather
can be integrated to construct a system of distributed scaffolding that
can suit students' scaffolding needs" (see p. 507). Belland (2014) cri-
tiqued these scaffolding modalities for promoting intersubjectivity, cus-
tomization, and transfer of responsibility at several levels in the study's
conclusion. The three modes are discussed in general terms below.

The optimum scaffolding is one-to-one scaffolding, which gives indi-
vidualized supports based on the teacher's continuing diagnostic of the
students' performance. When using one-to-one scaffolding, the teacher
should diminish the help at suitable points to encourage pupils to take
on more responsibility (Belland, 2014; Van de Pol et al., 2010). Many
studies claim that teachers in elementary and middle schools have used
one-to-one scaffolding in topics like reading, science, mathematics, social
studies, and language arts (Belland, 2014). In reading teaching, for ex-
ample, Jadallah et al. (2011) looked at the one-to-one scaffolding process
of fourth-grade students in reading conversations. The most common
scaffolding movements performed by teachers, according to the research
findings, are "asking for clarification, prompting for evidence, praising
in the use of evidence, and challenging" (p. 208). During reading discus-
sions, such scaffolding movements can "initiate extensive chains of effect
on children's talking and thinking" (p. 223).

Scaffolding was originally characterized as a set of supports between
one adult/expert and one kid, in which the adult/expert encourages the
child to progress in his or her ZPD (Wood, Bruner, & Ross, 1976). As the
concept has grown, a number of authors have proposed that peer help
can also be provided (e.g., Pata, Lehtinen, & Sarapuu, 2006). Peer scaf-
folding has been proposed as a viable method of providing scaffolding to
all students in a classroom. This form of scaffolding can be explained by
the fact that individuals have varying levels of learning skills; therefore,
some students may be able to assist others in achieving higher-order
thinking. It is important to note, however, that students cannot auto-

matically do peer scaffolding since they lack the necessary skills. Thus, students must be given direction in order to effectively scaffold their peers (Belland, 2014).

Pifarre and Cobos (2010), for example, created the KnowCat, a program in which university students were expected to give peer scaffolding by providing instructional psychology critiques of classmates' reports on specific themes. Students were given guidelines to assess "content adequacy, personal elaboration of the ideas, organization of the ideas, presentation tactics, and conclusions" as well as "content adequacy, personal elaboration of the ideas, organization of the ideas, presentation strategies, and conclusions" (Pifarre & Cobos, 2010, p. 244). Students may self-regulate their learning when they provide peer scaffolding to each other, according to the research.

The study's focus is on computer/paper-based scaffolding, which uses computer or paper-based technologies as scaffolds to assist students in their learning. Belland (2014) claimed that computer-based scaffolding can only be effective when there is also one-on-one scaffolding provided by the teacher to all pupils in the classroom, based on a synthesis of past studies. Computer-based scaffolds, he claims, "may be either context-specific or general" (p. 511). Context-specific scaffolds are defined as "tailored scaffolds related to the content associated with the unit in which they are embedded," to be more specific (p. 511). Linn, Clark, and Slotta (2003), for example, developed a Web-based Inquiry Science Environment (WISE) to assist students in researching scientific questions. Students can explain their thoughts about causes and possible solutions to scientific challenges using the WISE scaffolds. Generic scaffolds, on the other hand, are described as scaffolds built for students to interact with learning content both within and outside of the classroom. This type of assistance can be used with a variety of units in a variety of subjects (Belland, 2014). The use of the connection log, which was considered computer-based argumentation scaffolding, was investigated in Belland, Glazewski, and Richardson's study (2011). During a problem-based learning unit, the goal was to see how it affected middle school students' argumentation construction. Evidence suggests that such scaffolding can help students strengthen their argumentation skills.

Overall, based on the original definition of scaffolding, the literature review revealed that scaffolds could be utilized as additional tools, guidelines, and/or methods by teachers or peers in the learning process. Further, it was emphasized that although new technologies and the use of electronic curricula provide essential learning interaction and teacher training, incorporating scaffolding into online-learning environments, which is currently in high demand around the world, is considered difficult due to the high reliance on teachers and students. It's especially important to keep in mind that students in situations where technology-assisted language learning isn't the norm may be ignorant of the scaffolding that teachers have consciously constructed and provided. This emphasizes the necessity of assessing the effectiveness of scaffolding in such situations and making appropriate recommendations to help students make the most of the scaffolding available. In EFL contexts like Iran, there has been little research investigating the efficiency of scaffolding. Thus, narrowing this gap is the main goal of this study.

