

# The Effect of Collaborative Discovery Learning Using MOODLE on the Learning of Conditional Sentences by Iranian EFL Learners

Monireh Eskandari

Department of English, College of Humanities, Qom Science and Research Branch, Islamic Azad University, Qom, Iran;

Department of English, College of Humanities, Qom Branch, Islamic Azad University, Qom, Iran

Hassan Soleimani

Department of Applied Linguistics, Payame Noor University, Iran

**Abstract**—The present research examined the impact of collaborative discovery learning using Modular Object-Oriented Dynamic Learning Environment (MOODLE) platform on the learning of conditional sentences by Iranian English as a Foreign Language (EFL) learners. In addition, attitudes of the participants were investigated towards virtual learning and MOODLE Virtual Learning Environment (VLE) through three face to face semi-structured interviews. The analysis of the data was done through the analysis of the *t*-test. Finally, it was concluded that the experimental group outperformed the control group; however, there was no statistically significant difference between the achievements of two groups. Moreover, the interviews data indicated that the participants had an overall positive attitude towards virtual learning and MOODLE VLE.

**Index Terms**—collaborative discovery learning, conditional sentences, MOODLE

## I. INTRODUCTION

Grammar has always been one of the great important issues in second and foreign language learning. According to Dykes (2007), many believed that the absence of grammar instruction was the reason for decreasing in literacy of people. Nowadays, people agree that grammar is more important than to be neglected and furthermore language development of a learner without a good knowledge of grammar will be seriously constrained (Richards & Renandya, 2002). However, grammar is a facet of language which is often misunderstood and this misunderstanding refers to the way that grammar is defined as a set of rules and paradigms about linguistic forms. Celce-Murcia and Hilles (1988) indicate that disappointingly, teachers often teach grammar through isolated and unconnected sentences; because of this, students learn nothing more than a fragmented, unrealistic picture of English and consequently find it difficult to apply what they have learned in real situations. Richards and Renandya (2002) describe that a competent language user is a person who not only knows the rules of grammar, but also knows how these rules are used in real communication.

There are some active ways in teaching grammar including *collaborative discovery learning* which have intentionally departed from traditional approaches. Bruner (1961) maintains that discovery is not limited to finding out and discovering something which before was unfamiliar to mankind; on the contrary, it contains all ways of obtaining knowledge for oneself by using of one's own mind. Schunk (2012) explains that discovery refers to constructing and testing hypotheses rather than simply reading a passage or listening to the teacher presentations or other students lectures. Due to the fact that, learners move from studying specific examples to formulating general rules, concepts, and principles, discovery is known as a type of inductive reasoning (Schunk, 2012). Bruner (1961) describes that learning through discoveries results in benefits including increasing in intellectual potency, shifting from extrinsic to intrinsic rewards, learning the heuristics of discovering, and fostering memory processing. Ögeyik (2011) mentions that discovery activities are generally helpful for deep processing in all language skills and help students in grasping learning strategies. Schunk (2012) explains that teachers who apply discovery learning for teaching should present questions, problems, or puzzling situations to be resolved and should encourage students to make intuitive guesses when they are uncertain about the answers; in addition, for leading a class discussion, teachers can ask questions with no readily available answers and grading so that students come to their understandings and teachers can also give suggestions to students on how to search for answers in order to achieve a better result. On the other hand, teachers should not restrict discoveries to the activities in a classroom; in other words, students may find their answers in other places like classroom workstations, the school media center, and on or off the school grounds (Schunk, 2012).

Moreover, the process of education has been enriched by the advent of computers, the Internet, and information technologies. Nowadays, they have interwoven with the educational systems generally and language classrooms specifically in such a way that it is difficult to think about them separately. Haythornthwaite (2008) indicates that e-

learning means technology-based Learning; for example, through e-learning lectures, homework, quizzes, and exams are delivered almost entirely or completely online and in some cases even no in-person interaction takes place over the length of the course. According to Haythornthwaite (2008), e-learning offers more learner-friendly environments, allows more learner-centric activities, makes the teacher to act as a facilitator, enhances the collaborative nature of learning, motivates students to be much more engaged, and causes students to take more responsibility for their learning. Knight (2004) defines e-learning as a kind of learning which is facilitated and supported through the use of information and communications technology and may take advantage some or all of such technologies as desktop and laptop computers, software, interactive whiteboards, digital cameras, mobile and wireless tools like mobile phones, electronic communication tools such as emails and chats, discussion boards, audio and video conferencing, Virtual Learning Environments (VLEs), and Learning Management Systems (LMSs).

