

Challenges in Foreign Language Teaching in Iran

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Edited by

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and Gholamreza Zareian

Cambridge
Scholars
Publishing



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This book first published 2017

Cambridge Scholars Publishing

Lady Stephenson Library, Newcastle upon Tyne, NE6 2PA, UK

British Library Cataloguing in Publication Data

A catalogue record for this book is available from the British Library

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ISBN (10): 1-4438-9503-2

ISBN (13): 978-1-4438-9503-3

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CHAPTER ONE

THE EFFECT OF INTERACTIONIST DYNAMIC ASSESSMENT ON IRANIAN INTERMEDIATE EFL LEARNERS' READING COMPREHENSION

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Abstract

According to Vygotsky's idea on sociocultural theory (SCT), dynamic assessment (DA) employs mediation to activate a learner's zone of proximal development (ZPD). This study reports an investigation into the effect of scaffolding on the reading comprehension abilities of English as a Foreign Language (EFL) learners. The study aimed to discover the role of teacher- and peer-scaffolding in helping learners improve their reading comprehension abilities. Participants included two groups of 28 intermediate EFL learners who enrolled in conversation classes at a private institute in Iran. One group was provided with teacher- and peer-scaffolding and the other group was provided with non-dynamic instruction during reading comprehension classes. A reading comprehension test (Objective PET) was used before and after the treatment. The *Intermediate Select Readings* book was employed as the material for the treatment of the study. A mixed-method design was adopted in the current study. In the quantitative part of the study, by applying paired-samples and independent-sample t-tests, the scores of the pretests and post-tests of both groups were compared within and across the groups. The participants' interactions were collected during 16 sessions and were analyzed according to Lidz's (1991) 12 component behaviors of adult mediating instruction for qualitative parts. The results of t-tests

showed that using teacher- and peer-scaffolding in teaching reading comprehension creates greater success in improving students' abilities. Data analysis of interactions also revealed that the teacher and peers employed different scaffolding behaviors such as mini-lessons, meaning, praise, challenge, change, intentionality, transcendence, joint regard, and sharing experiences. The findings of this study show the efficacy of employing DA in teaching reading comprehension. Therefore, results of the study confirm the use of DA as an appropriate method of instructing reading comprehension in language classes. DA can also be used as a supplementary method together with other methods such as task-based and cooperative approaches.

Keywords: Sociocultural theory, Dynamic assessment, Zone of proximal development (ZPD), Scaffolding

1. Introduction

Testing processes are viewed negatively when they limit learners to achieving materials in a way that improves their performances in taking high-stakes and often standardized tests (Sacks, 1999; Ravitch, 2010; Poehner & Lantolf, 2013). In this way, learners focus on testing procedures in which the quality of test administration is more important than teaching and learning. In fact, teaching for testing is a method that leads learners to achieve packaged knowledge and procedures for the narrow context of tests (Poehner & Lantolf, 2013).

When a learner makes an error and asks a question, the teacher must decide how to answer to that error or question. Varieties of responses are at hand for the teacher, such as a final answer, ignoring the error, and asking other learners to provide the correct answer (DeKeyser, 1993; Lyster, 1998). Those questions and errors are opportunities for the teacher to evaluate the situation, the sources of errors or misconceptions according to the context, and to promote language development (Aljaafreh & Lantolf, 1994). The teacher must make an appropriate decision on the basis of a particular framework of responses to the learners in a way that is considered helpful to their development (Rea-Dickins, 2006).

On the other hand, achieving a high level of ability in reading comprehension is a goal for many learners. They want to be able to read to attain information and for pleasure, for improving their occupations, and for achieving study goals. In fact, in most EFL contexts, reading ability in the target language is all that students ever wish to acquire. Written texts provide varieties of pedagogical purpose. Extensive exposure to

linguistically comprehensible written texts can improve the process of language acquisition (Richards & Renandya, 2002).

DA of reading comprehension utilizes a response-to-instruction model to complement traditional static assessment of word recognition and reading comprehension. DA helps the teacher predict appropriate intervention by exploring students' responses to a series of mediations in an interaction (Carney & Cioffi, 1990).

Previous studies have mostly focused on the effects of teacher and learner interactions or interactions among learners on language teaching and learning; however, the effect of both of them on language learning has rarely been examined. In this study, the effect on reading comprehension of teacher and learner interactions and interactions among learners has been studied simultaneously to fill the gap in the literature of language studies. We aim to examine, first, the efficacy of DA when it is used in teaching reading comprehension, and second, the kinds of scaffolding behavior that emerge during teacher and peer interactions.

2. Literature Review

2.1. Sociocultural Theory

According to Vygotsky (1978), before becoming an internal and truly mental function each higher mental function should go through an external social stage in its development process. From a sociocultural perspective, development is a collaborative phenomenon that occurs through interaction among the individuals of a community (John-Steiner & Mahn, 1996). A learner's promotion and development in achieving materials depends on sociocultural forms of mediation (Sternberg & Grigorenko, 2002). This notion is the cornerstone of Vygotsky's (1987) psychological theory. SCT (Vygotsky, 1978) provides teachers with a framework to help their learners when encountering problems. The roles of social interaction and cultural artifacts are emphasized in SCT in the organization of human forms of thinking (Lantolf & Thorne, 2006).