3. Methodology

3.1. Design

This quantitative study used pre-existing groups, randomization was impossible, so a quasi-experimental method called Nonequivalent Control Group Design was used instead. When randomization is not possible, the researcher employs a quasi-experimental method, according to Creswell & Creswell (2017). The term "quasi-experiment" was coined by Campbell and Stanley (1963) to describe situations in which all of the characteristics of a true experiment are not met. The quasi-experimental design, for example, is appropriate when the researcher has no control over the participant selection process, as was the case in this study (Creswell & Creswell, 2017). Therefore, the researcher was able to compare two experimental groups that received the scaffolding intervention.

3.2. Population sampling and participant recruitment

For the purposes of this study, a total number of 40 male and female EFL learners within the age range of 12-17, learning English at the intermediate level at Avaye Dana Language Institution in Shiraz, Iran, took part

in this study. The participants were chosen through purposive sampling where the lead researcher considers as an English teacher. Before conducting the research, the Oxford Quick Placement Test was administered to the participants. Based on the results of the test, they were placed at the intermediate level. Moreover, in order to have more precise information about their writing ability and, more specifically, their grammatical range and accuracy, which is the focus of the present study, the writing component of their pre-test was scored based on grammatical range and accuracy component of the public version of IELTS scoring rubric. These scores served as their written accuracy entry-level. Hence, the participants were almost at the same level of language proficiency. The participants were then assigned to two experimental groups. They received their instruction based on the principles of online peer and teacher scaffolding.

3.3. Instruments

To collect the necessary data, three instruments were applied in the study. The first one was the oxford placement test which was applied to homogenize the participants in the study. The test involved reading, vocabulary, and grammar parts. It encompassed 60 questions in two sections. The first part included 40 multiple-choice items. Questions 1 to 5 were allocated to grammatical questions regarding prepositions. Questions 6 to 10 were related to a cloze passage, and the learners should choose one option out of the three other choices. Questions 11 to 20, the students were required to read two cloze passages and choose one option from four other choices. Questions 21 to 40 were delved into assessing the learners' grammatical knowledge. The second part was two sub-sections. From questions 41 to 50, the learners were asked to read two cloze passages and choose the correct choice. Questions 51 to 60 were allocated to tap learners' vocabulary knowledge. Many supporting explanations have been provided about the item facility values, discrimination indices, item and inter-test reliability, concurrent validity, and predictive validity of the test, especially in EFL contexts (see Wistner, Hideki, & Mariko, 2009).

The other two instruments, namely the pre and post-tests, were em-

ployed to measure the grammatical knowledge of the learners. The researcher also designed a multiple-choice grammar test which was employed as the pre-test and the post-test in order to help determine the learners' grammar knowledge prior to applying the instruction. Several steps were followed in order to determine the validity and reliability of the constructed tests.

Step 1: Designing the first version of the test (determining test items). Several criteria were used to select test items: an extensive review of English grammar resources was conducted, and the grammatical structures that had been explicitly taught in the courses that the participants had taken or were taking at the time of the study were determined; an attempt was made to select target language structures that were known to be problematic to EFL learners, and the SLA literature was consulted to this goal. The structures were chosen to represent a wide range of skill levels based on their introduction in EFL courses, including beginning, lower intermediate, upper-intermediate, and advanced levels. Overall, the initial tests were designed to provide measures of learners' knowledge of 50 English grammatical structures.

