

Teacher-Assisted vs. Peer-Assisted Performances and L2 Development: A Mixed Methods Approach¹

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Abstract

The present study compared the impact of teacher-provided and peer-provided oral assistance in the acquisition of English *wh*-question forms. Participants were 90 female Iranian EFL learners who constituted the 3 groups of the study: teacher-assisted, peer-assisted, and a control group. Participants in the experimental groups received assistance either from the teacher or a peer during task-based performances to make *wh*-questions, whereas those in the control group performed the same tasks with no assistance. The study took a mixed-methods design. Results from the quantitative pre/posttest analysis showed that both teacher-assisted and peer-assisted groups significantly improved in receptive and productive knowledge of the L2 forms compared to the control group, but no significant difference was observed between the 2 groups' degree of language development. Results of the qualitative microgenetic analysis revealed that the peer-assisted group outperformed the teacher-assisted group at the first 2 time points of the experiment. The finding that peer-provided assistance was effective with equal or greater benefits as compared to the teacher-assisted group calls into question the traditional belief that L2 learners are incapable of assisting peers in EFL classrooms.

Keywords: Assisted Performance; Teacher-Provided Assistance; Peer-Provided Assistance; Sociocultural Theory; L2 Development

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1. Introduction

In recent years, many SLA/FLA researchers have begun to describe L2 learning from a sociocultural perspective, largely because at its Vygotskian core is the inherently social nature of language and learning as well as the interdependence of the social and the cognitive (Lantolf & Poehner, 2014; Swain, Kinnear & Steinman, 2015). Sociocultural theory (SCT) is radically different from other mostly psycholinguistic/cognitive SLA theories because it does not consider social settings and psycholinguistic processes as separate phenomena, but the processes which mutually constitute one another (Lantolf, Thorne, & Poehner, 2015). The fundamental premise of this theory is the understanding that socialization and language acquisition cannot be separated from the interactive linguistic contexts in which they occur (van Lier, 2014).

As opposed to the cognitivist perspective on SLA that regards language learning as a process that takes place in the mind of the individuals, sociocultural SLA views language learning as a socially-situated process that takes place in people-embedded activities through collaborative interaction (Lantolf et al., 2015). Collaboration is considered an important part of what happens when learners interact with one another (Sato & Ballinger, 2016).

According to SCT, the main feature of learner's collaborative interaction that promotes L2 development is assistance (Foster & Ohta, 2005). Assistance, also called scaffolding (Wood, Bruner, & Ross, 1976), can be obtained in collaborative interactions by means of a range of techniques such as communication breakdown signals (i.e., confirmation checks, comprehension checks, and clarification requests), supporting by monitoring and modifying one's own and the interlocutor's utterances, expressing interest in what the interlocutor is saying and giving encouragement to continue and so forth (Foster & Ohta, 2005; Ohta, 2000, 2001).

From an SCT perspective, zone of proximal development (ZPD) is used to understand how assistance is related to language development (Lantolf & Thorne, 2007). Assisted performance defines what a learner can do with help, with the support of the environment, of others, and of the self (Lantolf, 2013; Lantolf & Thorne, 2007). The contrast between assisted and unassisted performances identifies the fundamental nexus of development and learning, namely ZPD that Vygotsky (1978) defines as "the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers" (p. 86).

Tailored to the context of L2 learning, ZPD is defined as "the distance between the actual developmental level as determined by individual linguistic

production, and the level of potential development as determined through language produced collaboratively with a teacher or peer” (Ohta, 2001, p. 9). This is an important concept because the theory argues that L2 development does not depend solely on internal mechanisms, but on the quality and quantity of external forms of social interaction, support from the interlocutors, and the affordances from the environment that are attuned to a learner’s potential ability. Thus, assistance consists of those supportive behaviors by which an interlocutor can assist a learner to achieve higher levels of language development.

Within the L2 classroom context, assisted performance is fostered through collaborative interaction between the learner and the classroom teacher with whom the learner interacts during learning activities, as well as the classmates around the learner in the classroom, whose utterances and interactions the learner can overhear and appropriate (Ohta, 2001). In other words, the two main sources of assistance are available inside the L2 classroom: teacher-provided assistance and peer-provided assistance.

Whereas research on peer interaction has been investigated since the early 1980s, this research domain has been given much less attention compared to that between learners and teachers (Sato & Ballinger, 2016). To date, research findings have clearly demonstrated that student-teacher interaction and peer interaction are indeed different in many ways (Philp, Adams, & Iwashita, 2013). Nevertheless, there is still no consensus on which should be given priority in L2 teaching and learning. Various claims have been made in the literature about the relative merits of teacher and peer assistance in L2 classrooms.

The pedagogical potential of teacher assistance has been fully recognized over the past decades; however, teacher assistance has been questioned due to the issues of equality, authority, and mutuality (Ballinger, 2013; de Guerrero & Villamil, 2000; Lantolf, 2000; van Lier, 2006). On the other hand, peer interaction has been recognized as an egalitarian context for experimenting with the language (Philp et al., 2013), although it has been criticized because of the significant amount of time it occupies in many L2 classrooms.

Regarding the fact that the comparison between assistance provided by the teacher and the peer has remained an underinvestigated arena in SLA research, it is necessary to advance the research agenda by comparing the merits of these two types of assistance. The present study was an attempt to examine and compare the process of teacher-assisted and peer-assisted performances by Iranian adult English language learners while performing picture tasks eliciting *wh*-question forms.