A sociocultural view focuses on the speculation that cognition and knowledge are the products of social interaction and dialogue that are created within a society (Lantolf, 2000, 2006; Swain, Brooks, & Tocalli-Beller, 2002). Inter-subjectivity is the sharing of knowledge between knower and learner; it is the cornerstone of social mediation (Wretch, 1985; Dixon-Krauss, 1996). In addition to an individual's involvement in interactions, cultural, historical, and instructional contexts are highlighted in this theory (Barnard & Campbell, 2005). What is called internalization

is a process that starts initially from a social state and turns to be an internal function. The gap between social and individual levels is filled by interaction and negotiation of meaning when individuals participate in a collaborative task. For learners, this process occurs in an instructional context in a way that allows the learners to transfer what the teacher or peer offers through interaction rather than copying presented knowledge (Vygotsky, 1978). In the process of social mediation and collaborative learning, individuals expand their consciousness and control over their mental functions, such as attention and memory. This process leads to independence and autonomy, which is achieved after interaction and internalization (Holton & Clarke, 2006).

2.2 Zone of Proximal Development

The zone of proximal development (ZPD) is the most important component of SCT, which can be employed to guide interaction in second language learning environments (Lantolf & Poehner, 2011; Poehner, 2009; van Compernelle & Williams, 2012). The ZPD is “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” (Vygotsky, 1978: 86). The ZPD states that some functions are not matured but are potential—functions that will be matured later but are currently in a sprouting state. These functions can be called “buds” or “flowers” but not fruits of development. The ZPD lets teachers delineate learners’ immediate futures and their dynamic development state. It provides help for what learners are likely to achieve in addition to what they have achieved (Vygotsky, 1978: 86–87).

Vygotsky emphasizes that educational systems should provide children with experiences in their ZPD to encourage and advance their individual learning (Berk and Winsler, 1995: 24). Holding a more educational perspective, Ellis (2003: 180) believes that ZPD sheds light on every important point about learning that remains, without any logical explanation if we disregard the notion of ZPD. Ellis (2003: 179) recommends that learning materials and tasks should be constructed in a way that poses an appropriate challenge to learners to guide them toward dynamic construction of their ZPDs. A teacher who understands how to provide guidance within a child’s ZPD can structure responses to student errors and questions in a way that leads the child to new understandings (Davin, 2013: 304).

2.3 Scaffolding

The ZPD term works in conjunction with the concept of scaffolding, which is the supportive prompts that a knower provides for a learner to help him/her achieve higher levels of mental abilities (De Guerrero and Villamil, 2000). Scaffolding can be defined as a process of providing situations that help novice learners make their tasks easier and more comprehensible and that supports them with hints in such a way that they gradually become knowledgeable enough to carry out the task (Walqui, 2006). The term “scaffolding” is used mostly for teacher–learner interactions in the literature of second language research while scaffolding can also occur in peer-to-peer interactions when learners collaborate in completing a task (Storch, 2007, 2002, 2005; Donato, 1994). Donato (1994) proved that the concept of “mutual scaffolding” can be effective in developing learners' knowledge of a particular subject.

However, there is not a complete consensus on this issue. Some scholars agree with the notion of “mutual scaffolding” while others reject it or have prudential idea about it (see, e.g., Tudge, 1999; Russell, 1982). Bruner (1978) classifies scaffolding behaviors in five groups: (a) simplifying the task, (b) leading the child's attention to the target task, (c) presenting models, (d) increasing the scope of the situation, and (e) providing help in a way that develops the child's ability to complete the task. Two frameworks, DA (Lantolf & Poehner, 2011; Poehner, 2009) and instructional conversation (van Compernelle & Williams, 2012), are used to conduct interaction in ZPD between learners and teachers within the learning context.

2.4 Dynamic Assessment

Dynamic assessment (DA) is defined as “an interaction between an examiner-as-intervener and a learner-as-active participant, which seeks to estimate the degree of modifiability of the learner and the means by which positive changes in cognitive functioning can be induced and maintained” (Lidz, 1987: 4). DA can be used as a framework to explain learner errors and answer learner questions in such a way that the learner's current knowledge and what he/she is capable of achieving in the future are taken into account (Davin, 2013). DA draws on the concept that participation in activities in which a learner is helped and prompted by others and provided with available resources allows his/her abilities to emerge (Poehner & Lantolf, 2013). DA believes that the static evaluation of a learner's current level is not as informative as what the DA procedure

measures of a learner's future potential (Feuerstein, Falik, Rand, & Feuerstein, 2003). While the mediator, in DA, instructs a learner by providing hints and prompts to develop the learner's actual level, he/she simultaneously assesses the learner's abilities (Lantolf & Poehner, 2004; Lidz & Gindis, 2003). DA measures a child's current hidden potential or capacity in a process-oriented way that allows the mediator to support the child by instructing them and providing feedback that assists them to achieve higher mental abilities (Sternberg & Grigorenko, 2002). On the other hand, non-DA draws on static, one-time scores alone (Wiedl, Guthke, & Wingenfeld, 1995). It aims to measure either the child's current level or what the child has achieved; nevertheless, what he/she has the potential to learn is ignored.

2.5 Theoretical Framework

Traditional static assessment of reading ability comprehension aims to identify word recognition and reading comprehension, while DA of reading ability uses a framework to respond to errors and questions. According to students' responses to prompts and hints, the mediator explores learners' actual levels and predicts suitable intervention in DA. Advantages of DA are that it is process oriented, it is a framework for explaining learners' errors and answering their questions, it is not limited to one method of instructing, and it allows the mediator to promote learners' proficiency in reading ability by taking learners' actual levels and what they can achieve in the future into account (Carney & Cioffi, 1990).