Step 2: Determining Score Validity and Reliability.
Content Validity of the selected items was evaluated. In order to calculate the quantitative Content Validity Index (CVI) for each Item (I-CVI) and Scale (S-CVI), 3 experts from the field of applied linguistics who were also interested in second language grammar pedagogy were asked to rate the test items according to a four-point Likert scale (1 irrelevant, 2 somewhat relevant, 3 very relevant, 4 highly relevant). For both I-CVI and S-CVI, a CVI of 0.8 or higher was considered appropriate content validity (Polit, Beck, & Owen, 2007). According to the results, two items were eliminated ($CVI < 0.8$). Moreover, in order to examine the face validity of items, the initial test was administered to 22 learners with similar characteristics to those in the main sample. Items that more than 30% of the participants did not answer were identified as difficult to understand and were deleted (Field, 2009), and those that were not answered by less than 30% were revised and modified. As a result, eight items were identified as too difficult to understand, and 12 items

were revised and modified because less than 30% of participants did not answer those. Therefore, face validity of the items was considered to be appropriate. In order to examine test-retest reliability, the grammar pre and post-tests were administered twice, with an interval of 2 weeks, to 15 learners.

Moreover, in order to determine internal consistency, the correlation between items was calculated by using Kuder-Richardson 21. Results of Kuder-Richardson Test 21 on internal consistency showed that there is a high correlation between test items (r = 0.82). Test-retest reliability was evaluated and a significant correlation was found between participants' scores at two different assessment times in the pre-test ($r = 0.91, p < 0.01$) and the post-test ($r = 0.89, p < 0.001$). Following the reliability analysis, the item-level descriptive statistics for the 40 items were computed. The means for the items ranged from 0.34 to 0.90, suggesting a wide range of item-difficulty levels. Most values for skewness and kurtosis were within the acceptable limit +2, indicating univariate normality. Some items (G4, G6, G9, G10) yielded large skewness and kurtosis values beyond the level of +2. Since all these items, except for Item G9, had a mean of 0.89 or higher, the values for kurtosis and skewness of these items were expected to be high.

3.4. Procedure

The process of gathering required data for this research lasted for 4 weeks. First, the researcher visited the classes for ten minutes during a regular class period and described to the students what participation in this research would involve and asked for their participation. The researcher also explained that if any student rejected to participate in the study, their data would not be recorded, but because the research was incorporated in regular classroom hours, they probably needed to carry out the activities that were involved in the project. Later on, the researcher distributed informal consent forms and background questionnaires.

OPT was then administered to the participants to homogenize them. Forty intermediate learners were selected out of 70 EFL learners as the members of the current research. In the first stage, the course explana-

tions, objectives, and evaluations were introduced to the learners. Due
to the requirement of scaffolding, especially peer scaffolding, it becomes
less efficient when little or no attention is devoted to the training of the
scaffolders. Therefore, prior to conducting the current research, twenty
hours were allocated to training students which empowered them to be-
come good scaffolders. The students were trained regarding how to apply
scaffolding techniques through providing some guidelines such as apply-
ing oral communication, eliminating and describing unclear matters to
each other, receiving feedback as well as peer evaluation while doing
their exercises. In addition, the teacher observed the training program
and the way students assist each other meticulously and recommended
some suggestions as well as helping them to completely understand such
kinds of scaffolding. The students in the experimental groups were re-
quired to apply Adobe Connect for the purposes of the study.

The textbook which was employed for both groups was TOP NOTCH
3A. In the experimental groups, peer and teacher scaffolding modes were
utilized. In this kind of scaffolding, following the Vygotskian model of
ZPD, scaffolders were supposed to empower the grammatical ability of
their classmates. Peer scaffolding intervention which was employed in
the current study encompassed applying peer feedback, asking ques-
tions from their classmates rather than the teacher, receiving suggestions
from their partners during working on exercises. Teacher scaffolding in-
tervention, however, encompassed applying teacher-generated feedback,
asking questions from the learners, and receiving suggestions from their
teachers during working on exercises. After that, the learners took the
post-test.

3.5. Data analysis

The Statistical Package for the Social Sciences (SPSS) program version
21 was used to analyze the data. This program offers a number of char-
acteristics that make it a useful data analysis tool. Only a few of these
include its widespread use, ease of use, and a large collection of sta-
tistical tools. Descriptive statistics, such as frequencies and measures
of central tendency, were applied to the data. Furthermore, the results
on the pre-tests and post-tests were compared using paired sampled T-

tests for the first two research questions and two independent samples t-tests for the third research question to examine the relative efficiency of the two alternative teaching approaches for developing students' English grammatical understanding.