2. Literature Review

The original account of assistance proposed by Vygotsky (1978) was limited to the support provided by a person who is more competent (e.g., a tutor), or in his own words, “under adult guidance or in collaboration with more capable peers” (p. 86). This account presumed the necessity of existence of an intellectual asymmetry between participants in any joint activity (Lantolf & Poehner, 2014). Inspired by this assumption, a large amount of research addressing the connections between assistance and L2 development placed primary focus on the behavior of teachers as the sole providers of learning affordance and assistance in L2 classrooms and failed to acknowledge the contributing role of peers in language learning (e.g., Aljaafreh & Lantolf, 1994; Lantolf & Aljaafreh, 1995; Nassaji & Swain, 2000).

However, a growing body of studies supports the idea that the joint activity in which learning originates does not require the presence of an expert (i.e., the teacher, tutor, more knowledgeable partner), and that assistance can also take place among learners at the similar level of understanding in a group or pair activity, where the peers have the chance to collaborate (e.g., Donato, 1994; Foster & Ohta, 2005; Ohta, 2000, 2001; Philp, Adams, & Iwashita, 2013; Sato & Ballinger, 2016; Storch, 2002; Swain & Lapkin, 1998, 2001, 2002).

Despite the amount of research on assistance and assisted performance, only a limited number of studies have compared the effectiveness of teacher-provided and peer-provided assistance on L2 development. Toth (2008) examined the role of teacher-led and learner-led discourse in task-based grammar instruction on providing procedural assistance for L2 morphosyntactic development. He compared quantitative and qualitative results for task-based L2 grammar instruction conducted as whole-class, teacher-led discourse versus small-group, learner-led discourse. The results of grammaticality judgment and guided production tasks administered as the pretest, posttest, and delayed posttest indicated stronger performances for the teacher-led discourse learners on both tasks.

In Sato and Lyster’s (2012) pre/posttest design, there were four groups, two of which were given feedback training and communicative tasks. Another was given the communicative tasks only, and a fourth acted as a control group. The results revealed that the peer interaction only group outperformed the control group for fluency development but not for accuracy, whereas the feedback groups outperformed the rest of the groups both for accuracy and fluency.

Sippel and Jackson (2015) investigated the effects of oral teacher and peer corrective feedback on the acquisition of the German present perfect tense. The learners in the teacher feedback group were corrected by their course instructor, whereas the learners in the peer feedback group were trained to provide guidance to

each other at the beginning of a two-day instructional treatment. The results from both an immediate and delayed posttest showed that whereas both experimental groups significantly improved in grammatical accuracy, the largest improvement was seen among the learners in the peer feedback group. These findings support the idea that peer corrective feedback heightens L2 learners' awareness of linguistic forms and that the learners who provide such feedback may benefit not only from receiving but also from providing it.

3. Present Study

Although the literature provides useful insights as to the impact of teacher-provided and peer-provided assistance on different aspects of L2 development, still serious gaps exist. For instance, previous research has merely focused on the provision of corrective feedback in collaborative task performances, whereas not all the problems a learner encounters during interaction is confined to making errors nor is corrective feedback the sole source of assistance from the teacher or other interlocutors. As opposed to the traditional conception of helping the learner in a unidirectional way in L2 activities in the form of corrective feedback, assistance refers to a joint effort constructed on the basis of the learner's need which is a function of the social interaction and collaboration of both the learner and the expert/peer operating within the learner's ZPD (Nassaji & Swain, 2000). Thus, narrowing down the notion of assistance to corrective feedback does not do it justice.

Another remarkable gap observed in the literature relates to a methodological drawback in previous research designs. As the cursory glance over the literature reveals, previous studies that have examined the connection between assisted performances and L2 learning are of two kinds. One type has utilized a microgenetic analysis of interactions that take place over a short period of time or of a sequence of interactions that take place in a single lesson (e.g., Aljaafreh & Lantolf, 1994; Donato, 1994; Ohta, 2000, 2001). Microgenetic analysis allows the observation of language development at the very moment it is thought to occur. For Vygotsky (1978), this type of thorough, minute analysis that grasps undergoing changes in flight is crucial in understanding how developmental processes are formed. A limitation of these studies is that they examine development entirely in terms of the immediate performance during a specific activity. It is, therefore, impossible to say whether the learner has reached the final level of development. To show that full internalization has taken place, some kind of experimental design involving pre/posttests is needed.

The second type has employed quasi-experimental designs involving pretest/posttests to investigate how collaborative interaction assists understanding of specific language features and their internalization over time. However, these studies

have focused on internalization at the expense of ongoing and immediate developmental changes (e.g., Nassaji & Swain, 2000; Swain & Lapkin, 2002; Sato & Lyster, 2012; Toth, 2008). In short, previous studies investigating L2 development as a result of assistance have taken a unidirectional stance: Either they have focused on the overt, online, and short-term signs of language development, or they have centered on the degree of change occurred as a result of the experiment over time.

The present study was an attempt to address the gaps in the literature. Firstly, the particular point of departure was to concentrate on the assistance as the support given during the language learning process in the interactive space created when learners work with each other or with the teacher on language learning tasks. Secondly, the study aimed to bridge the gap between microgenetic and pretest/posttest methods by taking both methods into account in a mixed-methods research design.

L2 development in this study was seen from two different dimensions: The development during ongoing moment-to-moment interactions was examined through a microgenetic analysis of qualitative data, whereas the development over time was considered through a pre/posttest measurement of quantitative data.

In light of insights gleaned from SCT, the study sought to address the following research questions:

1. What are the effects of teacher-provided assistance and peer-provided assistance on L2 learners' receptive and productive development of *wh*-question forms over time?
2. What are the effects of teacher-provided assistance and peer-provided assistance on L2 learners' microgenetic development of *wh*-question forms?