Knight (2004) explains that e-learning can deal with a spectrum of activities ranging from supporting learning, to blended learning which is a kind of learning combined of traditional and e-learning practices, to learning that is delivered entirely online; more importantly, e-learning is no longer simply a kind of learning which is associated with distance or remote learning, but rather it is part of a conscious choice of the best and most appropriate ways for promoting effective learning. AlHogail and El-Masri (2013) express that nowadays, e-learning is considered as an essential part of the higher education and one of the most widely used e-learning technologies across universities which also supports traditional learning is VLEs like *MOODLE*; in addition, every day tutors around the world upload many valuable learning resources like lecture notes, tutorials, and tests to the VLEs systems in order to make them more effective for teaching and learning. On the other hand, the ability of reusing and sharing these resources, saving teacher's time, enhancing the course content development, and being integrated with web tools such as wikis and blogs which is possible through the VLEs increases the value of these environments and adds more strengths and advantages to them (AlHogail & El-Masri, 2013). Being among these modern technologies, *MOODLE* is a modern digital technology that can be used effectively for language learning purposes. Brandl (2005) states that *MOODLE* is a kind of LMS and it has been popular as an open Course Management System (CMS); in other words, it is a software package designed to help teachers to produce internet-based courses. Moreover, this kind of VLE is based on socio-constructivist pedagogy whose goal is to offer tools and facilities that support a discovery-based approach to online learning and to create an environment that permits collaborative interaction among learners as a standalone or in addition to conventional classroom instruction.

#### A. Statement of the Problem

There has been a negative reaction against grammar for a long time, and attempts to engage students in active grammar learning have been futile because grammar has been considered as a set of rules without any chance for applying them in the real life situations. Teaching grammar traditionally by explanation, memorization, and repetition of grammatical rules has a long disappointing history. Under this condition, students have not become involved in learning and they have found it difficult, distant, and boring. Over the years, many methods and approaches in teaching grammar have gone through wax and wane. However, deficiencies in learning grammar show that the implementation of effective and innovative ways in this field is necessary.

On the other hand, the application of new technologies particularly the Internet offers teachers the opportunity to integrate many innovative ways and tools for improving the teaching and learning processes. Abedi Kargiban and Kaffash (2011) argue that most foreign language courses in Iran secondary schools are supported by textbooks which take advantage of audio materials such as audio-cassettes, CDs, and even CD-ROMs; however, it seems that students in these courses are still quite reluctant to use such tools effectively. So it is time our educational system took advantages of new technologies including *MOODLE* e-learning platform to help students to have a deeper and more meaningful learning. This study addressed the following questions:

1: Is there any statistically significant difference between the achievements of learners learning conditional sentences using collaborative discovery learning in the *MOODLE* environment and in the non-*MOODLE* environment?

2: What are the attitudes of the participants of the experimental group towards virtual learning and *MOODLE* VLE?

#### B. Purpose of the Study

The researcher in this study attempts to investigate whether collaborative discovery learning under *MOODLE* environment has any effect on improving the knowledge of the grammatical system of the Iranian learners. However, there are a wide diversity of grammatical rules across languages, but for the sake of the manageability and feasibility of the project, this study focuses on the instruction of conditional sentences.

#### C. Significance of the Study

The significance of this research can be viewed both theoretically and practically. They are as follows:

First, it is theoretically expected that the results from this project allow a reappraisal of the competing theories regarding teaching and learning grammar. Moreover, this topic is one of the important issues in the realm of a foreign or second language teaching and learning. Also the topic illustrates the importance of integrating innovative tools and environments for enriching the educational system. This study puts the emphasis on verifying an approach that enables students to use conditionals more effectively. In this case, the researcher uses the collaborative discovery learning under

MOODLE platform in teaching conditionals in order to improve the ability of learners to use these structures more actively.

Second, it is practically expected that this research may be helpful for those course designers who have paid attention to the potential of effective ways and VLEs for creating new courses. Moreover, information presented in this research may be useful for teachers in planning more effective lessons, devising more creative learning activities, fostering teaching materials, and improving teaching methods. This project may also move teachers away from boring traditional instructions and offers them positive input to experience a new way and environment generally in teaching grammatical structure and particularly in teaching conditional sentences. This paper may give students a chance to have a deeper learning, to learn more actively, and to control the pace of their learning. Therefore it is anticipated that this project may generate an interest, not only among educationalists, but also among the students.