4. Results

This section presents the results of investigating the extent to which online peer and teacher scaffolding structured within the learners' ZPD helped Iranian EFL learners improve their grammatical achievement. To understand the overall patterns of grammatical achievement changes over the tasks, descriptive statistics are first analyzed and inspected. In other words, the analysis with a macro examination of the data was performed. Then, the data are submitted to inferential statistics.

4.1. Descriptively comparing grammatical achievement of the participants

Descriptive statistics have been calculated to understand the overall patterns of grammatical knowledge changes. Information is provided about the means and standard deviations on the test regarding the grammatical achievement of the participants.

Table 4.1: Descriptive Statistics for Peer Scaffolding

Participants	N	pretest	posttest	Std. Deviation 1	Std. Deviation 2
Ex-grammar (peer)	20	12.12	14.12	7.420	7.420

As shown in Table 4.1 the grammatical achievement of the peer scaffolding experimental group was enhanced after receiving the intervention. While the learners' grammatical achievement in the experimental group was 12.12 before receiving treatment, its size rose to 14.12 after the participants received the treatment based on peer scaffolding. The rather large standard deviations indicate that the results were not so clustered around the mean. Moreover, in order to answer the first research question and see if online peer scaffolding had any statistically significant

influence on the grammatical achievement of Iranian EFL learners, the
peer scaffolding experimental group participants' scores from the pre
and post-tests were compared through carrying out a paired samples
t-test.

Table 4.2: Paired Samples T-test Results for the Effect of Online Peer
Scaffolding

		Mean	Std. Deviation	Std. Error Mean	Df	Sig. (2-tailed)
Peer-Exp.	Grammar achievement	.29207	.41850	.07771	28	.001

As the t-test results in Table 4.2 indicate, the participants in the on-
line peer scaffolding group have a significantly higher level of grammar
achievement after receiving the instruction as treatment, indicating that
there exist real differences in the group's performances before and after
the treatment. Cohen's d was also calculated which is the standardized
mean difference between two group means (Cohen, 1988). Cohen's d =
0.2, 0.5, and 0.8, often is cited as indicative of a small, medium, and
large effect size, respectively. As regards the effect of peer scaffolding,
the effect size of the treatment was small (Cohen's d: 0.04-0.48).

Moreover, descriptive statistics have been calculated to understand
the overall patterns of grammatical knowledge changes in the teacher
scaffolding group. Information about the means and standard deviations
of the participants' grammatical achievement is supplied in Table 4.3.

Table 4.3: Descriptive Statistics for Teacher Scaffolding

Participants	N	Pretest	Posttest	Std. Deviation 1	Std. Deviation 2
Ex-grammar (teacher)	20	11.12	15.14	6.342	7.312

The data presented in Table 4.3 shows that the grammatical achievement
of the teacher scaffolding experimental group was enhanced after receiv-
ing the intervention. In order to answer the second research question

and see if online teacher scaffolding had any statistically significant influence on grammar achievement of Iranian EFL learners, another paired samples t-test was conducted.

Table 4.4: Paired samples T-test for the Effect of Online Teacher Scaffolding

		Mean	Std. Deviation	Std. Error Mean	Df	Sig. (2-tailed)
Teacher-Exp.	Grammar achievement	.34793	.22850	.05471	28	.027

As indicated in Table 4.4, students' grammar knowledge has increased after receiving the intervention which was based on online teacher scaffolding. In fact, the increase of grammar knowledge among the participants who received the instruction has been statistically significant ($p < 0.05; Sig.(2 - tailed) = 0.027$). As regards the effect of teacher scaffolding, the effect size of the treatment was moderate (Cohen's d: 0.50-0.74).

4.2. Comparing pre-and post-tests results between online teacher provided and peer provided scaffolding

The findings from the first two research questions indicated that both online teacher and peer scaffolding significantly enhanced the students' grammar knowledge. However, the third research question was concerned with the significance of the difference between the two approaches in terms of developing grammatical achievement. To this end, independent t-test procedures were used to compare the grammar knowledge scores between the two groups, before and after the intervention. Descriptive statistics for grammar knowledge related to pretest comparison of the two groups' achievement test scores are presented in Table 4.5.