4. Method

4.1. Participants

The participants were 90 female adult EFL students at Skeikhbahaee University (Isfahan), who were majoring in TEFL, translation studies, and English literature, and had enrolled in the *Conversation in English* as a required course. Their age ranged between 18 and 25 and shared Persian as their L1.

The participants were selected from an original pool of 130 students that were assigned to three intact classes: There were 41 students in class A, 46 in class B, and 43 in class C. Because the classes were assigned by the university registration office, it was practically impossible to disrupt the prearranged structure of the

classes. As such, the homogeneity of the participants in terms of language proficiency and sample size could become an extraneous variable.

To control for the language proficiency, the Preliminary English Test (PET) (2016) was administered to the original pool of 130 students in the three classes. In class A, 36 students scored within the range of 1 standard deviation above and below the mean. In order to control for the sample size variable, out of those 36 students, 30 students were randomly selected as the participants in the teacher-assisted group. In class B, 38 students scored within the range of 1 standard deviation above and below the mean out of whom 30 students were randomly selected as the participants who shaped the peer-assisted group. In class C, 36 students scored within the range of 1 standard deviation above and below the mean out of whom 30 students were randomly selected as the participants in the control group of the study.

Overall, considering that 30 students from each of the three intact classes were selected, an ultimate number of 90 students shaped the participants who constituted the teacher-assisted, peer-assisted, and the control groups. The rest of the students who were not selected as the participants received and performed the tasks in the treatment sessions, but their data were excluded from the analyses of the study.

4.2. Materials

4.2.1. Preliminary English test (PET)

PET is a standardized English general language proficiency test which was used to ensure the homogeneity of the participants. PET is made up of three exam papers which incorporate all the four language skills; however, due to practical limitations, only its Reading and Writing sections were administered to the original pool of the students.

4.2.2. Picture tasks

Three picture tasks were designed to collect the data for further analysis. The tasks were given a form-focused goal in order to elicit the target form from the participants and observe the interactional behavior of the groups during the assistance process. Each task included a picture depicting a real-life scene. The participants were required to imagine a story with reference to what could be seen or inferred from the picture and make five questions. The tasks provided to all the three groups were the same, but the interactional approach in groups differed in accordance with the experimental conditions (i.e., teacher-student interaction, peer interaction, or control).

One point that merits particular mention here is the target form of the tasks. Special care had to be taken of the target form because research on collaborative task performance has indicated that the relationship between engagement in collaboration and learning may be mediated by the target form (e.g., Mackey & Gass, 2016; Nuevo, Adams & Ross-Feldman, 2011). *Wh*-question forms seemed to be a good choice as the target form of the investigation because they “are very common in English conversation with an average of one question per every 40 words in conversation” (Biber et al., 1999, p. 211). Besides, they are among the problematic parts of the English language for EFL learners. Several syntactic operations such as *wh*-fronting, auxiliary verb inversion, and *do*-support (de Villiers, de Villiers & Roeper, 2011), which may pose difficulty for L2 learners, are involved in *wh*-question formation. Thus, *wh*-question forms seemed to provide opportunities for negotiation while performing focused production tasks. Additionally, they seemed particularly amenable to the purposes of the study because they are relatively easy to elicit in communicative tasks (Rassaei, 2014). The *wh*-question words that were the focus of treatment and test in this study were *what*, *where*, *who*, *why*, and *how*.

4.2.3. Testing materials

Two testing instruments were used in a pretest/posttest sequence to collect the quantitative data: an untimed grammaticality judgment test (UGJT) and a question formation test (QFT). Two different types of tests were used to examine the different aspects of language learning. UGJT was included to elicit the learners' receptive knowledge before and after the treatment. QFT was intended to measure the participants' productive knowledge of the target form before and after the treatment. UGJT consisted of 45 sentences, 30 of which examined the correct use of the target question forms. Fifteen of the items were question forms other than *wh*-questions that were included to desensitize the participants to target structures on the test. Of the 30 items on *wh*-question forms, 15 were grammatical and 15 ungrammatical. QFT consisted of 15 sentences, in each of which a certain word was underlined. The participants were asked to make *wh*-questions based on the underlined word.

In each administration of the pre and posttests, all the tests were completed individually during class time. Individual assessment, rather than interactive assessment, was chosen in order to maximize the uniformity of testing conditions within and between the learners and across the two testing sessions, as well as measuring each learner's productive and receptive knowledge of the target form while avoiding any influence from an interlocutor's speech.

In an effort to minimize the practice effect, two counterbalanced versions of UGJT and QFT were developed. In the pretest administration, half the

participants received one version of the tests and the other half received the other version. At the end of the experiment, each participant received the opposite version as the posttest.

4.3. Procedure

4.3.1. Experimental procedure

The experimental procedure was integrated into a *Conversation in English* course for university undergraduate students majoring in TEFL, translation studies, and English literature. At the outset of the experiment, a decision had to be made as to whether the research should examine the groups' task performances in isolation or in conjunction with instruction. Despite theoretical justifications in favor of isolating the effects of assistance from instruction, there is strong evidence that assisted performance and instruction are best seen as complementary in pedagogical terms (Li, 2010; Lyster, Saito & Sato, 2013; Sheen, 2010). Li (2010) explains that prior instruction ensures that those receiving the treatment will be at a similar level in their knowledge of the target feature. Thus, with all the groups receiving the same instruction, but different instructional treatments, any effects observed in the between-group comparisons may be due to the treatment itself. In addition, Hattie and Timperley (2007) suggest that assistance "can only build on something; it is of little use when there is no initial learning or surface information" (p. 104).