## II. LITERATURE REVIEW

Grammar has been considered one of the controversial facets in the field of teaching and learning a foreign language. Due to the fact that grammar plays an important and crucial role in communication in both written and spoken language, the main aim of teaching grammar is to enable students to use language accurately and actively. Ellis (2006) expresses that grammar teaching refers to any instructional techniques which are aimed at drawing students' attention to some specific grammatical forms in a way that it helps them in understanding those forms metalinguistically and/or processing them in comprehension and/or production so that they can internalize them.

Castronova (2002) discusses that discovery or constructivist learning is considered an active learning process. Castronova also adds that fostering higher-level skills in students for building a deep understanding of major concepts results from this kind of learning; besides, motivating students and enabling them to seek information for satisfying their natural curiosity is an important advantage of the discovery learning method. Based on the results of a study by Setyowati (2013), collaborative learning techniques is considered an alternative technique in teaching grammar and an effective way for fostering learners' motivation and ability in mastering the grammatical materials. On the other hand, relationship between discovery and collaboration is achieved easily and the design of collaborative discovery learning environments is impressed by this relationship (Saab, Van Joolingen, & Van Hout-Wolters, 2005). According to Gijlers and De Jong (2005), it seems that integrating discovery learning with collaboration makes a promising approach and leads to increasing in effectiveness of discovery learning. According to Saab et al. (2005), knowledge regarding discovery learning processes as well as interaction data from students with the discovery environment can support the communicative process too. Gijlers and De Jong (2005) maintain that discovery learning motivates learners to express and explore their own conceptions, and collaborative discovery learning encourages them to share these plans and ideas with their partners, and one of significant advantages of collaboration is engaging learners in collaborative learning task and providing them with the opportunity to talk about their own understandings and ideas; moreover, collaboration allows learners to discuss their ideas, the design of their experiments, and the experimental outcomes with others learners; because of this, conditions required for cognitive conflicts, knowledge co-construction, and knowledge elaboration are provided. According to Gijlers and De Jong (2005), it is generally believed that knowledge construction which is a social process or a social cognitive process is impressed by the social setting in which they happen. Collaborative learning tasks enable learners to explore differences in opinion; consequently, cognitive conflicts become possible; besides, confronting with other partners who have different opinions or propose different solutions for the same problem fosters this conflict (Gijlers & De Jong, 2005).

Garrett (1982) states that a wide variety of foreign language software has been developed so far and most of them have focused on grammar as one important aspect of foreign and second language teaching and learning. Garrett (1982) defines that Computer Assisted Language Learning (CALL) is a software which refers to uses of the computer based on the hypotheses regarding the process by which learners can communicate grammatically in the language. Garrett (1982) expresses that in order to deal with more interesting purposes, CALL engages learners in using the target language without noticing explicitly to the formal aspects of the language which they are producing. Yaman (2010) maintains that computers, multimedia, the Internet, and so on are considered powerful tools to enrich learning process; however, to be effective in learning process, technology should be integrated into a rich, meaning-centered curriculum. Yaman expresses that MOODLE is one of the most widely used open-source learning management systems on the Internet, for it has been addresses to all teachers and students without exception of any age group and offers them many opportunities.

Recently, constructivism has attracted a lot of attention in order to keeping up with employing innovative methods in educational systems. Weegar and Pacis (2012) argue that constructivism is a learning theory which is proposed by Swiss psychologist Piaget and the Russian psychologist Vygotsky and is evolved from the extensive study of cognitive development; in other words, Piaget and Vygotsky studies regarding cognitive development have made the foundation for the psychological theory of constructivism. Brown (2007) describes constructivism which is a school of thought lays great emphasis on the learner's role in constructing meaning out of available linguistic input and the importance of social interaction in creating a new linguistic system as well.

Can (2009) mentions that according to constructivist approach, using technologies such as the Internet, websites, and the VLEs which creates new environments for language learning and teaching transforms the pedagogy and causes the

classroom and course books to diversify; moreover, creating these designs for learning requires employing new approaches to learning like collaborative learning, problem-based learning, and goal-based scenarios; on the other hand, learners need to work together and collaborate with each other when they are learning the language by making their own designs and projects and they need to learn for themselves when they are solving real life problems and achieving goals in groups like real micro societies regarding the constructivism. Can also states that creating such societies out of classroom simulates the real life solutions to real life problems. In addition, this kind of collaborative and meaning construction approach makes the negotiation of meaning more accessible.

