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EXPLICIT FEEDBACK IN COMPUTER ASSISTED READING COMPREHENSION VS. CLASSROOM FEEDBACK

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Abstract:
This study investigated the effect of CALL and computer-mediated explicit feedback on reading comprehension of intermediate EFL learners. To this aim, two classes of general English were under study and learners' reading comprehension was investigated. The two classes were randomly divided into experimental and control group. To homogenize the participants in reading comprehension a pre-test of FCE reading-oriented was administered. In one group CALL was employed and the learners did not attend the class at all and received explicit feedback on line. The other group received in-class feedback through the conventional methods of classroom interactions. After the treatment, the learners were administered with another FCE reading –oriented for the post-test. The collected data was analyzed through independent and paired sample t-tests. The results suggested that computer-mediated explicit feedback has remarkable effect on developing reading comprehension of intermediate EFL learners.

Keywords: computer assisted reading comprehension, explicit feedback

1. Introduction

There are different activities involved in foreign language teaching and learning. Among these activities, reading is one of the most important skills for learners. Reading ability is often all that English as a foreign language learners need (Alderson, 1992). Because today's world is the world of science and technology, reading skill has a significant role in being up-to-date and well-informed. In fact, reading skill is a key skill for active participation in such a world, since it improves all other language skills. The habit of reading helps readers to decipher new words and phrases they meet in everyday conversations. In fact, it helps us to communicate with contemporary writers and those in the past and makes us sensitive to global issues. Reading is a fundamental part of everyday life. It enables us to interact and understand the world around us and

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helps us to explain our ideas to others. Like reading in one's first language, reading in a foreign language helps us become more comfortable with the words and grammatical rules that enable us to express our thoughts (Cheng, 1996; Banaruee & Askari, 2016). Educational researchers found a correlation between reading and academic success so that without the ability to read the chances for academic and occupational success are limited. A student who is a good reader is more likely to do well in school and pass exams than a student who is a weak reader. They also found a correlation between reading and vocabulary knowledge, since reading is the best way to acquire a large vocabulary. Without the ability to read in a foreign language like English well, the opportunities for personal fulfillment and job success will be lost, because today many of the professional, technical and scientific literatures are published in English. In recent years, there has been increasing focus on the teaching of reading skills. According to Cheng (1996), there are some reasons for this growing focus. Firstly, it may be due to the recognition of the importance of reading for second language learners in academic contexts and an increase in the number of people around the world who are learning English as a second or foreign language. Secondly, it may be due to the growing numbers of countries such as Taiwan and Korea that are making English language instruction mandatory from an early age. Since books and other reading materials are available over the internet, reading is being known as a valuable source of language input, especially for students in some EFL contexts. In these contexts, other kinds of language input are not available since there are not any fluent speakers.

Effective reading is necessary for success in acquiring a second language. It is the basis of instruction in all aspects of language learning: using textbooks for writing, revising, developing vocabulary and using computer assisted language learning programs. So, due to the important role of reading in second language acquisition, there is a vital need to investigate the effectiveness of the present methods of its instruction. In the last decade, researches have illustrated how computer technologies support educational experiences, and it has been demonstrated that computer assisted reading instruction can be one of the effective ways of improving reading ability of learners. Computer assisted language learning, referred to as CALL, originated from computer assisted instruction (CAI), which was first viewed as an aid for teachers in 1960's (Lepper & Gurtner, 1989). CAI made possible the dynamic presentation of materials, individualization instruction and engagement in the learning process that might not be possible in a more traditional classroom setting. Computers are able to organize, select and present the multiple sensory components (Al-Seghayer, 2001). According to Mathes, Torgesen and Allor (2001), CAI could provide immediate feedback in the case of correct responses, reinforcement where appropriate and modeling when needed. Feedback gives learners information about the progress they make towards their goals (Borich & Tombari, 1997). More recent studies have shown that corrective feedback in SLA is beneficial to the learning process by both students and teachers. There has been emphasis on the importance of raising learner's consciousness of the differences in SLA between their current state of knowledge and their goal state (Strik & Van Hout, 2009;

Banaruee, 2016; Zare-Behtash, Bakhshizadeh Gashti, Khatin-Zadeh, & Banaruee, 2017; Banaruee, Khatin-Zadeh, & Ruegg, 2018; Askari, Khoshsima, Khatin-Zadeh, & Banaruee, 2017; Banaruee, Khoshsima, & Askari, 2017). There are different types of corrective feedback, one of which is explicit feedback. This kind of correction shows the existence of an error and the provision of the target like reformulation and can take two forms, i.e. explicit correction and metalinguistic feedback (Ellis, Loewen & Erlam, 2006). In explicit correction, the teacher provides both positive and negative evidence by clearly saying that what the learner has produced is erroneous, while in metalinguistic feedback the teacher only provides students with "*comments, information, or questions related to the well-formedness"* of their utterances (Lyster & Ranta, 1997, p.47).

2. Review of the literature

2.1 Nature of Reading Comprehension

Comprehension means understanding. Comprehension is the act of understanding what we are reading. It requires full attention and focus when reading. Comprehension is a learning process. It is the ability to understand and gain meaning from what has been read and being able to communicate this information to others. In fact, this is the reason and the ultimate goal of reading. As mentioned before, comprehension is one of the five key components of reading as identified by National Reading Panel (2000). This key component cannot occur independent of the other elements; however, it is the most difficult and the most important of the others. In the past it was believed that reading comprehension was the combination of decoding and oral comprehension skills (Hoover & Gough, 1990). It means that if readers were able to decode words they could monitor what was being read for themselves orally and understand what they were reading. However, today's researchers have shown that reading comprehension is something more than decoding and oral comprehension (Duck & Pearson, 2000; Zare-Behtash, Khatin-Zadeh, & Banaruee, 2017).