According to Lidz (1991), there are two sorts of learning, direct and mediated. When the child learns alone without support from the teacher, learning is called "direct." If the child is assisted when learning, learning is called "mediated." Scaffolding from Lidz's perspective "describes the mediator's adjusting the complexity and maturity of the teaching interaction to facilitate the child's mastery of the task; providing support when necessary; and providing encouragement and prompts to the child to move ahead when ready" (1991: 80).

Lidz has constructed a scale for evaluating an adult's mediating behavior when he/she assists a child. In this study, peer behavior is evaluated according to Lidz's scale, as is the mediator's behavior in interactions. As not all behaviors and processes are limited to this scale, anywhere it is necessary we use other frameworks; however, the cornerstone criterion for evaluation is Lidz's scale. Table 1 is our framework for analyzing data in the present study. It has been adapted from that of De Guerrero and Villamil (2000).

Table 1. Lidz's (1991) twelve component behaviors of adult mediating instruction.

1. Intentionality: Consciously attempting to influence the child's actions. This involves making efforts to keep the interaction going, engage the child's attention, inhibit impulsive behavior, and maintain goal orientation.
2. Meaning: Promoting understanding by highlighting for the child what is important to notice, marking relevant differences, elaborating detail, and providing related information.
3. Transcendence: Helping the child make associations with related past experiences and project him- or herself into the future.
4. Joint regard: Trying to see the activity through the child's eyes, looking at an object that has been brought into focus by the child, using "we" to talk about the experience.
5. Sharing of experiences: Telling the child about an experience or thought that the mediator had and of which the child is unaware.
6. Task regulation: Manipulating the task to facilitate problem solving, stating a principle of solution or inducing strategic thinking in the child.
7. Praise/encouragement: Communicating with the child, verbally or nonverbally, that he or she has done something good, keeping the child's self-esteem high.
8. Challenge: Maintaining the activity within the limits of the child's ZPD. This implies challenging the child to reach beyond his or her current level of functioning, but not so much that the child will feel overwhelmed and get discouraged.
9. Psychological differentiation: Keeping in mind that the task is the child's and not the mediator's—the goal is for the child to have a learning experience, not the adult. Avoiding competitiveness with the child.
10. Contingent responsiveness: The ability to read the child's behavior and to respond appropriately. It can be compared with a well-coordinated dance between two partners who are very much in tune with one another.
11. Affective involvement: Expressing warmth to the child, giving the child a sense of caring and enjoyment in the task.
12. Change: Communicating to the child that he or she has made some change or improved in some way.

3. The Study

3.1 Participants

The participants were 28 Iranian intermediate EFL learners who took English classes in a private institute. They were selected on the basis of a TOEFL test and assigned to two groups randomly. Each group consisted of 14 male learners who were 17 to 20. One group was taught based on DA instruction and the other group was taught based on non-dynamic

instruction. The reason for selecting these students was the principle of availability and purposive sampling (Ary, Jacobs, and Razavieh, 1996). All participants were native speakers of Persian; English was their foreign language. To ensure that samples were homogeneous in terms of their level of proficiency, the researchers only included those students whose scores on the TOEFL test fell one standard deviation below or above the mean and they ignored the rest. All pairs remained constant over the course of the study. To control the effect of gender on study, only male learners were selected. The *Intermediate Select Readings* book written by Lee and Gundersen (2001) was taught to both groups in 16 sessions. This book consists of 14 chapters that start with a reading text and follow up with vocabulary and grammar activities. Identical parts of the book were selected for both groups.

3.2 Procedure

Reading comprehension was taught to the members of the experimental group based on DA instruction. The teacher employed hint-based instruction to facilitate the cognitive development of English learners. It is worth mentioning that the mediation could be offered from a menu of clues, hints, and leading questions selected in a lock-step fashion (moving from most implicit to most explicit) (Poehner, 2008). At first, the teacher asked some eliciting questions to motivate learners to be able to read the text eagerly. Moreover, by asking some demanding questions, he attempted to challenge the participants and awaken their ZPD. Then, he asked difficult questions whose responses were in the target text. These questions were asked to open up a gap between learners' current knowledge and what they were supposed to achieve. In this way, the learners needed to read the text carefully and notice it. Next, the learners skimmed and then scanned the text. During these stages, the learners applied different strategies to deal with the text. They were trained to use appropriate strategies in different situations. During this process, the teacher never interrupted the learners except when there was a question or problem. When this happened, the teacher clarified the issue for the whole class (whole class demonstration) or for one learner who had difficulty in understanding the issue.

DA is based on "active modification," wherein a strong effort is made to remediate any identified deficit or at least provide the learner with compensatory strategies to circumvent the impact of any identified weakness (Haywood & Tzurriel, 1992). After working on each problem, on the basis of the situation, if necessary he would explain for the whole

class; otherwise, he would try to help the learner solve the problem. He never provided the learner with a direct answer. The teacher made a conversation, in which the learner was actively motivated to take part. The teacher moved from implicit instruction to a more explicit instruction. This type of instruction consisted of asking different types of questions, providing hints and prompts and mini lessons, and using examples, modeling, or semiotic learning. However, the focus was on hints and implicit instruction. The teacher tried to challenge them and to stimulate them to engage in the problem-solving process, on the one hand, and to activate their ZPD, on the other hand. All teacher–learner interaction was audio recorded.