Educators try to validate the outcomes of the teaching by employing effective methodologies based on new philosophies like constructivism. Wiener (1992) discusses that over the past decade, those college English teachers who have rejected philosophically approaches to teaching that isolate learners instead of drawing them together find collaborative learning an important method for effective learning. MacGregor (1992) expresses that social constructionism which comes from the assumption that knowledge is socially constructed by communities of individuals rather than individually makes the philosophy of collaborative learning. MacGregor (1992) argues that according to social constructionism, knowledge is shaped by successive conversations and ever-changing social and political environments over time. Saab et al. (2005) indicate that making the learning environment in which students can construct knowledge themselves and negotiate this knowledge with others is the focus of attention in constructivist approaches to learning. According to Saab et al. (2005), some learning contexts such as discovery learning and collaborative learning contexts satisfy knowledge construction processes. Saab et al. (2005) argue that collaborative learning environment makes learners to share and construct knowledge in working towards a solution of an assignment or problem, to expand their thoughts as part of the communication, and to search for a common way of working, so students make the discovery learning processes explicit.

Nowadays, the accepted models for instruction mainly focus on the potential ways that actively involve learners in learning. Veermans (2003) mentions that “anyone, who has ever experienced the feeling of excitement that can accompany discovering something ‘new’, may recognize the potential of discovery learning” (p. 1). Van Joolingen (1998) discusses that discovery learning is a type of learning which makes students to construct their own knowledge by experimenting and inferring rules from the results of the experiments; therefore, constructing the knowledge by the student is considered the main idea of discovery learning. Van Joolingen (1998) also adds that as opposed to expository learning environment, which presents necessary information by a teacher, discovery learning causes understanding at a higher level due to these constructive activities. Alfieri, Brooks, Aldrich, and Tenenbaum (2011) mention that if the learner is not provided with the target information or conceptual understanding and is required to find it independently with only the provided materials, discovery learning occurs. Alfieri et al. (2011) argue that within the framework of discovery-learning methods, the teacher can provide the learners with intensive or minimal guidance, and both types can appear in many different forms including manuals, simulations, feedback, example problems; however, the amount of the assistance depends upon the difficulty in discovering the target information. Gijlers and De Jong (2005) maintain that learners through discovery learning are motivated to be active agents in their own learning process; on the other hand, finding the properties of a domain is the main task of the learners within a discovery learning environment and these properties are not offered to learners in a direct manner; however, learners are required to discover them through experimentation and interpretation. Schunk (2012) argues that in discovery learning, teachers should arrange activities in such a way that allow learners to form and test hypotheses and learners cannot simply do what they want.

The educational system in general and language classrooms in specific are undergoing marked changes in the fields of teaching and learning. A good illustration of this is the application of new digital technology; in other words, such powerful tools as computer technology and the Internet have revolutionized the foundation of learning and teaching and offer teachers and students some significant advantages. CALL holds enormous potential for offering innovations in the field of language teaching and learning. Ahmad and Al-Khanjari (2011) argue that the world is changing into a comprehensive society in which the Internet and other related technologies are becoming dominant and ubiquitous and nations are also entering the digital phase; meanwhile, the world of WWW offers MOODLE as an innovative environment for instruction and learning in education.

Corich (2005) expresses that MOODLE was first released in 2002 and was developed by Martin Dougiamas an Australian computer scientist and educator at the Curtin University of Technology in Perth, Australia. Corich (2005) also argues that MOODLE has been provided freely as open source software; in other words, although MOODLE has been copyrighted, users have been allowed to copy, use, and modify MOODLE if they provide the source to others, not modify or remove the original license and copyrights, and offer this same license to any derivate work. Dougiamas (2004) discusses that MOODLE is programmed in Hypertext Preprocessor (PHP), a programming language that can create web pages based on user input and data-based information; moreover, all elements on the page can be modified, repositioned or deleted in MOODLE. Dougiamas (2004) mentions that there are there columns in MOODLE platform, two columns consisting of blocks on either side with special functions regarding course settings and information and a center column with blocks related to the course content; furthermore, the core blocks can be labeled automatically, either numerically or with sequential weeks. All course elements of MOODLE are presented in a flat view so teachers can easily hide specific sections when required and elements can be moved up or down just with two clicks of the mouse (Dougiamas, 2004). Yang and Lin (2010) argue that CMSs or LMSs are recently used in the areas of teaching

and learning as a modern alternative to using such applications and a good illustration of these systems which is undergoing a worldwide popularity is MOODLE. Uzun (2012) maintains that by applying online foreign language learning the learner rather than the teacher decide about the process, the individual needs and interests come before the contents, and assistance to learners in learning the foreign language instead of teaching them makes the main philosophical principle. Stickler and Hampel (2013) argue that there is a direct connection between socioconstructivist theories of learning and the context of language learning; in other words, language learners are more proficient in terms of using and understanding of a foreign language through collaboration and in co-construction with other learners.