From a cognitive or psycholinguistic perspective, comprehension is a process of constructing meaning in transaction with texts (Goodman, 1996). The text, the reader, the immediate and socio-cultural context and the cognitive strategies that the readers employ have an important role in every reading act. Each reader has its own traits and characteristics that differently applied with each text and situation (Butcher& kintsch, 2003). The reader's world knowledge is the most important of these characteristics. The more background knowledge the reader has, the more he will understand what is being read. The structure of the text, its vocabulary, language, genre, and how well it is written, are all of the features that have role in occurring comprehension. The role of immediate and socio-cultural context is that it provides the cultural and pragmatic aspects of why one is reading and how the text is to be comprehended.

2.2 The History of Computer Assisted Language Learning

Computer-assisted language learning (CALL) may be defined as "*the search for and study of application of the computer in language teaching and learning*" (Levy, 1997, p.1). CALL is an approach in which computers and related technologies such as internet are used to improve language learning and increase opportunities of instruction. By emerging the earliest computers in the mid 1940's for translation purposes, computers began to role play in language learning (Fotos & Brown, 2004). However, the development of CALL involves three phases.

The first phase of CALL which was based on behaviorist theories of learning implemented in 1960's and 70's when Audio-lingual method was mostly used (Warschauer, 1996). In this period, systems improved, linguists used computer technology to create concordances. Students had two tests consisting of presentation and practice in a language laboratory in order to master the language. The programs of this phase were drill and practice. These programs were based on the computer as tutor model (Taylor, 1980). In fact, computers considered as tools for delivering instructional materials to the students and as mechanical tutors which do not get tired and allow students to work on their own pace. In other words, behaviorist CALL believed that computer exposure to the same material repeatedly is essential for learning and also believed that computers can provide immediate feedback.

In the late 1970's and early 1980's, by rejecting the behavioristic approaches at both the theoretical and the pedagogical level and by introducing the microcomputer, the second phase of CALL namely, communicative CALL emerged. This phase was based on cognitive theories and believed that materials should focus more on using the language rather than on analysis of the language; grammar should be taught implicitly not explicitly; students should not only manipulate prefabricated language, they should be allowed and encouraged to generate original utterances and the target language should be used predominantly or exclusively (Philips, 1987). The arrival of personal computers (PC) was at this time, so the availability of computing was more widely and the software for language learning developed more. In this phase, computer continued to be considered as tutors. Communicative CALL considered learning process as a process of discovery, expression and development. This phase still provides skill practice but not in a drill format. So, the programs of this phase were programs such as text reconstruction, programs that provide students with opportunities to work alone or in groups for rearranging words and texts to discover language patterns and meaning (Healey & Johnson, 1995). Stimulations were other programs of this phase. The aim of these programs was to stimulate discussion, writing and critical thinking of students who work in pairs or groups.

2.3 The Importance of Incorporating CALL in Language Learning and Teaching

Technology provides people from different culture with opportunities to interact with each other. By advancing in technologies and increasing access to internet, email, e-journals and digital materials for getting information, the role of computer in the

second or foreign language learning classrooms has expanded and in fact its role has become an important issue which language teachers around the world are confronted with. By incorporating technology into classroom, language learners can also benefit from it. They can improve their language skills such as reading, listening, writing and speaking. By applying technology in teaching, the quality of learning and teaching will increase, and will provide an environment in which the second or foreign language learning can ease and the learner's knowledge and creativity can increase (Lapkin et al, 1990). Warschauer (1996) stated that technology and the internet as an aid to the teacher play an important role in teaching the second and foreign language because with the help of them learners can communicate with the other people or learners of the target language throughout the world. In fact "*internet has become an important college students' life, not only for their studies and daily routines, but as a tool for getting to know other people and rest of the world"* (Chou & Hsiao, 2000, p.66). In our today's world, computer is one of the most useful tools in learning. In compared to tapes and ordinary textbooks, computers have a more significant role. The role of computers can be considered as the role of the teacher, but it does not mean that they can completely replace the role of the teacher in a classroom.

2.4 Benefits of CALL for Learners Developing Reading Comprehension Skill

Reading comprehension is one of the important components in English language for learners. In order to understand a text, a learner should have a good skill of reading comprehension. Historically, there have been a number of efforts to facilitate the complex process of foreign language reading comprehension. More recently, growing attention has been paid to the use of computers for developing reading comprehension skills and various efforts have been made in this regard.

The first advantage of computer assisted language learning is that it facilitates the process of developing the reading comprehension skill. Accessibility to the computers provides the opportunity to display the text not only on paper, but also on computer screen. So, reading on screen has become the main means of retrieving information in the format of e-mail, chat room, World Wide Web, conversations, etc. Teachers can use computers in their reading curriculum in different ways such as mode of instruction, assessments and student work. By incorporating technologies such as computers in L2/FL reading instruction, the L2/FL reading process becomes more complicated. Computers by providing and adding visual and auditory features to a text activate prior knowledge which is a critical factor in learning and comprehending a text and facilitates the reading process (Chun & Plass, 1997). According to Ellis (2003), traditional language classrooms are often boring, monotonous and painful since there is often a need to provide repeated practice to meet important objectives, so students may lose their motivation and interest in such environments. Computers by providing games and communicative activities teach the language through different and more interesting ways and make even bore drills more interesting, promote learners' motivation and reduce their stresses and anxieties and cause them feel more

independent. Learners have different learning styles. Some of them learn more effectively when they can use a compatible learning style than when they are compelled to use an incompatible one. In this case, computers can be used to adapt instruction to each learner's style. In other words, through CALL, learners can get compatible style. Computers can provide fast and slow drills suited for different learners. Kilickaya (2007) emphasized the importance of flexible learning. CALL provides this flexibility and allows learners to choose appropriate timing for learning. They also can review the material every time they want. CALL provides a learner-centered environment in which the goal of education is to create independent, autonomous learners who are responsible for their own learning (Weimer, 2002).