On the above grounds, the experiment started with an instruction session, during which the participants were briefed about *wh*-question structure and the relevant rules were explained and practiced. The instruction, which was run in the second week of the semester and lasted around 30 min, was presented to the groups identically.

The participants met twice a week for 90-min lessons over a 14-week semester. The experimental procedure started in the third week of the semester and proceeded over a 10-week period. The participants in the three groups were provided with three tasks in weeks 3, 5, and 8 of the experiment. Each treatment session lasted around 45 min. The teacher taught her classes as usual and did not revise her planned activities or method for the purposes of the research being conducted.

The instruction for doing the tasks differed in each group according to the experimental condition. The participants in the teacher-assisted group worked on the tasks with their teacher individually. Each learner was provided with a picture task while the teacher urged the learner to ask questions about the picture. The teacher assisted and scaffolded the learner's production throughout the interactive task performance. The assistance included hints whenever the learner was struggling

with the language production as well as reacting to the learner's erroneous outcomes whenever errors occurred.

In the peer-assisted group, the tasks were just the same, but the interactions were carried out between student pairs rather than with the teacher. For each treatment, the participants in the peer-assisted group were, first, divided into pairs; then, they worked on the task collaboratively. The peers were instructed to work on the task together and assist their partners whenever needed. The pairs were made under the supervision of the teacher so as to form matched language proficiency dyads. The 30 participants whose language proficiency was determined to be at the intermediate level were arbitrarily paired with one another. The rest of the students were also allocated into pairs, but their data were excluded from the data analysis procedure. Learner pairings varied from session to session with the result that each learner had the opportunity to work with all her other class members and was exposed to a range of interactional styles.

Previous studies have emphasized the importance of the teacher's role in supporting or scaffolding the quality and quantity of students' L2 production during collaborative activities (e.g., Henderson & Palmer, 2015; Sato & Ballinger, 2012). It has been argued that without the teacher's skillful set up and support, the potential of peer interaction activities can be wasted and classroom time lost (Philp et al., 2013). Thus, it is necessary for teachers to play an active role in increasing the effectiveness of peer interaction by teaching students how to better interact during peer interaction, taking the time to make informed decisions in organizing such activities, and supporting students during those activities (Sato & Ballinger, 2016). Consequently, the teacher tried to be available during the pair practice by circulating among the students and offering support when necessary. However, her role was just a supportive observer who did not engage in the pairs' interactions, but was ready and available to assist the students if they asked for help. In fact, the role of the teacher in peer-assisted group shifted to class-supporter, a guidance reference, and a facilitator of learning instead of class-dominator and the sole authority in the class.

As regards the control group, the participants worked on the tasks individually, but no interaction took place. Each student was given a picture task and asked to write five *wh*-questions and submit them to the teacher. The teacher was sitting at her desk during the class activities and did not get involved in the students' task performances.

4.3.2. Testing procedure

The testing procedure followed a pre/posttest format. In the second week of the semester, the pretest was administered. In the 10th week of the semester, the counterbalanced version of the same test was administered as the posttest.

4.4. Data Coding and Analysis

Two sets of quantitative and qualitative data were collected from the experimental procedure. The first set of data was obtained from the quantitative pretest/posttest procedure (including UGJT and QFT), administered to the three groups. To score UGJT, the participants received 1 point for each correctly identified answer. Likewise, to score QFT, the participants received 1 point for any grammatically correct question form. The scores were, then, fed into the SPSS software (version 20.0).

A cohort of audiorecorded dyadic interactions from teacher-assisted and peer-assisted groups shaped the qualitative data to address the microgenetic development. In the first place, the data had to be transcribed and coded systematically. The unit of coding was assistance episode. An assistance episode was defined as any segment of dyadic dialog (teacher-student or peer-peer) in which the teacher or a peer assisted the interlocutor to improve the accuracy of their nontarget *wh*-question forms.

Following previous research (e.g., Gutiérrez, 2008; Lantolf, 2000; Ohta, 2001), microgenetic development was examined based on identification of microgenesis instances (MGI) throughout the coded data. Thus, the assistance episodes were analyzed to find points of microgenetic development as “the overt signs that some language improvement had taken place” (Gutiérrez, 2008, p.7). The criterion to determine the improvement during dyadic interactions was the outcome of the assistance; if assistance yielded successful correction or production of the *wh*-question form and the learner incorporated the suggested change, the assistance episode was considered as an instance of microgenetic development. MGIs were considered as the proportion of the assistance episodes containing signs of microgenetic development to the total number of assistance episodes per task.

5. Results

5.1. Pre/Posttest Analysis

The first part of the L2 development analysis involved a pre/posttest measurement of change over time on both receptive (UGJT) and productive (QFT) knowledge of the target form. A one-way ANOVA was performed to compare the outcomes between the three groups. These analyses are detailed in the following sections.