### III. METHODOLOGY

#### A. Research Design

The current study employs both quantitative and qualitative research methodologies. Regarding the quantitative analyses, the researcher employed a quasi-experimental research design. On the other hand, the researcher tried to employ methodological triangulation through face-to-face semi-structured interviews for investigating the attitudes of the participants towards virtual learning and MOODLE VLE.

#### B. Participants

The population of this research was chosen from some English institutes including Zabansara, Ava, Mehr-E-Nasir, Poyesh, and Farhikhtegan branches one and two in Qom, Iran. Sampling in this research was not random for the sake of including beginners in the concept of conditional sentences. Convenience sampling was used in this paper for having an easier accessibility to the proposed subjects. First, the researcher-made conditional sentences pre-test was piloted in branch one of Farhikhtegan Language Institute with 20 participants of similar test-takers from 71. The subjects' English proficiency was classified as pre-intermediate level by the institutes based on the participants' score in an English interview; however, in order to guarantee the homogeneity of these 51 participants in terms of their language proficiency, a version of Oxford Placement Test (OPT) was used. Having been homogenized by the Solutions Placement Test (Edwards, 2007), 35 participants met the homogeneity criterion of the test and were chosen for the next phase of the research. Then, these 35 participants were pretested and 30 of them met the necessary conditions of lack of ability to recognize and produce conditional sentences. Next, they were put into two groups of 15 students each: the experimental and the control groups.

#### C. Instrumentation

In this study, the researcher used two different kinds of materials to collect data, namely teaching materials and testing materials. Teaching materials included the treatment, pictures, and MOODLE platform. The researcher employed the MOODLE site of Al-Mustafa Open University. Testing materials in this research also contained the Solutions Placement Test (Edwards, 2007), the conditional sentences pre-test, the conditional sentences post-test, pilot testing, and three face-to-face semi-structured interviews.

#### D. Procedure

Before implementing the treatment, the necessary information concerning an overview of working with different modules of MOODLE like Adobe Connect live class, forum, wiki, and quiz was taught to the participants in the experimental group during one session. Under Adobe Connect live class in MOODLE platform, subjects of the experimental group were divided into small groups. Team working, group discussion, and peer correction comprised the main part of the classroom activities.

The treatment which was conducted in the experimental group was composed of three steps including:

1. Preview: During this phase, the researcher tried to prepare participants by asking some warm up questions about conditional sentences. The researcher asked participants to work in their specified groups through writing on their whiteboards. Finally, one of the members of each group as a volunteer answered loudly through her microphone or wrote answer in the chat room.

2. View: Under Adobe Connect live class, participants of the experimental group were provided with pictures which were downloaded from the Internet via Microsoft PowerPoint program, and they heard and saw the questions through microphone and screen or chat room respectively. Questions were related to the pictures, and they were used for leading and helping the participants to make the story about them. They worked in their teams on their whiteboard. Then, they answered to questions via their whiteboard, chat room, or microphone. The stories were made through the ideas which were elicited from the participants. Finally, the researcher tried to elicit the aimed structures.

3. Review: Through this stage, participants of the experimental group in Adobe Connect live class were given a Portable Document Format (PDF) file with some fill in the blank or unscramble questions on it. They worked individually, selected a question, and answered to the question using their whiteboard, chat room, or microphone.

In order to practice conditionals, the researcher set different assignments for participants in the experimental group. First, 10 fill in the blank or multiple choice questions with feedback were made. For doing more conditional exercises, participants of the experimental group also took part in some free discussions via forum every other session.

The same procedure, content, and material were also applied for the control group under non-MOODLE environment. The participants worked through team working, group discussion, and peer correction. Like the experimental group, the implemented treatment in the control group also consisted of three steps followed through including:

1. Preview: Under this phase, the researcher started the lesson plan by asking some warm-up questions about conditionals from participants and preparing them in every session.

2. View: During the view phase, the researcher showed some printed pictures which were download from the Internet to participants and asked them some questions related to aforementioned pictures. The researcher helped the participants to make stories based on pictures and questions. Participants were encouraged to work in close collaboration, to share their opinions, to find answers, and finally to discover the aimed structures. Finally, the researcher elicited the intended conditionals from participants by asking questions based on the story which was made with the cooperation of participants. To be made the story leads participants towards the proposed grammar rule; in other words, participants are required to use the aimed conditional for making the story.