Many students need additional time and individualized practice to meet learning objectives. By providing self-instructional tasks, computers allow learners to master prerequisite skills and course goals at their level and speed. In fact, computers offer individualized instruction which is according to teachers like Warschauer (2004) is one of the most important advantages of using CALL in the development of reading comprehension skills. Reading speed is a major issue in teaching reading skill. And obviously, it varies among students of a class. So, in order to increase and also to control the reading time of each student individually, computers are the only medium which can provide such control. Computers can provide learners with a step by step representation of materials which allows students to infer the meaning of new words and helps them to decide on the importance of creating words for the global comprehension of a text (Leech, 1986).

Aweiss (1994) investigated the effect of computer-mediated reading supports on comprehension during independent reading. The significant finding of this study was that the access to computer-assisted reading aids caused readers to score higher on the immediate recall protocol while such increase was not evidenced in the scores of those with no access to any reading aids. In addition, motivation benefits were also observed for the computer-displayed group. The design of this study, however, did not make it possible for the researcher to investigate whether the use of traditional reading supports would have rendered similar results for the participants.

Hong (1997) also attributed positive reading achievements for CALL implementation in a study that evaluated the effectiveness of multimedia computer-assisted reading in business Chinese in comparison with the conventional paper-pen-dictionary reading method. He found that computer-assisted reading is much more effective in improving students' reading efficiency and in enhancing students' comprehension of business Chinese articles than the conventional reading method.

2.5 Feedback in Second/ Foreign Language Learning

Feedback is an essential part of any learning process and is vital in all learning contents (Slavin, 2003). Second or foreign language learners should be informed about their progress through providing feedback. Giving frequent feedback to learners is an important issue since through this they will perform better.

There are different definitions of feedback during the history of importance of feedback. Feedback is the information given to the learners about their language production and provides them an opportunity to modify their output. Feedback can either be positive and divided into four categories like acknowledgement, acceptance, repetition and rephrasing or it can be negative and corrective and divided into two categories (Doughty & Varela, 1998).

2.6 Corrective Feedback and L2/FL Development

Errors and corrective feedback are a natural part of language learning. According to Ellis (1997), errors are deviations from the norms of the target language. Corrective feedback is an indication to a learner that his or her use of the target language is not correct in second language learning. Corrective feedback helps to facilitate the acquisition of certain L2 forms such as rare forms, forms that are low in perceptual salience and forms that do not typically lead to communication breakdown (Long & Robinson, 1998). Corrective feedback can draw the learner's attention to mistakes between his/her output and the target like form thereby; the occurrence of noticing is facilitated. According to Schmidt (2001, p.37), noticing is "*the first step in language building*". Corrective feedback has also been recognized as focus-on-form procedure. According to Long (1991, p.46), focus-on-form is "overtly drawing students' attention to linguistic elements as they arise incidentally in lessons whose overriding focus is on meaning or communication". Other authors such as Little and Ushioda (1998, p.96) contend that "*in naturalistic as well as formal context, feedback is one of the most important stimuli to learning*". By giving feedback, metalinguistic awareness of learners is most sharpened and improved (Little, Ushioda, & Appel, 1999).

2.7 Necessary Conditions for Effectiveness of Corrective Feedback

Swain (1985) stated that exposure to the target language alone is not sufficient for high quality L2/FL learning and there is a need for CF. There are a number of studies on the effectiveness of different forms of corrective feedback. All of these studies indicate that (1) corrective feedback, from teachers, peers, or native speakers, inform students of the differences between their output and the L2. They also indicate that (2) corrective feedback is more effective for SLA than language input alone, and that explicit feedback may be more effective than implicit feedback (Ellis & Bogar, 2007). According to these several studies, there are indications that corrective feedback does not work when it is erratic and inconsistent. Corrective feedback must be clear without any ambiguity, understandable and short. It should be intensive and appropriate to learners' readiness. It should provide opportunities for self-repair and modified output because these cause learners to revise their hypotheses about the target language (Havranek, 2002). Besides, an individualized attention to the learner is also needed. In real classroom, it is difficult to meet these conditions and in fact there is no enough time for the teacher to pay attention individually and give feedback to each student, so each error that occur cannot be addressed and errors are selectively corrected.

The problems in the corrective feedback research mentioned above can be partly corrected by utilizing a CALL environment where corrective feedback is provided individually and immediately. Up to now, different CALL systems have been used for SLA experiments (Hulstijn, 2000) and for studying the role of corrective feedback in particular. There are a number of advantages of CALL systems for research on corrective feedback.

2.8 CALL and Immediate Feedback

When feedback is given immediately and individually, it has the maximum benefit for the learner since in the case of wrong performance it can help the learner avoid his misconception in the initial stage itself. The learners' interest and acceptability decrease when the information on their performance is delayed. And as it was mentioned before, in real classrooms feedback is delayed and often denies due to different reasons. The computer assisted language learning environment can provide individualized and immediate feedback. One-on-one learners' interaction with the system provides clear, immediate and consistent feedback to all of the learners. It also provides a private, stress-free environment in which learners can access to input ultimately and practice in their own pace. Such environment engages and motivates students to perform better.