DA is not limited to teacher scaffolding. Peer scaffolding could be helpful as well as teacher scaffolding. Vygotsky (1978) did not limit mediating in the ZPD to teachers or adults; instead, significantly, he emphasized peer mediation as an essential means for internalization and development. He proposed that learning awakens a variety of internal developmental processes that are able to operate only when the learner is interacting with people in his environment and in cooperation with his peers. Therefore, the teacher sometimes asked the learners to work on the same text or activity in pairs. The learners were taught about different strategies and techniques in comprehending the text. They knew how to use different ways to catch the meaning of the text and not to use more explicit mediation tools like a dictionary or asking the teacher. More than one audio recorder was used in this case to record their interaction.

Different strategies and techniques for reading comprehension were taught to the control group as well as the experimental group by the same teacher. However, the control group was trained in a non-dynamic way. At the beginning of each session, the teacher taught the lesson and provided the learners with the necessary explanation. Then, the readers were asked to deal with the text on the basis of what they had learned. If there were some questions or misunderstandings, they were resolved by the teacher. In fact, each session was divided into two parts; in the first part, the teacher provided necessary information and, in the second part, the participants applied the materials they had been taught in order to complete the task. Reading instruction was taught through a kind of P–P–P (present–practice–product) instruction. The only difference between the experimental and the control group was the presence of mediation and hint-based instruction. In this class, instruction was presented directly and the teacher focused on the whole class rather than one learner alone. The reading passages for the participants of the control group were the same as for the experimental group.

The obtained data were divided into two parts: quantitative data and qualitative data. Quantitative data consisted of the participants' scores from the pretest and the post-test in reading comprehension tests. The pretest and post-test were the same: the study used the Objective PET test by Cambridge University Press. The test was in multiple-choice format and was scored by the teacher. Qualitative data contained the interactions between the teacher and the learners as well as the interactions between peers. The interactions were audio-recorded.

Through the use of SPSS, the descriptive statistics (mean scores and standard deviations, t-tests, etc.) for both the control and experimental groups were computed. After eliciting the required data and confirming the normality of the data, SPSS software was used to check the normality of the data. P.P plot, Q.Q plot, skewedness, and histogram were also used. The result was compared with related criteria and the normality of the data was confirmed to compare the mean scores of post-tests for both groups. An independent-samples t-test was applied to see whether the mean differences were statistically significant. The significance of the difference between the mean scores of both the experimental and control groups were tested at a probability value of .05. For comparing the development in pretest and post-test in each group, a paired-samples t-test was used. The effect size was also measured.

The qualitative data, which were audio-recorded and transcribed, were presented in the form of episodes. Each episode was subjected to micro-genetic analysis—that is, interactions were scrutinized to observe (a) moment-to-moment changes in behavior that might signal development of reading comprehension through mediated assistance, and (b) the scaffolding mechanism employed by the teacher and the participants in helping the learners' comprehension of the text. This method of analysis was particularly suitable for the present study because it allowed the learners' development to be tracked over a certain time. Belz and Kinginger (2003: 594) define the micro-genetic method as “the observation of skill acquisition during a learning event” enabling researchers “to examine specific instances of the development.” To interpret learners' performances and the interaction between the learners and peers and the learners and the mediator, Lidz's (1991) twelve component behaviors of adult mediating instruction scale was employed.

4. Result and Discussion

Two different groups were instructed through two different methods, dynamic assessment and non-dynamic assessment, to discover, on the one

hand, which one helps more to improve a learner's ability in reading comprehension and, on the other hand, to see what kind of scaffolding behaviors emerge during applying DA in teaching reading comprehension.

4.1. Results of Pretests for Both Groups

To compare the mean scores of the control and experimental groups before treatment, a pretest was given. To capture the initial differences between the means of the two groups on the pretest, an independent-samples t-test was conducted. The tables display the results of the independent-samples t-test on the pretest.

Table 2. Descriptive statistics of pretest for both groups.

Group	Mean	N	Std. deviation	Std. error mean
Exp.	22.28	14	2.78	.74
Con.	21.35	14	2.97	.79

Table 3. Independent samples t-test for pretest.

Group	Mean	Std. Deviation	Std. Error Mean	t	df	Sig. (2-tailed)
Exp.	22.28	2.78	.74	.85	26	.402
Con.	21.35	2.97	.79			

Based on Table 3, there was no significant difference in scores for the control group ($M=21.35$, $SD=2.97$) and the experimental group ($M=22.28$, $SD=2.78$; $t(26) = .85$, $P = .402$, two-tailed). This shows that the groups were homogenous. Indeed, one of the principles of the study was to have homogenous groups in order to investigate the effect of DA on reading comprehension. The result of this test confirmed that both groups were at the same level of proficiency in reading ability and the change in their performance was because of treatment.

4.1.1. Results of Pretest and Post-test in the Experimental Group

At the end of the treatment, the Objective PET test was given to the participants. To answer the first research question and to see the change in the participants' performance, a paired-samples t-test was run to compare the pretest and post-test scores of the experimental group. Results are presented in the following tables.

Table 4. Descriptive statistics of pretest and post-test for the experimental group.

Group	Mean	N	Std. deviation	Std. error mean
Exp.	22.28	14	2.78	.74
Con.	27.50	14	3.34	.89

Table 5. Paired samples t-test for experimental group.

	Mean	Std. deviation	Std. error mean	t	df	Sig. (2-tailed)
Pretest	22.28	2.78	.74	4.50	13	.001
Post-test	27.50	3.34	.89			

Results of the pretest and post-test paired-samples t-test in the experimental group showed that there was a significant difference between scores from pretest ($M=22.28$, $SD=2.78$) and post-test ($M=27.50$, $SD=3.34$), $t(13)=4.50$, $P=.001 < .05$ (two-tailed). The eta-squared statistic (0.60) indicated a large effect size on the basis of Cohen (1988).