5.1.1. Results of untimed grammaticality judgment test (UGJT)

Table 1 presents the results of the one-way ANOVA for the comparison of the UGJT pretest scores of the three groups at the outset of the experiment:

Table 1. *One-Way ANOVA for Comparison of UGJT Pretest Scores of Three Groups*

	Sum of Squares	<i>df</i>	Mean Square	<i>F</i>	<i>Sig.</i>
Between Groups	.556	2	.278	.150	.861
Within Groups	161.400	87	1.855		
Total	161.956	89			

The results in Table 1 indicate that there were no statistically significant differences between the three groups at the outset of the study when the participants took UGJT as the pretest. But the results for the posttest, as displayed in Table 2, are quite different:

Table 2. *One-Way ANOVA for Comparison of UGJT Posttest Scores of Three Groups*

	Sum of Squares	<i>df</i>	Mean Square	<i>F</i>	<i>Sig.</i>
Between Groups	854.289	2	427.144	192.049	.000
Within Groups	193.500	87	2.224		
Total	1047.789	89			

According to Table 2, there was a significant difference between the groups' UGJT posttest results at the end of the experiment ($p < 0.05$). As presented in Table 3, the post-hoc Tukey HSD test was run to address the points of significant difference between the groups:

Table 3. *Post-Hoc Tukey HSD Test for Multiple Comparisons of Groups for UGJT Posttest Scores*

(I) Group	(J) Group	Mean Difference (I-J)	Std. Error	<i>Sig.</i>	95% Confidence Interval	
					Lower Bound	Upper Bound
Teacher-Assisted	Peer-Assisted	.23333	.38364	.816	-.6814	1.1481
	Control	6.60000*	.38364	.000	5.6852	7.5148
Peer-Assisted	Teacher-Assisted	-.23333	.38364	.816	-1.1481	.6814
	Control	6.36667*	.38364	.000	5.4519	7.2814
Control	Teacher-Assisted	-6.60000*	.38364	.000	-7.5148	-5.6852
	Peer-Assisted	-6.36667*	.38364	.000	-7.2814	-5.4519

*The mean difference is significant at the 0.05 level.

By examining Table 3, it is clear that at specific points the p value is at the significance level ($p < 0.05$). The points of significant difference refer to the comparison of the control group with the other two groups. In other words, the results indicate a significant difference between the control group and the teacher-assisted and the peer-assisted groups at the end of the experiment in terms of the mean scores of UGJT as the posttest. Nevertheless, no statistically significant

difference was observed between the results of the teacher-assisted and peer-assisted groups.

5.1.2. Results of question formation test (QFT)

Table 4 presents the results of the one-way ANOVA for the comparison of the QFT pretest scores within the groups at the outset of the study:

Table 4. *One-Way ANOVA for Comparison of QFT Pretest Scores of Three Groups*

	Sum of Squares	<i>df</i>	Mean Square	<i>F</i>	<i>Sig.</i>
Between Groups	5.956	2	2.978	.755	.473
Within Groups	342.933	87	3.942		
Total	348.889	89			

Table 4 suggests that there was no significant difference between the groups in terms of the QFT pretest scores at the outset of the study. Nevertheless, performing the same test on the QFT posttest scores yielded different results, as presented in Table 5:

Table 5. *One-Way ANOVA for Comparison of QFT Posttest Scores of Three Groups*

	Sum of Squares	<i>df</i>	Mean Square	<i>F</i>	<i>Sig.</i>
Between Groups	706.489	2	353.244	110.760	.000
Within Groups	277.467	87	3.189		
Total	983.956	89			

According to Table 5, there was a significant difference between the groups in terms of the QFT scores at the posttest. In order to determine the exact points of difference, a post-hoc Tukey HSD test was performed, the results of which appear in Table 6:

Table 6. *Post-Hoc Tukey HSD Test for Multiple Comparisons of Groups for QFT Posttest Scores*

(I) Group	(J) Group	Mean Difference (I-J)	Std. Error	<i>Sig.</i>	95% Confidence Interval	
					Lower Bound	Upper Bound
Teacher-Assisted	Peer-Assisted	.40000	.46111	.662	-.6995	1.4995
	Control	6.13333*	.46111	.000	5.0338	7.2328
Peer-Assisted	Teacher-Assisted	-.40000	.46111	.662	-1.4995	.6995
	Control	5.73333*	.46111	.000	4.6338	6.8328
Control	Teacher-Assisted	-6.13333*	.46111	.000	-7.2328	-5.0338
	Peer-Assisted	-5.73333*	.46111	.000	-6.8328	-4.6338

*The mean difference is significant at the 0.05 level.

At first glance, what is evident from Table 6 is that, at some points, the p values are at the significance level. Further inspection reveals that all the statistically significant differences refer to the comparison of the control group with the other two groups. Nevertheless, no such difference was observed between the teacher-assisted and peer-assisted groups.

5.2. *Microgenetic Analysis (MGIs)*

The interactions in the experimental groups were scrutinized in order to observe MGIs, that is, moment-to-moment changes in behavior that might signal language development through mediated assistance. For the sake of brevity, one MGI from each group will be offered as illustration. Excerpt 1 gives an example of how the teacher assisted a student in an assistance episode that successfully led to production of a correct target form (see Appendix for transcription conventions).

- Excerpt 1:
 - 1 S: Why (.) why are not speaking?
 - 2 T: Good question! Yeah, they are not speaking to each other in the picture.
 - 3 S: Ahhh, why are not speaking to each other?
 - 4 T: Where's the subject?
 - 5 S: Why they are not speaking to each other?
 - 6 T: Be careful about the order of the subject and the auxiliary verb!
 - 7 S: Ahhh, why (.) why::: are they not , no no, why aren't they speaking together.
 - 8 T: Once again!
 - 9 S: Why aren't they speaking to each other?

In excerpt 1, first the student reads aloud her malformed *wh*-question form that contains multiple errors. In line 2, the teacher provides the student with a recast, that is, without directly indicating that the student's utterance was incorrect, the teacher implicitly reformulates the student's error. The student corrects one of her errors in line 3, but the question form is still not correct. Thus, the teacher in lines 4 and 6 provides assistance with metalinguistic clues, that is, by posing questions about the structure of the sentence. As a result of the teacher's assistance, the student finally manages to produce a correct question form. This episode sheds light on the nature of teacher assistance. Evidently, the teacher takes the lead; her tone is authoritative and she assumes a tutor role as she tries to provide other-regulation.