2.9 Theoretical Support for CALL and Corrective feedback

Communication technologies can realize constructivists' ideals of learning (Taki & Ramazani, 2011). By using computer technology, the opportunity for active and collaborative construction instead of transferring knowledge from one person to another is provided. Collaborative construction requires less controlled environment which encourages thoughtful reflection. In such environment, learners become more active and problem solvers (O'Malley, 1995). According to constructivist theory, students are actively involved in a task in which they build new knowledge based on their previous experience to get new ideas into their knowledge schema. Students also have the responsibility for their learning, and teacher is a facilitator rather than provider of knowledge (Plester, Wood, & Joshi, 2009).

3. Methodology

3.1 Participants

The participants in this study were two classes of 60 male and female EFL university students majoring at Nursing at State University of Jahrom, Jahrom, Fars, Iran with an age range of 19 to 25. They had registered at two classes and were taking general English course. Their level of language proficiency, namely intermediate level of English proficiency, was established through the paper-based TOEFL test. Those who were at the intermediate level were selected for the main part of the study. The classes were randomly assigned to two groups (one class with 30 students as control group and the other class with 30 students as experimental group). Their reading homogeneity

was insured using a test of FCE as the screening pre-test. The first language of participants involved in this study was Persian.

3.2 Instrumentations

To meet the purpose of the study, the following two different instruments, i.e. instructional and testing instruments, were used during the implementation of the research.

3.3 Procedure

3.3.1 TOEFL (the paper-based test) Proficiency Test

The researcher used FEC test to become sure about the homogeneity of participants regarding the English language proficiency. This test enabled the researcher to grasp the homogenous participants. The already reliable and valid TOEFL test was composed of four parts: listening comprehension, structure and written expressions, reading comprehension and written English test including two essay topics. Written English test section was excluded from the test because of its subjectivity in scoring and ineffectiveness in accounting the total score, but the three other sections were kept due to their necessity in accounting the total proficiency score and ease of objective scoring. Listening comprehension, structure and written expressions, and reading comprehension sections involved 50, 40 and 50 multiple choice items respectively. The test was taken from *Longman Preparation Course for the TOEFL Test (the Paper Based Test)* (Deborah Philips, 2003, 431-454) (see Appendix A).

3.3.2 FCE (First Certificate in English) Reading- oriented Test

Language proficiency is composed of different abilities, one of which is reading comprehension that may be dissimilar even in the learners who are at the same level of language proficiency. So, a reading-oriented pre-test was used as the other required instrument in this study. This reading comprehension proficiency (FCE) test was used to determine the reading comprehension homogeneity of participants in each group.

All participants were given this pre-test prior to the treatment to ensure the comparability of the two groups' reading comprehension ability at the beginning of the study. Only the reading section of the FCE test was used in this study. This test involved 30 items (see Appendix B).

3.3.3 Post-test

The same pre-test of reading comprehension proficiency namely, First Certificate in English that was administered prior to the treatment to assure the comparability of the two groups' reading comprehension ability at the beginning of the study, was applied as the post-test at the end of the treatment to determine the possible progress in the reading comprehension of the participants.

3.3.4 Attitude Questionnaire

The researcher gave an attitude questionnaire to both experimental and control groups after post- test in order to elicit their attitudes towards the way of language learning.

3.3.5 Validity and Reliability of Research Instruments

Due to the fact that validity and reliability are two crucial factors in a test, the researcher tried to ensure that tests applied to the study were valid and reliable enough.

4. Results

4.1 TOEFL (the Paper Based Test) Proficiency Test Administration

Firstly, the whole 60 students of both classes attended a common session and were given the TOEFL test to ensure that they were at intermediate level of language proficiency. They were asked to do the test in 115 minutes, devoting 35, 25, 55 minutes to the sections of listening comprehension, structure and written expression and reading comprehension respectively. After correcting the tests, the score of all 60 students were at the intermediate level, so they were selected for the experiment and none of them were dropped.

After selecting the students as intermediate EFL learners according to TOEFL scoring scale, the students of one class numbering 30 considered as the experimental group and the 30 other students participating in other class were put into the control group.

Table 1: TOEFL (the Paper Based Test) scoring scale

Score Scale	Level
380	Elementary Level
450	Intermediate Level
550	Working Proficiency at
630	Advanced Level at

Note: Taken from www.toefl.org

4.2 FCE Reading- oriented Pre-test Administration

The FCE pre-test was administered to the experimental and control group before starting the treatment to ensure that both groups had homogeneous level of reading comprehension ability besides being at the same level of language proficiency at the start of the study. They were given 60 minutes to do the test.

4.3 Treatment Procedure

As it was mentioned above, after administrating the TOEFL and FCE pre-tests, one experimental group and one control group were selected for this study. The researcher was the instructor for both the experimental and control groups. As for their teaching, the same lessons of their English book were presented to them in two different ways. One class as control group received instruction through the traditional method, i.e. the

teacher explained everything to the class and reading assignments in the form of answering questions or writing a summary were done at home by the students and later checked by the teacher in the class. They did not receive any computer facilities. The same procedure was repeated for each lesson at the end of the term. In other words, the subjects in the control group attended in real classroom two sessions a week during 7 weeks. Each session took about 90 minutes.