4.1.2. Results of Post-tests in both the Experimental and Control Groups

To compare the post-tests of both groups, an independent-samples t-test was conducted. The following tables manifest the results of this test.

Table 6. Descriptive statistics of post-test for both groups.

Group	Mean	N	Std. deviation	Std. error mean
Exp.	27.50	14	3.34	.89
Con.	22.92	14	3.24	.86

Table 7. Independent samples t-test for post-test.

Group	Mean	Std. deviation	Std. error mean	t	df	Sig. (2-tailed)
Exp.	27.50	3.34	.89	3.67	26	.001
Con.	22.92	3.24	.86			

As was mentioned above, an independent-samples t-test was run to compare the control and experimental post-test scores. A statistically significant difference was found in scores for the control group ($M=22.92$,

$SD=3.24$) and the experimental group ($M=27.50$, $SD=3.34$), $t(26) = 3.67$, $P= 0.001 < 0.05$ (two-tailed). The eta squared statistic (0.50) indicated a large effect size on the basis of Cohen (1988).

According to the previous tables and results, it could be claimed that the experimental group outperformed the control group since there was a significant statistical difference between the post-test scores of both groups and also there was a significant statistical difference between the experimental group's pretest and post-test scores.

The change in the mean scores of the experimental group in pretest and post-test from $M=22.28$ to $M=27.50$ indicates that the participants obtained a significant improvement in their reading comprehension after the treatment. The comparison of the post-test mean scores of the experimental and control groups also represents that there is a wide gap in their post-test scores. It displays the superiority of the experimental group over the control group in terms of their performance on the reading comprehension test after the treatment. To determine whether this development was produced by the treatment, an independent-samples t-test and a paired-samples t-test were carried out. In both cases, the level of significance was less than the probability value (0.05). Therefore, it might be claimed that these statistically significant differences were due to the treatment and the first null hypothesis of the study can be safely rejected claiming that there is no statistically significant difference between learners' performance on reading comprehension when they are assessed on the basis of DA instruction and its non-dynamic counterpart.

4.2 Qualitative Data Analysis

In the qualitative part of this study, the researcher attempted to discuss the effects of the treatment on the participants' performances. The researcher also considered Elliott's (2000) procedural framework of DA, which is a chain of pretest-teach-post-test. In the following sections, the researcher discusses the process of DA, its implication for teaching and learning and the influences it has on the output produced by the participants. Due to various limitations, only some parts are presented and elaborated.

In this part of the study, some of the teacher-learner and learner-learner interactions during the whole course were analyzed through the microgenetic approach. Each episode was subjected to microgenetic analysis, that is, interaction was scrutinized to observe (a) moment-to-moment changes in behavior that might signal development of reading comprehension through mediated assistance, and (b) the scaffolding mechanism employed by the teacher and the participants in helping the

learners' comprehension of the text. This method of analysis was particularly suitable for the present study because it allowed the tracking of learners' development over a certain period of time. Belz and Kinginger (2003: 594) define the microgenetic method as "the observation of skill acquisition during a learning event" enabling researchers "to examine specific instances of the development."

It should be noted that, except for some parts where they read to refer to various sections of the text, for the most part the learners' interactions were in Persian. To speed up the readers' understanding, an English version of the sections was produced, which is presented below.

In the transcription of the data, the following notation system was utilized:

(Parentheses) explanation by the author

A dotted line indicates a pause

Boldface words are said in English

"Quotation marks" show that those interacting are reading from the text.

4.2.1. Microgenesis Analysis of the Data; Teacher Scaffolding

Episode 1

1. T (teacher): **A long walk home.** What does this title bring into your mind? What do you think this topic is about?
2. S (student): Um . . . I think it's about a person who goes home on foot.
3. T: Then why?
4. S: Maybe he doesn't have a car or he wants to do some exercise.
5. T: Good. Can you think of some other reasons?
6. S: There are many reasons. Maybe his car broke down or he wasn't allowed to use a car or . . .
7. T: Great. I sometimes walk to relax. Do you think walking could be a method of punishment?
8. S: I'm not sure, but if you leave somebody or somewhere intentionally, yes it could be.
9. T: OK. Let's see what happened in the passage.

In this episode, various scaffolding behaviors are used. By asking a question, the teacher intentionally attempts to involve the learner in the task. He asks a general question, which is too difficult to answer objectively.

However, he does not seek the correct response. In fact, he challenges the learner and raises his enthusiasm. According to Lidz (1991), the teacher employs *challenge* behavior to assist the learner in going beyond his or her current level of functioning. This behavior is obvious in lines 3 and 5. The teacher uses some expressions like good and great in lines 5 and 7 to encourage the learner. *Praise* and *encouragement* are used to indicate verbally or nonverbally that students have done something well. This scaffolding behavior leads to high self-esteem (Lidz, 1991).

Episode 2

In this interaction, the teacher notices that one of the students has underlined a word. The teacher tries to help the learner recognize the meaning of this word. He uses different scaffolding behaviors like *gambit* and *joint regard*.