3. Review: Throughout the review phase, the researcher offered participants in the control group the papers with fill in the blank or unscramble questions on them to answer. They selected a question and answered or the researcher herself assigned one question to every participant based on her weak points.

Regarding assignments, participants in the control group were given 10 fill in the blank or multiple choice questions every session. The subjects also took part in free discussion every other session. Sentence writing around different topics also gave them the extra opportunity to practice conditional sentences more. In addition to the teacher's feedback, peer correction and self-correction were made other techniques for correcting learners' errors.

The current study also investigated the attitudes of the participants of the experimental group towards virtual learning and MOODLE VLE. Data were collected from 13 participants via methodological triangulation through three face-to-face semi-structured interviews. Basic structures for the interview protocol consisted of attitudes towards virtual learning, MOODLE VLE, its activities, and fulfillment. In order to give the interviewees the opportunity to express themselves comfortably and to make a better understanding, the interviews were carried out in the mother tongue of interviewees (in Persian). All the interviews were audio recorded and subsequently transcribed with the interviewees' permission.

#### IV. RESULTS AND ANALYSIS

##### A. Results Related to the First Question

Having got the data from the pre-test and the post-test, descriptive statistics were employed to summarize the characteristics of the data. Also, essential information regarding the normality of distribution was provided by the descriptive statistics.

TABLE 1:  
DESCRIPTIVE STATISTICS FOR OBTAINED SCORES OF THE EXPERIMENTAL GROUP

		Pre- test	Post- test
N	Valid	15	15
	Missing	0	0
Mean		11.73	52.40
Std. Error of Mean		1.33	2.03
Median		11.00	56.00
Mode		15	59
Std. Deviation		5.17	7.88
Variance		26.78	62.11
Skewness		.13	-1.12
Std. Error of Skewness		.58	.58
Kurtosis		-.85	.43
Std. Error of Kurtosis		1.12	1.12
Range		17	26
Minimum		4	34
Maximum		21	60

According to Table 1, the *skewness* values are .13 and -1.12 for pre-test and post-test in the experimental group respectively and the *standard error of skewness* is .58, the two times value of *standard error of skewness* is 1.16 and this value is more than the *skewness* values of pre-test and post-test ;as a result, it may be inferred that normal distribution exists.

TABLE 2:  
DESCRIPTIVE STATISTICS FOR OBTAINED SCORES OF THE CONTROL GROUP

		Pre-test	Post-test
N	Valid	15	15
	Missing	0	0
Mean		10.67	50.67
Std. Error of Mean		1.44	2.49
Median		11.00	54.00
Mode		4 <sup>a</sup>	59
SD		5.58	9.67
Variance		31.23	93.66
Skewness		.57	-1.04
Std. Error of Skewness		.58	.58
Kurtosis		.13	-.30
Std. Error of Kurtosis		1.12	1.12
Range		20	28
Minimum		3	32
Maximum		23	60

As reported by Table 2, the *skewness* values are .57 and -1.04 for pre-test and post-test in the control group respectively and the *standard error of skewness* is .58, the two times value of *standard error of skewness* is 1.16 and this value is more than the *skewness* values of the pre-test and post-test; consequently, the data are distributed normally.

TABLE 3:  
RESULTS OF NORMALITY OF TEST OF THE EXPERIMENTAL GROUP

		Pre-test	Post-test
N		15	15
Normal Parameters	Mean	11.73	52.40
	Std. Deviation	5.17	7.88
Most Extreme Differences	Absolute	.13	.27
	Positive	.09	.16
	Negative	-.13	-.27
Kolmogorov-Smirnov Z		.52	1.06
Asymp. Sig. (2-tailed)		.94	.20 > p. 0.05

Table 3 shows the results of normality of test; i.e., one sample Kolmogorov-Smirnov (K-S) test, of the experimental group. As shown in these figures, the plots are placed on the hypothetical lines or near to them; consequently, the normal distribution exists. According to the last row, the *Asymp. Sig. (2-tailed)* of both the pre-test and post-test which are .94 and .20 respectively are more than the p. value 0.05; hence, a normal distribution exists and parametric statistics can be used in further calculation.