On the other hand, the experimental group did not attend the classroom at all. For them, reading passage along with new words and their meaning were sent through e-mail. They were asked to read the passage themselves and to ask about every part that they didn't understand. In addition to these, the assignments including reading comprehension questions and answer sheets were attached to the email. The students were asked to read the assigned material and then individually write down two or three paragraphs as summary and sent back the answer sheet through email during the given time. All the interactions with the instructor were done electronically. The instructor corrected the answer sheets, scored them, gave explicit feedback to each student and sent them back through email to each student. The same procedure for each lesson was followed at the end of the term. The procedure was explained to the experimental group before starting the treatment.

4.4 Post-test Administration

In the last session after implementing the treatment, a reading post-test was administered. The post-test was as quite same as the pre-test (Appendix B). All subjects of both experimental and control groups participated at the post-test. The purpose of administering this test was to examine the probable impact of computer-mediated explicit feedback on reading comprehension ability of the subjects.

4.5 Performance of the Participants in the TOEFL Pre-test

The collected data from the TOEFL proficiency test was analyzed through an independent-samples t-test. Table 2 displays the TOEFL pre-test results. The estimated language proficiency mean of all the participants amounted to 435.57 which put them as intermediate learners (according to PBT TOEFL scoring scale in Table 1). Figure 1 indicates the results more clearly.

Table 2: Results of TOEFL Proficiency Pre-test

	N	Mean	Std. Deviation	Std. Error Mean
Score	60	435.57	39.041	5.040

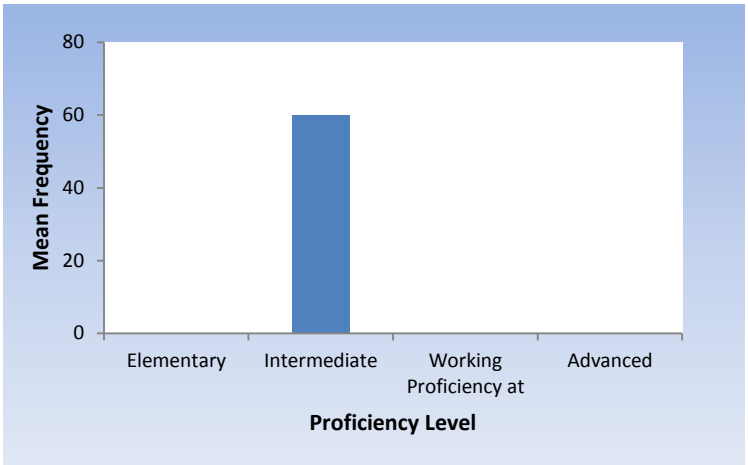

Figure 1: Results for the TOEFL Proficiency Pre-test

The result of this table indicates that all of the participants were in the intermediate level (M= 435.57) and ready to be put into experimental and control groups.

4.6 Performance of the Participants in the FCE pre-test

Tables 2 and 3 show the results of FCE pre-test for the experimental and control groups. The evaluated reading ability mean and standard deviation for the participants in the experimental group amounted to 16.40 and 2.07 respectively, and the evaluated mean and standard deviation for the participants in the control group amounted to 16.63 and 2.17 respectively (Table 3). An independent samples t-test was run to measure the difference in the pre-tests' mean scores. The reported P-value is .66 which is larger than .05. So, there was no significant difference between the treatment and control groups in terms of their reading proficiency. In other words, the experimental and control groups proved to be homogeneous and comparable at the beginning of the study (Table 3). In order to highlight the results more clearly, the data provided above is shown in Figure 2.

Table 3: Results for the FCE Pre-test of the Experimental and Control Groups Independent Samples T-tests for the FCE Pre-test of Experimental and Control groups

Groups	No. of Students	Mean	Std. Dev.	Std. Err
Experimental	30	16.40	2.02	.37
Control	30	16.63	2.17	.39

Experimental and Control groups	Mean Diff.	DF	T-value	P- value	Significant Difference
	.23	58	.43	.66	NO

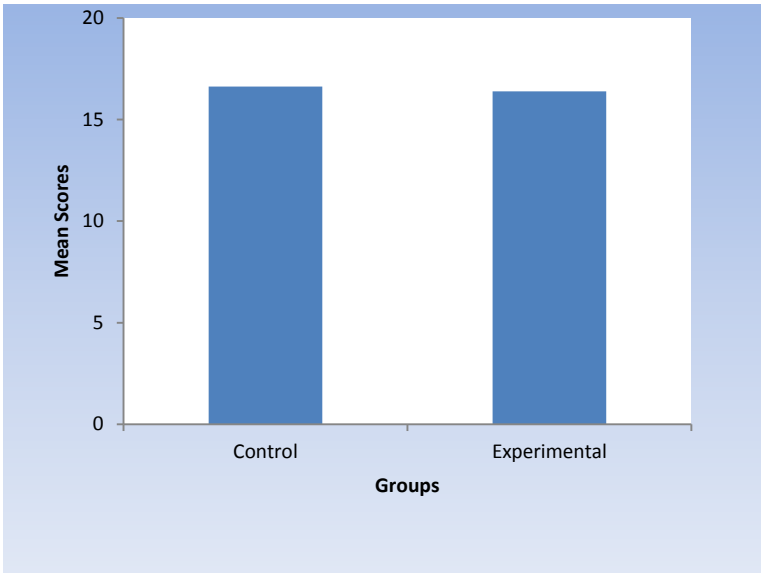

Figure 2: Results for the FCE Pre-test of Experimental and Control Groups

4.7 Data Analysis after the Experiment

The first research question of this study dealt with investigating the impact of computer-mediated explicit feedback on the EFL learners' reading comprehension ability. It was hypothesized that computer-mediated explicit feedback has no significant effect on the reading comprehension of the EFL learners. To meet the purpose of this hypothesis, the same FCE pre-test was administered as the post-test to all participants in experimental and control groups at the end of the treatment to measure their reading achievement. To do the analysis for the first research question, the mean scores of both experimental and control groups on post-test compared through utilizing another independent-samples t-test.