Excerpt 2 demonstrates an interesting example of coconstruction by the peers. S1 is trying to rectify an error that she has already been informed about. But she encounters difficulty formulating the correct form and coconstruction occurs when S2 chimes in to provide a continuation of what the partner has said:

- Excerpt 2:
- 1 S1: Who did rec- (.) who did (.) who recommor..., recom... (.)
 2 S2: recommend?
 3 S1: Ah, Yes. Who did recommend the restaurant (.) to the guy?
 4 S2: Uh hmm.
 5 S1: I am not sure.
 6 S2: I think we should say “Who recommended” because (.) subject... Er,
 we are asking about the subject.
 7 S1: Okay (.) Okay. Who recommended the restaurant to the guy? Do you
 agree?
 8 S2: Yes. Right!

In this example, S1’s trouble is evident in her pauses and hesitations. She does not recall a word and repeatedly utters a partial syllable of it (recommend). In addition, with two possibilities for making a subject or object question form, she has a decision to make but she is in two minds whether or not to use the auxiliary verb. S2 joins her in producing the utterance by providing just the right word as well as a cue to the correct question form. In fact, her contribution (the phrase *who recommended*) has two functions: In the first place, it provides her partner with the word she is looking for; also, it assures her which structure she should use (i.e., the subject question form). S2’s provision of assistance guides student 1 to move forward and do what she is able to do independently. This episode demonstrates the improvement flow in peer interaction that emerges from each student and result in a joint production, a process which has been characterized as an *artful dance* by previous researchers (e.g., de Guerrero & Villamil, 2000; Lidz, 1991). The peers’ choice of language to conduct the interaction constitutes yet another sign of joint responsibility and effort at task operationalization. The episode concludes with the S1’s question: “Do you agree?”. By seeking her peer’s approval, S1 is displaying affective involvement which is another remarkable feature of peer assistance.

In the above examples, all the behaviors on the teacher’s and peers’ parts helped to construct a supportive scaffold for the interaction from which an instance of microgenetic development emerged. The whole cohort of data for the experimental groups were analyzed in a similar vein. Table 7 summarizes the descriptive results of MGI analysis for each group per task:

Table 7. *Descriptive Statistics for MGIs per Task*

	Group	Mean	Std. Deviation	<i>N</i>
Task 1	Teacher-Assisted	37.2333	11.75521	30
	Peer-Assisted	71.3333	19.71580	30
	Total	54.2833	23.55023	60
Task 2	Teacher-Assisted	59.6667	23.95590	30
	Peer-Assisted	85.1000	15.10960	30

	Total	72.3833	23.63787	60
	Teacher-Assisted	96.6667	12.68541	30
Task 3	Peer-Assisted	95.0000	15.25643	30
	Total	95.8333	13.93589	60

In order to compare the microgenetic development in the teacher-assisted and peer-assisted groups, repeated measures ANOVA was performed. As portrayed in Table 8, the results demonstrate a significant difference between the two groups' MGIs measures $F(1, 58) = 60.508, p < 0.05$. This entails that participants differed significantly on their microgenetic development depending on their group, that is, teacher-assisted versus peer-assisted:

Table 8. *Repeated Measures ANOVA for Comparing MGIs of Teacher-Assisted and Peer-Assisted Groups*

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power ^a
Intercept	990125.000	1	990125.000	3578.265	.000	.984	3578.265	1.000
Group	16742.756	1	16742.756	60.508	.000	.511	60.508	1.000
Error	16048.911	58	276.705					

^aComputed using alpha = .05

Table 9 presents the within-subjects effects of the experiment on the two groups across time. The *Time* box of the table indicates that there was a significant change over the three points of time within the groups, $F(2,116) = 89.072, p < 0.05$.

Besides, the *Time*Group* box in Table 9 demonstrates that the changes in MGI measures across time were not equivalent in the two groups. In other words, there was a statistically significant difference between the two groups' microgenetic development across time, $F(2,116) = 17.863, p < 0.05$:

Table 9. *ANOVA for Comparing Two Groups' MGIs Across Time*

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power ^a
Time	Sphericity Assumed	52078.300	2	26039.150	89.072	.000	.606	178.144	1.000
	Greenhouse-Geisser	52078.300	1.725	30198.704	89.072	.000	.606	153.607	1.000
	Huynh-Feldt	52078.300	1.803	28882.377	89.072	.000	.606	160.608	1.000
	Lower-Bound	52078.300	1.000	52078.300	89.072	.000	.606	89.072	1.000
Time * Group	Sphericity Assumed	10443.878	2	5221.939	17.863	.000	.235	35.725	1.000

	Greenhouse-Geisser	10443.878	1.725	6056.103	17.863	.000	.235	30.805	.999
	Huynh-Feldt	10443.878	1.803	5792.125	17.863	.000	.235	32.209	1.000
	Lower-Bound	10443.878	1.000	10443.878	17.863	.000	.235	17.863	.986
	Sphericity Assumed	33911.156	116	292.338					
Error (Time)	Greenhouse-Geisser	33911.156	100.022	339.036					
	Huynh-Feldt	33911.156	104.581	324.258					
	Lower-Bound	33911.156	58.000	584.675					

^aComputed using alpha = .05

In order to address the exact points of significant differences, a post-hoc test using the Bonferroni correction was run, the results of which are presented in Table 10:

Table 10. *Pairwise Comparisons for Time-Group Interaction*

Time	(I) Group	(J) Group	Mean Difference (I-J)	Std. Error	Sig. ^b	95% Confidence Interval for Difference ^b	
						Lower Bound	Upper Bound
1	Teacher-Assisted	Peer-Assisted	-34.100*	4.191	.000	-42.489	-25.711
	Peer-Assisted	Teacher-Assisted	34.100*	4.191	.000	25.711	42.489
2	Teacher-Assisted	Peer-Assisted	-25.433*	5.171	.000	-35.784	-15.082
	Peer-Assisted	Teacher-Assisted	25.433*	5.171	.000	15.082	35.784
3	Teacher-Assisted	Peer-Assisted	1.667	3.623	.647	-5.585	8.918
	Peer-Assisted	Teacher-Assisted	-1.667	3.623	.647	-8.918	5.585

Based on estimated marginal means

*The mean difference is significant at the .05 level.