Table 4.5: Descriptive Statistics for Pre-test Grammatical Achievement Difference of the Two Groups

Group Statistics					
	grouping	N	Mean	Std. Deviation	Std. Error Mean
Pretest Difference	Peer scaffolding	20	12.12	.75864	.14088
	Teacher scaffolding	20	11.12	.66579	.12363

As Table 4.5 indicates, the two groups had different levels of grammar knowledge before receiving the treatment. While mean grammar knowledge of peer scaffolding group in pretest equaled 12.12, the mean grammar knowledge of teacher scaffolding group equaled 11.12. Although the mean level of grammar knowledge between the two groups during the pretests was different before the intervention, it needs to be investigated if this difference is significant or not. To check the significance of grammar knowledge difference between the two groups, the means were compared (Table 4.6). The results of the independent samples t-test indicated that the grammar knowledge difference between the two groups in the pretest was not statistically significant ($p > 0.05; Sig. = 0.11$).

Table 4.6: Pre-test Comparison of the Two Groups' grammatical achievement difference

		F	Sig.	T	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Pretest	Equal variances assumed	.582	.449	-1.594	56	.116	-.29207	.18318
Difference	Equal variances not assumed			-1.594	54.187	.117	-.29207	.18318

As Table 4.6 indicates, the result of Levene's test is higher than 0.05, which by itself indicates that the two groups are homogeneous. Since the result of Levene's test is not equal to 0 (zero), it needs to have equal variance assumed (the first row) for the Sig. (2-tailed), which equals 0.116. The t-test result indicates the two groups were not significantly different before the treatment.

Table 4.7: Descriptive Statistics Related to Post-test Grammatical Achievement Difference

Group Statistics					
	Grouping	N	Mean	Std. Deviation	Std. Error Mean
Posttest Difference	Peer scaffolding	20	14.12	.63052	.11708
	Teacher scaffolding	20	15.14	.76357	.14179

On the other hand, the descriptive statistics for the posttest grammar knowledge difference of both groups are presented in Table 4.7, which show that the two groups performed differently in the posttests.

Table 4.8: Post-test Comparison of the Two Groups' Grammatical Achievement Difference

		F	Sig.	T	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Posttest	Equal variances assumed	.001	.972	2.594	56	.612	.48793	.18812

Independent samples t-test was carried out to check if this difference is statistically significant or not. The results of post-intervention indicate that although the instruction significantly and differently affected the learners' grammar knowledge, the difference between these two approaches was not statistically significant as shown in Table 4.8.

5. Discussion of the Findings

The purpose of this study was to investigate the effect of applying various kinds of online scaffolding, teacher and peer mode, on Iranian EFL learners' grammatical knowledge. Despite the fact that the treatment was only used for a few weeks due to practical concerns, the results of the analyses are consistent with those of earlier research (e.g., Akiyama & Fleshler, 2013; Marzban & Arabahmadi, 2013). Based on the results, it was revealed that both online teacher and peer scaffolding had statistically significant effects on the grammatical achievement of Iranian EFL learners. This leads to the conclusion that students appreciated the scaffolding offered by the teachers and peers in the course. This should, in theory, be a good measure of scaffolding success because unless students are aware of the scaffolding that is available to them, they may not be able to take advantage of it to maximize their learning. Although students were aware of the existence of offered scaffolding based on informal first discussions, the data revealed that their levels of awareness and interpretation of the scaffolding were not entirely aligned with what the instructor actually scaffolded.

When delivering comments on scaffolding in an informal session, social components were highlighted in this study through collaborative online scaffolding. This could lead to the creation of a new category in this study called "social scaffolding." In fact, based on their post-test results, data suggests that students encountered and valued the humanity part of online learning environments. Hence, the instructor created a welcoming, motivating, and social learning environment in which students were easily engaged and driven by the learning activities and community. In other words, the instructor could help students with the social and mental components of learning. In computer-supported collaborative learning (CSCL) contexts, this can be linked to the component of social interaction. Because "the social process of building shared understanding through contact is the 'natural' way for people to learn," existing research has found that social interaction is a major aspect in CSCL (Kreijns, Kirschner, & Jochems, 2003). However, because of two major difficulties identified by Kreijns et al., social engagement within CSCL situations can be severely limited (2003). One problem is "taking social interaction for granted," in which educators assume that because technology allows it, the social connection can be easily established in CSCL settings, just as it can in F2F settings. To put it another way, educators frequently overlook the human factor when implementing CSCL. "Restricting social engagement to cognitive operations" is another hazard. Educators, on the other hand, have a tendency to limit learning activities to task context and educational dimension while ignoring or overlooking the social component (such as getting to know each other, building up relationships among peers and between teachers-students). The lack of this component, according to the experts, will have a negative impact on CSCL's effectiveness. As a result, when creating and implementing a CSCL, educators, and teachers should pay close attention to the social dimension.