10. T: Why did you underline this word in line 6?
11. S: I didn't know the meaning of this word and because you had said that we need to underline unfamiliar words and expressions through the process of reading, I did so.
12. T: We know some strategies to find the meaning of new words.
13. S: Yes, like using the dictionary, asking friends or the teacher, guessing . . .
14. T: I think it's better to use the dictionary after applying all other strategies. Try to guess.
15. S: I did, but no result.
16. T: Imagine someone asked you for something. What would you do?
17. S: It depends on the request. If I'm willing to do that request, I accept it immediately; otherwise, I think about it and postpone it or even reject it.
18. T: Therefore, if we ignore rejecting a request, there are two options in accepting it. We think about it or accept it on the spot.
19. S: Yes, that's true.
20. T: Read the sentence again carefully and try to guess the meaning through using the context.

(After some seconds)

21. S: Um. I got the point. He assumes it is an opportunity to use the car. So, **readily** means immediately.
22. T: That's it.

In line 10, the teacher asks a question in a way that is not distressing. He does not start in a way that would mean the learner's lack of knowledge is at the center of focus. This strategy is called *gambit* (Keller, 1981), which means to know how to start, maintain, and finish a conversation. When interacting with the learner, he uses the pronoun *we* (lines 12 and 18). In fact, he induces a sense of friendliness. By doing this, he does not stay at a corner to show his *authorship*. He establishes a *collaborative* environment to increase achievement. This behavior is called *joint regard* in Lidz's (1991) scaffolding behaviors. *Joint regard* points to a behavior in which the mediator tries to see the activity through the learners' eyes. Through the process of interacting with the learner in this episode, the teacher starts by giving implicit hints and moves forward step by step to make the learner aware of the meaning of the word. That is a continuous movement from implicit hints to explicit hints. Finally, he does not support the learner by exact response.

Episode 3

In this section, a learner asks the teacher a question about grammar. It is a kind of misunderstanding, in which the learner cannot distinguish between past and perfect tenses.

23. S: As far as I remember, in parallel sentences the same structures should be used. Why in this sentence is this rule obviated? "When the last movie had finished, I looked down at my watch."
24. T: What do you think about the tense of the sentence?
25. S: Past time.
26. T: There are different past tenses. Which one do you mean exactly?
27. S: Sentences are written in past time. But, in this part, "When the last movie had finished," the two verbs are used in the past form.
28. T: Which verb do you mean?
29. S: **Had** and **finished**.
30. T: In your opinion, which one is appropriate?
31. S: **Finished**.
32. T: OK. You studied in your interchange books that there are different past tenses. Some tenses need **auxiliary** verbs. For example, in the present perfect tense, **auxiliaries** like **have** or **has** are used.
33. S: Aha. Ok. So **had** is an **auxiliary**.
34. T: That's true. Which tense needs the **auxiliary had**?
35. S: I think past perfect.

36. T: And what is past perfect?
37. S: When something happens in the past before another event.
38. T: Very good. And the rule is . . .
39. S: **Had + past participle.**

In this interaction, the teacher asks eliciting questions instead of providing direct responses. He creates *gaps* to motivate the learner to reach the answer. On the other hand, these questions are kinds of strategies to assess the learner's current knowledge in order to supply appropriate hints and clues. In line 32, the teacher *makes* an *association* to the learner's past knowledge. He intends to transfer previous knowledge to the current situation. This behavior is named *transcendence* by Lidz (1991), which means helping the learner *make an association* with the related past experiences and project him- or herself into the future. The teacher realizes that some forms need to be explained. Therefore, he speaks about the present perfect tense, which is similar to past perfect and adds some points (line, 32). A behavior in which the mediator explains some issues explicitly during the mediation process is called *instructing* or giving a *mini-lesson* (Villamil & Guerrero, 1996). The entire interaction is a kind of *task regulation*. Lidz (1991) explains this behavior as manipulating the task to facilitate problem solving. The teacher attempts to state a principle of solution and induce *strategic thinking* in the learner.

Episode 4

In this section, a misunderstanding is clarified with the teacher's help. Different behaviors are analyzed after teacher-learner interaction. This conversation starts with the learner's question when he cannot catch up with the difficulty of the text.

40. S: Sir! What's wrong with watching movies in the father's opinion in this text?
41. T: Do you think something is wrong with movies?
42. S: Yes, because line 13 [of the text] says: "I know Dad would be angry if he found out I'd been watching movies." His father even gives a punishment for it.
43. T: Yes, that's right. What's the problem?
44. S: In no other part of the text is this issue discussed. The reason for not watching the movies is not provided. I cannot understand why he has to be punished for watching movies.

45. T: Do you think that knowing the meaning of all words in a text leads to an understanding of the entire text?
46. S: Sometimes.
47. T: So, you mean it may not lead to understanding the whole meaning of the text in some cases?
48. S: Yes.
49. T: And do you know that different words, sentences, and parts of a passage are related to one another. I mean if you miss one part, then you will have problems with other parts.
50. S: You mean I haven't got the meaning of another part, which causes this problem?
51. T: Yes, you have to make a connection between this part and the previous paragraph. This is called *cohesion*.

(The teacher lets the learner read the previous paragraph.)

52. S: Yeah, I got the point. He means if Dad found out that because of watching movies I would be late, then he would be angry and the punishment is because of being late not for watching the movies itself.
53. T: Wow. That's great. You are a clever student.

In this episode, the teacher employs a *mini-lesson* in some parts. He explains different strategies in lines 45, 49, and 52. He tries to provide information for the learner but not in a direct way. In fact, that is a *collaborative dance*. It seems like a duty the teacher and the learner are supposed to carry out together. Each of them completes one part by his information and this moment-to-moment problem solving continues until the problem is clarified. During this interaction, on the one hand, the teacher behaves in such a way that the learner tries to find out the problem and, on the other hand, he behaves in a way that ensures that this conversation is not boring and stressful for the learner. The learner participates in the interaction actively. It could be claimed that this kind of scaffolding leads to *self-confidence*. The learners feel that they are part of the process and do not regard themselves as being detached. At the end of the episode in line 53, the teacher uses *praise*, which is an important scaffolding behavior (Lidz, 1991).