^bAdjustment for multiple comparisons: Bonferroni.

From the results in Table 10, it could be inferred that, at Time 1 and Time 2, there was a significant difference between the MGI measures of the teacher-assisted and peer-assisted groups because, at these two points of time, the p value was at the significance level ($p < 0.05$). Yet, at Time 3, it was not so because the p value at this point ($p = 0.647$) was way beyond the significance level.

The pairwise comparison across time is represented graphically in Figure 1. An upward trend for both groups is evident in the profile plot. It may be seen clearly that for both groups microgenesis increased steadily in all the three points of time. Furthermore, as the statistical measures in Table 10 demonstrate, the mean measures

of MGIs were quite distinct at Time 1 and Time 2, but toward the end of the experiment the two groups converged at Time 3:

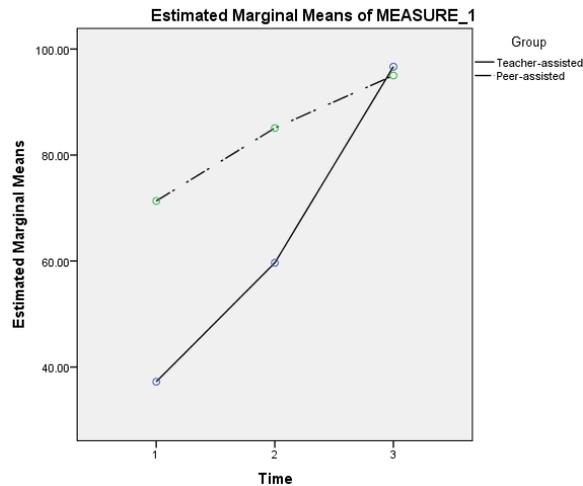


Figure 1. Profile plot displaying microgenetic development across time.

6. Discussion

The first research question of the present study aimed at examining and comparing the effect of teacher-provided or peer-provided assistance on the participants' productive and receptive learning of the target forms by means of a pre/posttest measurement. The analysis demonstrated that the participants in the teacher-assisted, the peer-assisted, and the control groups had comparable prior receptive/productive knowledge of the *wh*-question forms at the beginning of the experiment as measured by UGJT and QFT. At the posttest, only the two experimental groups greatly benefited from the treatment and displayed a learning gain of *wh*-question form in terms of both receptive and productive knowledge.

Furthermore, the analysis did not document any significantly differential pretest/posttest development between the teacher-assisted and the peer-assisted groups. In other words, contrary to the control group, the experimental groups made similar gains across the pretest/posttest measures.

A surprising and novel finding that may throw lights on the aspects of teacher and peer assistance that were missed in the pre/posttest measurement came out as a result of microgenetic analysis which was performed to address the second research question of the study. The microgenetic analysis revealed that the peer-assisted group outperformed the teacher-assisted group at the first and second time points of the experiment. What the microgenetic results reflect is that some aspects

of language development (e.g., the online, local, contextualized learning processes) seem to be better served by peer interaction.

As witnessed by a large body of previous work (e.g., Gutiérrez, 2008; Lantolf, 2000; Ohta, 2001), microgenetic approach has been proven to be extremely useful in providing a greater understanding of the complex, manifold mechanisms that are at play during mediated interaction and has brought to light behaviors that may contribute to L2 growth but frequently go unnoticed in the study of L2 development. The findings, thus, could be interpreted according to the scaffolding behaviors that emerge from learners' interactions when engaged in task performance. Excerpts 1 and 2 illustrated some of those behaviors. In the microgenetic analysis of the excerpts, it was noted that, in contrast to excerpt 1 where the teacher displayed an authoritative leading role, in excerpt 2, the peers collaboratively formulated and reformulated options till they finally settled on a satisfactory solution through partnership, affective involvement, and joint construction. This reflects the social embeddedness and collaborative genesis of peer interaction. Thus, a possible reason for the sustained microgenetic outperformance in the peer-assisted group might be found in the collaborative nature of peer interaction. The learners in this group engaged in more discussions about linguistic forms and had more speaking and practice opportunities than did the learners in the teacher-assisted group.

The findings could also be interpreted in light of the insights from earlier sociocultural studies that have attributed the value of peer interaction to the issues of equality (de Guerrero & Villamil, 2000), mutuality (Lantolf, 2000; van Lier, 2006), and intersubjectivity (Ballinger, 2013). In accordance with the present results, previous studies have demonstrated that peer interaction is a much more egalitarian context for practice and participation where assistance can be a matter for debate (e.g., Foster & Ohta, 2005; Philp et al., 2013). Because there is no expert present and because it is not carefully monitored, peer interaction is generally felt to be less stressful than teacher-led interaction (Sato & Lyster, 2012). Moreover, it has been shown that one of the key advantages of peer interaction is the absence of an authority figure that results in freedom for students to take risks and experiment with linguistic forms (Henderson & Palmer, 2015; Sato & Ballinger, 2012).