6. Conclusion

Overall, the findings of the study suggest that trust in online scaffolding as a valuable technique for enhancing EFL grammatical understanding is justified. The results revealed a substantial difference in favor of the

groups receiving online scaffolding. However, the difference between the two approaches used in this study was not statistically significant. Educators and instructors can use the findings to gain a better understanding of scaffolding in online learning. To begin, teachers should pay close attention to their students' ZPD in order to provide input that is tailored to their specific requirements. The teacher should be eager to provide minimum support based on the outcomes until the student can function independently before the aid can be removed. As a result, it's critical for EFL teachers to be well-versed in the socio-cultural theoretical framework and to have a set of abilities for structuring feedback within it. This implies that they should be taught how to interpret and position input inside the ZPD. They should also be knowledgeable about how to use scaffolding strategies during the feedback process and how to track student development.

This suggestion is supported by Ferris, Liu, Sinha, and Senna's (2013) report, in which 12 M.A. students participated in a 10-week tutorial session for ESL writers and displayed better proficiency in defining grammatical terminology, as well as identifying and fixing faults in ESL students' writing. Instructors should carefully create acceptable scaffolds in an online learning environment, taking into account their functions and the use of relevant approaches. Students, on the other hand, may not always be aware of the availability of instructor-provided scaffolding and may not use it in the way that the instructors intend. Thus, in order to improve the effectiveness of scaffolding students in online learning, it is critical to teach students how to recognize and use the scaffolding that is available. Second, when creating and delivering scaffolding in online learning settings, educators should keep social and humanistic factors in mind. Because of the loss of humanness in distributed learning environments, social scaffolding oriented to learners' ZPD should be noted and highlighted when it comes to online learning. When teaching, instructors can provide this form of scaffolding by creating a welcoming and healthy learning environment, promoting social interactions among students, and inspiring students with their own qualities, knowledge, abilities, behaviors, and excitement.

Finally, when assessing the effectiveness of scaffolding, teachers should

consider students' perspectives on the scaffolding supplied. As the evo-
lution of educational instruction has evolved from a teacher-centered to
a learner-centered approach (Gibbs, 1981), instructors should respect
students' voices and how they perceive the scaffolding offered. The in-
structors can also learn from the students' feedback about how to give
relevant scaffolds to fulfill the students' needs. Furthermore, in addition
to reviewing students' feedback, instructors should consider a variety of
factors to assess the success of the scaffolding offered, including metacog-
nitive, cognitive, learning outcomes, learning engagement, motivation,
and so on.

Although this study shows that online peer and teacher scaffolding
within a socio-cultural framework increases EFL learners' grammatical
knowledge, the reader should be aware of the study's limitations and how
future research in this area could be improved. First, over the course of a
few weeks, this study was undertaken with a small group of Iranian EFL
students. More research studies with more students over longer periods
of time are needed to understand the results of the instructional strat-
egy adopted properly. Furthermore, we know relatively little about the
impact of online peer and teacher scaffolding on specific linguistic traits
based on these findings. As a result, the evidence that online peer and
teacher scaffolding can improve general grammatical knowledge merits
more research to investigate if some language aspects respond better to
this technique than others. A study like this might have a big impact
on both the L2 writing classroom and the field of L2 acquisition. Due to
individual variances and various potential levels of growth, it may not
be possible to treat all kids similarly. Setting a timetable for tutorial
sessions is desirable for planning purposes, but it may not be possi-
ble if L2 students are to be treated differently based on their language
abilities. Another disadvantage of this study is that it was only con-
ducted for a little more than four weeks. A longitudinal approach would
have undoubtedly revealed whether online peer and teacher scaffolding
incorporated in a socio-cultural setting was effective in enhancing gram-
matical knowledge over a longer length of time or whether it failed to
achieve such a big, long-term improvement.

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