4.8 Performance of the Participants in the FCE Post-test

Tables 4 and 5 display the post-test results for the experimental and control groups. The estimated reading comprehension development mean and standard deviation (Table 4) of the participant in the experimental group amounted to be 21.87 and 2.41, respectively, and the estimated reading comprehension ability achievement mean and standard deviation of participants in the control group amounted to be 17.60 and 2.11. An inspection of the mean scores showed that there was a considerable difference between the experimental and control groups in terms of overall reading comprehension ability development. Moreover, the independent-samples t-test showed that this difference was statistically significant ($p= .00$) $<.05$. Therefore, the first null hypothesis is rejected and the positive influence of computer-mediated explicit feedback on the participants' reading comprehension skill was confirmed (Table 3). This difference can be seen clearly in the Figure 3 below.

Table 4: Results for the FCE Post-test

Groups	No. of Students	Mean	Std. Dev.	Std. Err
Experimental	30	21.87	2. 41	.44
Control	30	17.60	2.11	.38

Table 5: Independent Samples T-tests for the FCE Post-test

Experimental and Control groups	Mean Diff.	DF	T-value	P- value	Significant Difference
	-4 .26	58	-7.28	.00	Yes

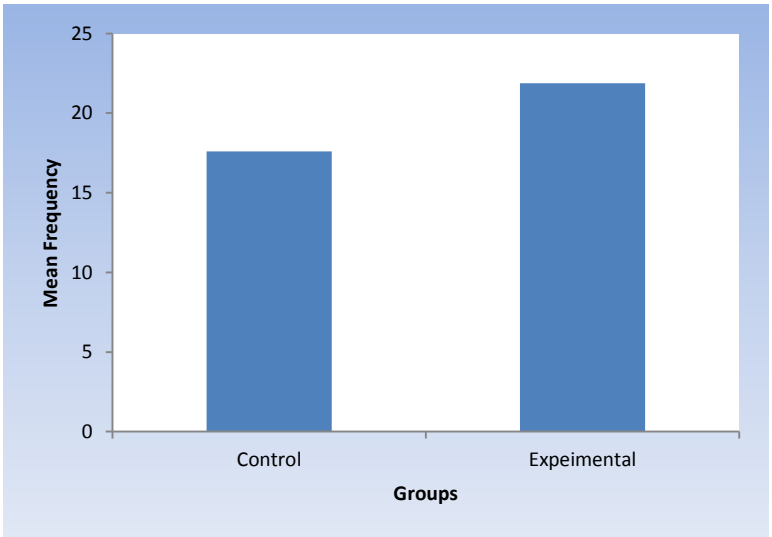

Figure 3: Results for the FCE Post-test of Experimental and Control Groups

4.9 Performance of the Participants in the FCE Pre and Post-tests

In the next step of the data analysis, a couple of paired-samples t-test were run to find and demonstrate the performance of the experimental and control groups (intra-group) at the pre- and post-test separately.

4.10 Performance of the Experimental Group in FCE Pre and Post-tests

To demonstrate the amount of progress of the experimental group exactly, the performance of the participants of this group at the pre-test and post-test was compared. The comparison of the pre- and post-tests of the experimental group revealed a remarkable achievement in the reading comprehension mean scores (Table 6) of the participants. According to the pre-test and post-test mean values of 16.40 and 21.87 as well as a significant level of p= (.00) <.05, the experimental group has shown a great difference during this experiment (Table 6). Figure 4 clarifies these interpretations in a more detailed fashion.

Table 6: Results for the Pre-test and Post-test of the Experimental Group

Groups	No. of Students	Mean	Std. Dev.	Std. Err
Pre-test	30	16.40	2.02	.37
Post-test	30	21.87	2.41	.44

Table 7: Paired Samples T-test Results for the Pre-test and Post-test of the Experimental Group

	Mean Diff.	DF	T-value	P- value	Significant Difference
Pre-test and post-test	-5 .46	29	-12.17	.00	Yes

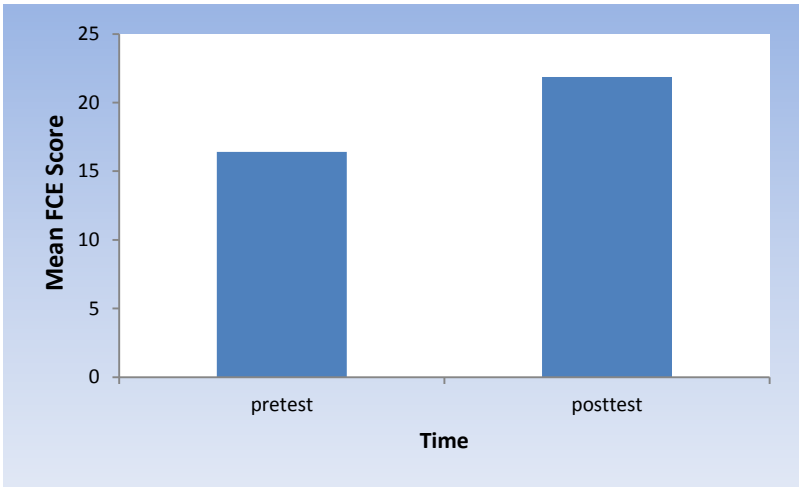

Figure 4: Results for the FCE Pre-test and Post-test of the Experimental Group

4.11 Performance of the Control Group in FCE Pre and Post-tests

To demonstrate the amount of progress of the control group exactly, the performance of its participants in the pre-test and post-test would be compared. The comparison of the pre- and post-tests of the control group indicated achievement in reading comprehension mean scores (Table 8) of the participants. The pre-test and post-test mean values of 16.63 and 17.60 show development in the participants' reading comprehension ability and the level p= .00 obtained through paired samples t-test indicates a statistical difference in the reading comprehension of the control group (Table 9). However, according to the mean difference (-.96) of the pre- and post-tests of this group which is less than one, it is clear that the control group's development compared to that of experimental group is very slight. The results are clarified in Figure 5 in details.