4.2.2. Microgenetic Analysis of the Data; Peer Scaffolding

In this part, peer interactions were subjected to microgenetic analysis to find out what kind of scaffolding behaviors emerge during the problem solving process.

Episode 1

In this episode, two learners are discussing the meaning of a sentence. Behaviors that they use during this interaction are analyzed.

1. S1: I cannot understand the meaning of this part exactly. Can you take a look at it?
2. S2: Yes, of course, if I can. What's the problem?
3. S1: The sentence is "I go to my beach not only to relax and think, but also to feed off the sea."
4. S2: What's your problem?
5. S1: How can this person feed the sea? As you know **feed** means giving food to someone or something else, am I right?
6. S2: I'm not sure. Maybe it's an expression. Let's check the dictionary.

This conversation shows a *warm environment* (line 2 and 6). None of the learners shows an *authoritarian* behavior while discussing the meaning of the text. Because peer scaffolding followed teacher scaffolding, the learners had got accustomed to helping one another in a collaborative manner but not in a competitive way. They try to share their knowledge and experiences in order to solve problems. Lines 2 and 6 are examples of using *hedges*. This behavior manifests *uncertainty* in the scaffolding process. On one hand, in this interaction the scaffolder and scaffoldee's roles change, which motivates them to take part in conversation actively and learn from the environment and, on the other hand, it reveals how different teacher scaffolding is from the learner's. S2 recommends using the dictionary to catch the meaning. When learners use another tool like the dictionary, a handout, or a picture to complete the task, in fact, they are provided with *semiotic* tools (Kozulin & Grab, 2002). In line 6, the learners apply this behavior by using the dictionary.

Episode 2

The teacher asks students to scan the passage in groups of two. The students should get ready to answer some questions after scanning the passage. The questions need specific information to be answered.

7. S1 (Student 1): What are we supposed to do?
8. S2 (Student 2): We should **scan** the text.
9. S1: Yes, I know. But, what should we do when we **scan** the text?
10. S2: We need to find specific information.
11. S1: Like what? What is the specific information? You mean new words, expressions, or something like this?
12. S2: No, um . . . information such as date, phone number, age . . .
13. S1: Places, names. Do you agree?
14. S2: Great. You're right. I wanted to mention them.
15. S1: Therefore, we don't need to look up the meaning of new words.
16. S2: Exactly. Good.
17. S1: But I cannot remember all of them. Is it necessary to memorize all information?
18. S2: Surely not. We can underline them or something else.
19. S1: We can write them in the margin.
20. S: We can also take notes.

This interaction shows how S2 plays the role of a scaffolder and sometimes he takes the role of a scaffoldee. Both learners use the pronoun *we* in conversation. This reveals that they have a *sense of collaboration*. This behavior is called *joint regard* (Lidz, 1991). They assume the problem as an opportunity to learn something as they participate in conversation actively and accept the information that their partner supplies. By seeking his partner's approval, S1 displays affective involvement (Lidz, 1991). S1 in line 13 asks his friend for his idea. At first S2 provides information and as they move forward, his partner adds some details to solve the problem. They provide related information continuously until they perform the task. This behavior is called *meaning* by Lidz (1991). Here, on the basis of the situation, it is obvious that the learners have the scaffolder and scaffoldee roles. To motivate his partner, S2 uses *praise* and *encouragement* (lines, 13 and 13). This behavior is called *praise/encouragement* by Lidz (1991). Employing *praise* reduces *stress* and helps the learner to achieve *self-confidence*, which stimulates him to participate in the task eagerly.

Episode 3

This conversation shows an interaction between two learners, who do not know how to summarize or paraphrase a text. They try to deal with the problem on their own. Finally, they solve the problem.

21. S1: I know what a summary of a text is. But, here in addition to summarizing the text, we need to **paraphrase**. Are they two separate things?
22. S2: I'm not sure. As far as I understood from what the teacher said, they are not two distinct issues.
23. S1: So what can we do?
24. S2: Let's ask the teacher.
25. S1: I think it's better to check the dictionary. If we don't find the answer, then we ask the teacher.
26. S2: OK. Do it.
27. S1: It means "to express in a shorter, clearer or different way what someone has said or written."
28. S2: I cannot understand how a text can be written in a different way.
29. S1: I'm not sure. What about *using synonyms*?
30. S2: Yeah. It sounds logical. We can also use compound sentences.
31. S1: We can change active sentence to passive ones or vice versa.
32. S2: Yes, that's it.

The whole interaction shows that the learners apply different means of mediation. Based on this interaction, the peers have three choices to solve the problem: asking the teacher, asking the partner, and using the dictionary. They systematically apply them and because they have been trained, their movement is from an implicit one to a more explicit one, in a lock-step manner. Using *hedges* (lines 22 and 27) and asking the partner for help, are signs of *friendliness* and lack of *authorship*. Moreover, this behavior shows lack of certainty and knowledge, which stimulates them to test other ways of problem solving. Employing the dictionary is a kind of *semiotic* learning (line 27). After checking the dictionary, they cooperate with each other to gain a better understanding of the issue (lines 27–32).