Furthermore, the learners in the peer-assisted group benefited from both receiving and providing assistance. In contrast, the learners in the teacher-assisted group assumed only one role: the rather passive role of the receiver of assistance. Thus, in line with previous studies (e.g., Sato & Lyster, 2012; Sippel & Jackson, 2015), a plausible explanation for the effectiveness of peer assistance in the present study is that it encouraged noticing and heightened the learners' awareness of linguistic forms more than teacher assistance because the peer-assisted learners were

encouraged to notice not only corrections and explanations provided by the peers but also errors in their peers' speech.

It is also noteworthy that improvement occurred on both QFT and UGJT. The fact that the learners in the two experimental groups improved in making correct *wh*-question forms and accurately correcting ungrammatical *wh*-questions suggests that both teacher- and peer-assistance improved not only the learners' production but also their metalinguistic knowledge concerning the *wh*-question forms.

Finally, one might argue that the participants in the teacher-assisted and peer-assisted groups improved because they had opportunities to review and practice the target structure rather than because of the assistance per se. Previous work on both teacher and peer assistance has shown that instruction and practice, when combined with an assistance component, are more effective than instruction and practice alone (e.g., Sato & Lyster, 2012). Therefore, whereas improvements in the present study probably stemmed from a combination of practice and assistance, it should be recognized that the gains made by the two treatment groups may not be attributed solely to the additional practice they received considering that the participants in the control group did not show such improvement.

An important issue that deserves special mention here relates to the observation that the results of peer and teacher assistance toward the end of the experiment (Time 3) were not significantly different. According to the insights from SCT, this might be taken as symptoms of self-regulated behavior on the learners' part. SCT argues that when the students begin experimenting with the language, they are at the other-regulation stage of development in which they rely on and are open to assistance from others (Lantolf & Thorne, 2007). Gradually, as individuals cognitively develop and internalize the language forms, the level of support to complete tasks decreases until they are able to carry out actions without the support of others. At this point, they are regarded as being self-regulated. Based on this, the results of the current study witness the emergence of the learners' self-regulation and their gradual growth as a more independent learner over time. Evidently, at the level of self-regulation, it does not make a difference whether the teacher or the peer is present to offer assistance because the learner at this stage is able to manage his or her language task independently and without intervention from external sources.

To sum up, the findings from the pre/posttest and microgenetic analyses support the sociocultural belief that the teacher and peers are both partners in L2 interactions, although they are likely to offer quite different, but equally valuable, kinds of learning opportunities and affordances (Lantolf et al., 2015). The significance attached to the contribution of peer interaction witnessed in this study might be taken as evidence against Vygotsky's (1978) postulation that assistance

comes only from a more capable interlocutor. The labels *expert-novice*, *more capable*, *more proficient*, or *strong* interlocutor in Vygotsky's ideas imply a persistent state of one participant being generally abler than another. In other words, the phenomenon of assistance has its source in the pooled expertise of collaborators. However, the findings of the study reveal that the source of assistance may not merely be expertise. Indeed, the observation that the peers provided effective assistance to each other establishes evidence that mutuality and reciprocity could be sources of assistance, as well. This finding is in line with the findings of the previous work in the STC framework, arguing that as opposed to the initial conceptualization of ZPD as an interactional space in which a novice's activity is supported by an adult or more capable peer, ZPD has been found to be alive and well in peer learning settings where there is no unequivocal expert (e.g., de Guerrero & Villamil, 2000; Foster & Ohta, 2005; Guk & Kellogg, 2007; Ohta, 2001).

7. Conclusion

The present study investigated the effect of teacher-provided and peer-provided assistance on intermediate EFL learners' acquisition of *wh*-question forms in an Iranian context.

The results demonstrated that both teacher-provided and peer-provided assistance were effective, with equal or greater benefits for the peer-assisted group as compared to the teacher-assisted group. As such, the present findings highlight the effectiveness of peer assistance as a pedagogical tool in L2 classrooms.

From a broader viewpoint, the findings call into question the persistent belief among some language theoreticians and practitioners that students are incapable of assisting peers because of their lack of language ability, skill, and experience (Saito & Fujita, 2004). Traditionally, there has been a shared belief that consistent target-like models of L2 use are clearly the province of the teacher (Philp, Walter, & Basturkmen, 2010). There has been a misconception that peers are unlikely to provide scaffolding with the skill of a trained teacher (Fujii & Mackey, 2009), and peer interaction has been wrongly characterized by inconsistencies, interlanguage forms, infrequent feedback, and a reduced ability to provide synonyms or to paraphrase or reformulate meanings (Philp et al., 2010).

The findings of the present study cast doubts on the long-held belief of superiority of teacher-led assistance and accords with current trends in research on interaction and L2 learning that point to social relations as factors that one cannot afford to ignore when considering the effectiveness of classroom interaction.

The most important implication that emerges from the findings of this study is that peer interaction might be a possible alternative for teacher-fronted instruction, especially on the L2 input-poor contexts, where very busy teachers do not have

opportunities to interact with individual students. The findings contribute to the shift in language teaching towards a more learner-centered approach by encouraging the use of pair or small group work and taking advantage of the potential of peer interaction and collaborative language learning in the Iranian EFL context.

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Appendix **Transcription Conventions**

- False start
- (.) Brief pause
-] points of overlapped speech across two turns
- :: lengthening of syllable
- (()) researcher comments or translation
- italics*: non-English speech
- T: The teacher in the particular excerpt
- S: The student in the particular excerpt