Table 8: Results for the Pre-test and Post-test of the Control Group

Groups	No. of Students	Mean	Std. Dev.	Std. Err
Pre-test	30	16.63	2.17	.39
Post-test	30	17.60	2.11	.38

Table 9: Paired Samples T-test Results for the Pre-test and Post-test of the Control group

	Mean Diff.	DF	T-value	P-value	Significant Difference
Pre-test and post-test	-.96	29	-3.77	.001	Yes

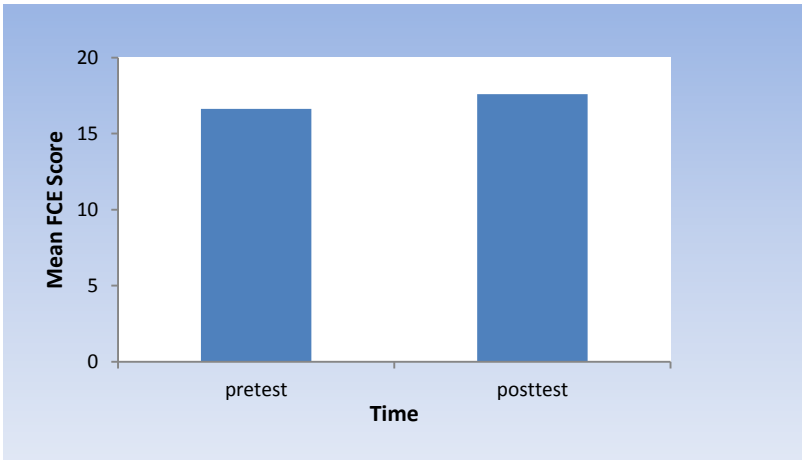

Figure 5: Results for the FCE Pre-test and Post-test of the Control Group

The above-obtained data via figures and tables is the evidence for rejecting the first null hypothesis and confirming the positive influence of computer-mediated explicit feedback on the participants' reading comprehension ability.

4.12 Data Analysis for the Second Research Question

The second research question of this study dealt with examining the experimental and control subjects' attitudes toward the way of language learning. It was hypothesized that the participants in experimental and control groups don't have significant different attitudes towards the way of language learning.

To do this, a questionnaire was given to the participants of both groups after the post-test. The obtained data from this questionnaire was analyzed using chi-square due to the non-parametric nature of the questionnaire. The statistical results of chi-square for each question are discussed separately as follows.

4.13 Participants' Performance in the First Question of Questionnaire

The attitudes of students towards the teaching method have an important role in their performance. The first question in the questionnaire (see appendix C) aimed at clarifying whether students were interested in the implemented teaching method (way of language learning) or not. The answers of participants to the question "it was a good way of language learning", were analyzed by SPSS software. So, a chi-square test of independence was performed to examine the relationship between the implemented method and participants' attitudes. The obtained statistical data are presented in tables 10 and 11.

Table 10: Q1 Cross Tabulation Data

Count

		Q1			Total
		Agree	Agree in part	Disagree in part	
Groups	control	10	15	5	30
	experimental	25	5	0	30
Total		35	20	5	60

Q1: It was a good way of language learning.

Table 11: Q1 Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	16.429[a]	2	.000
Likelihood Ratio	18.805	2	.000
Linear-by-Linear Association	15.733	1	.000
N of Valid Cases	60		

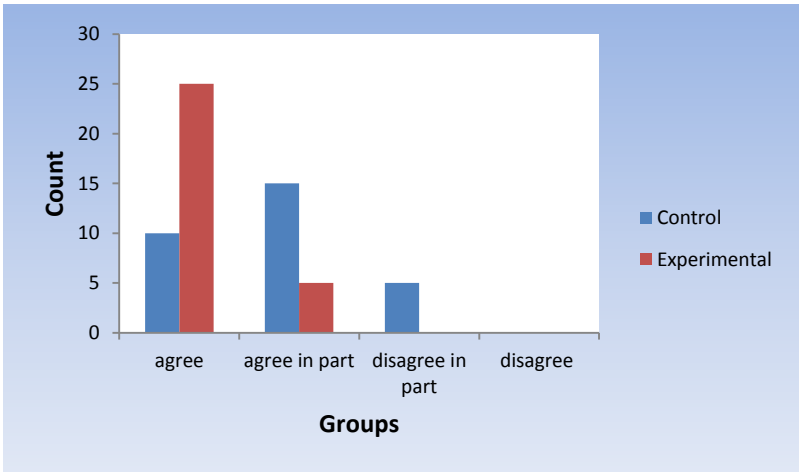

Figure 6: Graph Representations for Q1

Based on the Table 10, the relationship between these variables is significant, x^2 =16.42, p< 0.5. Table 11 shows that participants in experimental group were more interested in the implemented method. Moreover, in table 10 it is reported that 25 participants in the experimental group chose agree but only 10 participants in the control group chose this option. Figure 4.6 presents these results better.