Episode 4

33. S1: I got confused. I can't understand the difference between prefixes that mean "not." For example, we say **unsuitable** and **inactive**.
34. S2: What's the problem?
35. S1: Different words accept different prefixes.
36. S2: Yes, they're perplexing to some extent.
37. S1: How should they be learned? Do you know all of them?
38. S2: Not all of them. I know some rules and I have memorized some of them.
39. S1: I've tried to memorize some of them, but when using them I get confused.
40. S2: I know that "in-" is used before words with Latin roots like **inactive**. "Im-" comes before words that start with M or P like **immoral** or **impolite**.
41. S1: **Immorality, impossible.**
42. S2: Words that begin with R take "ir-" and words that begin with L take "il-" like **irregular** and **illegal**.
43. S1: What about "un-"?
44. S2: As far as I know "un-" is added to words that have English roots like **unbelievable, unattractive**.
45. S1: You know a lot. I appreciate your knowledge. How about other prefixes like "dis-," "ab-" . . .
46. S2: I don't know about them exactly. I can use some of them without knowing the rule like **dislike**.
47. S: So let's ask the teacher.

This part follows reading a text in which the word *unsuitable* was used. S1 knows the meaning of the word. But, he has difficulty recognizing different prefixes. Because S2 is familiar with this issue, he attempts to help S1 by giving *explicit mini-lessons*. S2 plays the role of mediator during the conversation. He elaborates upon the issue by employing examples and lets the scaffoldee participate in interaction actively. As Lidz (1991) mentions, this interaction is comparable to a well *coordinated dance* between two partners, who have something in common. Lidz (1991) calls this behavior *contingent responsivity*. Line 47 shows uncertainty in the peers' opinion so that finally they decide to ask the teacher.

5. Discussion

The results of this study confirmed that DA assessment is an effective method for teaching and assessing language learners. The statistical findings of the study revealed that DA instruction helped learners to improve their abilities in reading comprehension. The participants' performances were compared with and across groups to make sure that they progressed.

The focus of this study was on qualitative data. It was important for the researcher to know what kinds of behaviors emerge when DA is applied in teaching reading comprehension. The interactions between the teacher and learners or peers were audio-recorded and mostly subjected to microgenetic analysis, according to Lidz (1991). After analyzing data, the researcher found some fascinating behaviors that emerged in the DA group, which are presented below:

In some cases, the mediator taught several lessons, which were necessarily based on his opinion. These are called *instruction or mini-lessons* by Villamil and Guerrero (1996). It was also true in cases of peer scaffolding. When one side of the interaction felt that there was a need for more instruction and explanation, he supplied them. By giving examples and making use of *semiotic mediation*, the mediator tried to mediate the scaffoldee, not in an explicit way but to *challenge* the partner and present instruction in harmony with his level.

If we observe the episodes, a movement from *intentionality* and *authorship* to *friendliness* and *joint regard* is observable. With respect to peers, at first, both tried to keep a distance from each other and impose their authority on the other side. This trend gradually became weak and a sense of *collaboration* and *friendliness* was replaced. At the end of the treatment, by sharing ideas and moving in one direction, they were following the same aims.

On the part of the teacher, he tried to reduce the distance between himself and the participants. The teacher tried to engender a *sense of friendliness* while providing instructional materials.

One of the major aims of education is to improve students' *self-confidence* and *self-esteem* in order for them not to be passive learners but to be knowledge providers. I observed a gradual movement on the part of learners to becoming more active. The learners' improvement in becoming independent learners could be considered as a sign of *self-regulation*.

During all sessions, whether the teacher was a mediator or an observer, he supplied the necessary information according to context. He attempted to challenge the learners by asking and eliciting questions. In some cases,

he himself generated the questions and in some other cases, he asked the questions to engage the learners. He rarely supplied the learners with immediate explicit answers. Actually, he provided prompts, hints, and clues in place of explicit responses.

Incomplete sentences by the teacher were an invitation to the learners to involve themselves in the process of learning and to be active in performing the assigned tasks. He made efforts to change the role of learners from consumers of knowledge to knowledge providers. Another powerful point was inductive instruction in which the teacher applied different models, examples, and other semiotic tools to mediate the learners. In other words, he practiced whatever he theorized.

The main difference of this study compared with other studies of this type was that the effect of teacher and peer scaffolding on reading comprehension was examined simultaneously. The studies that were mentioned in the review section studied the effect of DA when the teacher mediated learners or when peers mediated, while the present study was a combination of both these. At first the teacher mediated learners and provided them with hints, clues, and scaffolding behaviors. Then, peers played the roles of scaffolder and scaffoldee. At the end of treatment, the test was administered. There was a gap in the previous studies where only one kind of interactionist DA was employed, while the effect of both was examined in this study.

The findings of the present study are in line with the results of Peña and Gillam (2002), who expressed DA's efficacy. Gibbons (2003) claimed the power of interaction within the ZPD. Kozulin and Garb (2002) studied students in the age range 18–25 who were learning English as a foreign language. Specifically, their ability to understand academic reading passages in English was investigated. According to Kozulin and Garb (2002), mediation was effective for students and they were able to employ in new situations the strategies to which they were exposed in the mediation phase.

Antón (2003) worked on the utility of a DA procedure in university-level students of Spanish as a foreign language. Poehner and Lantolf (2005) and Poehner (2005) described a particularly powerful example of how DA can be used to provide a complete picture of learner development. The study investigated advance undergraduate learners of French as a foreign language and their ability to describe a video clip in French that they had previously watched. In that study, the researcher employed DA in classes in which English was a foreign language.

According to the findings of Kletzien and Bendar (1990), specific strategies can help children overcome their reading comprehension