TABLE 4:  
RESULT OF NORMALITY OF TEST OF THE CONTROL GROUP

		pre-test	post-test
N		15	15
Normal Parameters <sup>a</sup>	Mean	10.67	50.67
	Std. Deviation	5.58	9.67
Most Extreme Differences	Absolute	.08	.22
	Positive	.08	.16
	Negative	-.08	-.22
Kolmogorov-Smirnov Z		.33	.85
Asymp. Sig. (2-tailed)		1.00	.45

Table 4 indicates the results of *K-S* test of the control group. As it is shown in the last row, the *Asymp. Sig. (2-tailed)* of both pre-test and post-test which are 1.00 and .45 respectively are more than the p. value 0.05; therefore, data are distributed normally and parametric statistics can be used.

In order to determine whether the treatment given to the experimental group had caused any statistically significant change in this group and to determine if the performance of the participants of the experimental group was significantly different from that of the control group, an independent *t*-test was run between the scores of the post-test of both groups.

TABLE 5:  
DESCRIPTIVE STATISTICS FOR POST-TESTS IN BOTH GROUPS

	group	N	M	SD	SEM
achievement	Experimental group	15	52.40	7.88	2.03
	Control group	15	50.67	9.67	2.49

According to Table 5, *mean* and standard deviation of two groups are (M= 52.40, SD=7.88) for the experimental group, and (M= 50.67, SD= 9.67) for the control group respectively. As the results show, the *mean* score of the experimental group is higher than that of the control group; as a result, the experimental group outperformed the control group on the post-test. However, to show whether the difference is significant or not a further statistical analysis was needed; therefore, the independent samples *t*-test was conducted.

According to results of the *Levene's* test for equality of variances in the top row of Table 6, the *sig.* value is .49 and greater than .05; as a result, the variability in the two conditions of the study is not significantly different. As displayed in the Table 4.8., the *sig. (2-tailed)* value is .59 and greater than the  $\alpha$  value; hence, there was no statistically significant difference between two groups regarding their achievements. So the null hypothesis stating that there is no statistically significant difference between the achievements of learners learning conditional sentences using collaborative discovery learning in the MOODLE environment and in the non-MOODLE environment is maintained.

TABLE 6:  
RESULTS OF INDEPENDENT SAMPLES T-TEST OF THE POST-TEST

		Levene's Test for Equality of Variances		t-test for Equality of Means				95% Confidence Interval of the Difference		
		F	Sig.	t	df	Sig. (2- tailed)	MD	SED	Lower	Upper
achievement	Equal variances assumed	.47	.49	.53	28	.59	1.73	3.22	-4.86	8.33
	Equal variances not assumed			.53	26.89	.59	1.73	3.22	-4.88	8.34

### B. Results Related to the Second Question

Based on the content analysis of the interviews' transcriptions, the findings of the interviews suggested the highly positive attitudes of the participants of the experimental group towards virtual learning; furthermore, interviews data indicated that they adopted positive attitudes towards MOODLE platform. The results of the interviews are summarized with respect to the following questions in the interview protocol:

#### 1. Interview Question One: What is your opinion about virtual learning?

The findings related to this question indicated that the participants really benefited from this kind of learning. They agreed that virtual learning offered them not only many new opportunities which were very different from those of conventional learning, but also helped them to improve their learning. For instance, participant C said that "virtual learning has made the learning process so easy. My language institute is far from my home, I should spend a lot money, time, and energy for commuting; however, I did not have such problems under virtual learning". Interviewee E stated that "regarding the characteristics of virtual learning, I assert that I could access my class from my home just by logging into the MOODLE platform, so it was very convenient that we were not required to leave the house".

#### 2. Interview Question Two: What is your opinion about MOODLE VLE?

All interviewees had positive attitudes towards MOODLE platform. They claimed that different activities and capabilities of MOODLE platform encouraged them to learn better. However, two interviewees said at first they did not have much confidence to work with MOODLE comfortably, but they have certainly gained confidence over few sessions. Regarding question two, interviewee G mentioned that "when I got familiar with the MOODLE environment and all its diverse tools, it would seem that I was motivated to practice and learn more". Interviewee M strongly claimed that "I was not good at working with computer and the Internet. I could not believe that I learnt everything about Moodle just in one hour and I used the MOODLE environment without installing any additional programs".

3. Interview Question Three: Are you aware of any advantages and disadvantages that might be afforded by training via VLEs like MOODLE?

Majority of the interviewees stated that controlling the pace of learning, employing diverse digital applications, engaging all learners including shy ones in learning, and performing communicative activities out of class time were considered some significant advantages of MOODLE. On the other hand, all participants believed that the most



significant disadvantage would be the bad effect of low internet connectivity on the operation of Adobe Connect live class. Meanwhile, three interviewees complained about unexpected problems in their modems and microphones which hindered their full accessibility to MOODLE modules during a few sessions. The following excerpts taken from the participants' answers indicate the aforementioned results. Participant A said "I found it effective to work in this environment. After the class, recordings were ready over there to be downloaded. If I had any problems, I could use them as if I had taken part in the class again". Interviewee K said that "considering forum, wiki, and assignment, we were comfortable to spend as much as time that we needed to practice conditionals in sentences or revise the opinions of our friends".

4. Interview Question Four: What is your opinion about those activities of MOODLE platform which were used in the course including chat, forum, wiki, assignments, and Adobe Connect live class?

The result of interviews data regarding this question indicated that the participants expressed positive perceptions towards the activities which were offered via MOODLE platform. Most of them mentioned that they were impressed by some important features of the activities including peer correction, immediate feedback, and diversity of activities. These views are represented in the following interview excerpts. For instance, interviewee I claimed that "personally speaking, when I used wiki and forum, I greatly enjoyed the atmosphere of cooperation among my friends and I. You know, we could interact with each other thorough many new communication technologies". Interviewee J mentioned that "I got much benefit from immediate feedback in the assignment activities and peer correction in the forum and wiki activities. Immediate feedback served me to practice conditional sentences more effectively. On the other hand, peer edition increased my accuracy and attention".

5. Interview Question Five: In your opinion, which type of MOODLE activities that were used in the course are you the most/least interested in? Why?

The interviews findings showed that among the most favored activities, Adobe Connect live class stood first. Moreover, forum, wiki, and assignment activities stood second, third, and fourth after Adobe Connect live class respectively. Finally, all of the participants have used the chat room of Adobe Connect live class; in contrast, just two interviewees took advantage of chatting via chat module besides chat room of Adobe Connect live class. Because of this, chatting through chat module was considered as the least favored activity. There are some interview excerpts that illustrate these results. Participant D claimed that "I consider the Adobe Connect live class as the best activity in the MOODLE environment. During the class, I was forced to speak, listen, type, and read for participating in the activities. I was completely engaged". Interviewee K argued that "Mostly, I was interested in forum and wiki activities for having the chance to express my ideas and to receive the other students' feedbacks".

6. Interview Question Six: Would you recommend your Language Institute offers its learners an opportunity to use virtual learning and MOODLE VLE? How important do you feel this is?

The collected data revealed that all participants strongly believed in numerous advantages of virtual learning MOODLE platform in improving the learning. All the participants acknowledged that if our educational system did not keep up with these new technologies, it would fall behind. Meanwhile, four participants also added that the low quality of the Internet services limited and constricted MOODLE operations; hence, being equipped with suitable internet tools is an important prerequisite for proper and optimum implementation of MOODLE platform in the educational system. These views are indicated in the following interview excerpts. Participant E strongly stated that "I enjoyed my course and it gave me the great satisfaction to know about such learnings and environments". Interviewee L stated that "I'm sure that virtual learning through MOODLE environment helps language students to learn better; therefore, I tried to persuade my language institute to employ it".

## V. CONCLUSION

According to the achieved results of the study, it was found that there is no statistically significant difference between the achievements of learners learning conditional sentences using collaborative discovery learning in the MOODLE environment and in the non-MOODLE environment. Nonetheless, participants of the experimental group performed better as compared to participants of the control group in learning conditional sentences. Furthermore, participants of the experimental group showed positive attitudes towards MOODLE platform and virtual learning. Finally, for probing the impact of collaborative discovery learning in the MOODLE environment and non-MOODLE environment on the achievement of conditional sentences, it should not be forgotten that:

1. We are living in the age of computer and web based technologies. Today the application of these technologies is rapidly changing the world; meanwhile, language education is no an exception.

2. As compared with the non-MOODLE environment, MOODLE environment provides learners with some unique opportunities for a better learning including managing the time and speed of learning, accomplishing distance learning, motivating learners, and enriching learning process.

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**Monireh Eskandari**, has an M.A. in English teaching and now is teaching at English institutes. Her fields of interest are applied linguistics, computer assisted language learning, and English translation.

**Hassan Soleimani** is an assistant professor at the University of Payame Noor, Tehran, Iran, where he teaches computer-assisted language learning and EFL curriculum development for Ph.D. candidates, and research methods and language teaching methodology to graduate and undergraduate students. He has written some books, including *An Introduction to Non-parametric Statistics for Applied Linguistics Research* (2009), and articles in national and international journals. He also serves as the editorial board member of some journals. His areas of interest include research methodology and statistics, curriculum design, and SLA issues.