4.14 Participants' Performance in the Second Question

The second question aimed at drawing the participants' attitude towards the provided feedback. Another chi-square test of independence was conducted and the statistics reported in tables 12, 4.13 and figure 4.7 showed a significant difference between the participants' attitudes in the control and experimental groups towards the provided feedback, x^2= 35.62, p<0.5. According to Table 12, 27 participants in the experimental group chose agree while in the control group only 5 participants chose agree.

Tables 12: Q2 Cross Tabulation Data

Count

		Q2				Total
		Agree	Agree in part	Disagree in part	Disagree	
Groups	control	5	5	5	15	30
	experimental	27	3	0	0	30
Total		32	8	5	15	60

Q2: The feedback provided by teacher gives me enough information on where I went wrong.

Table 13: Q2 Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	35.625[a]	3	.000
Likelihood Ratio	44.855	3	.000
Linear-by-Linear Association	32.988	1	.000
N of Valid Cases	60		

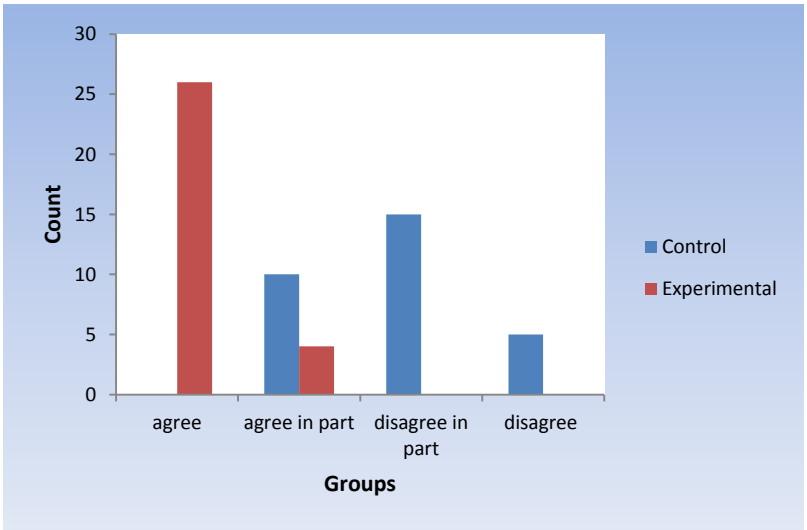

Figure 7: Graph Representations for Q2

4.15 Participants' Performance in the Third Question

This question was about the participants' feeling in the class. Based on the statistical results of the performed chi-square test of independence, a significant difference between variables was observed in this question, $x^2 = 60$, $p<0.5$. In fact, in the control group 24 students chose 'agree' but in the experimental group none of the students chose this option (30 students chose disagree). These findings prove that CALL provides a stress-free language learning environment. Tables14, 15 and Figure 8 are the related proofs for these statistics.

Table 14: Q3 Cross Tabulation Data

Count

		Q3			Total
		Agree	Agree in part	Disagree	
Groups	control	24	6	0	30
	experimental	0	0	30	30
Total		24	6	30	60

Q3: I am afraid of people laughing at me when my answer is not correct.

Table 15: Q3 Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	60.000[a]	2	.000
Likelihood Ratio	83.178	2	.000
Linear-by-Linear Association	56.686	1	.000
N of Valid Cases	60		

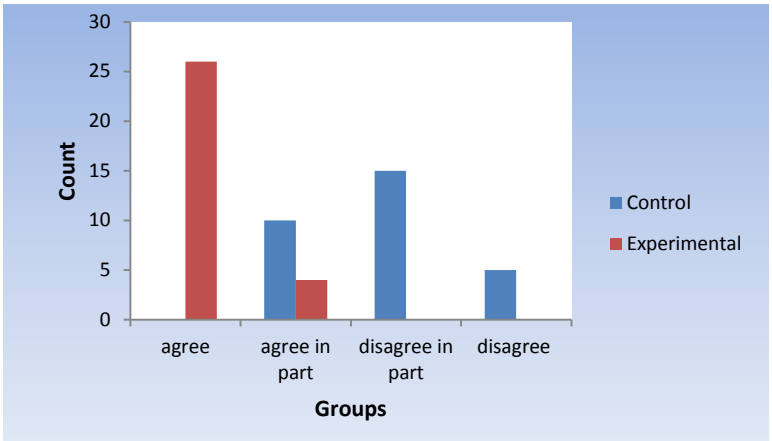

Figure 8: Graph Representations for Q3

4.16 Participants' Performance in the Fourth Question

This question was designed to draw the participants' attitude towards the help provided by the teacher. Collected data from this question was analyzed by the chi-square test and the obtained statistics indicated a significant difference between the participants' attitudes of both groups towards this question, x^2= 50.00, p<0.5. Table 16 revealed that 25 students in the experimental group chose 'agree' while the number of students in the control group who chose this option is 0. Figure 9 presents these results concisely.

Table 16: Q4 Cross Tabulation Data

Count

		Q4				Total
		Agree	Agree in part	Disagree in part	Disagree	
Groups	control	0	5	20	5	30
	experimental	25	5	0	0	30
Total		25	10	20	5	60

Q4: I get the same amount of help from the teacher, as do other students.

Table 17: Q4 Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	50.000[a]	3	.000
Likelihood Ratio	69.315	3	.000
Linear-by-Linear Association	46.058	1	.000
N of Valid Cases	60		

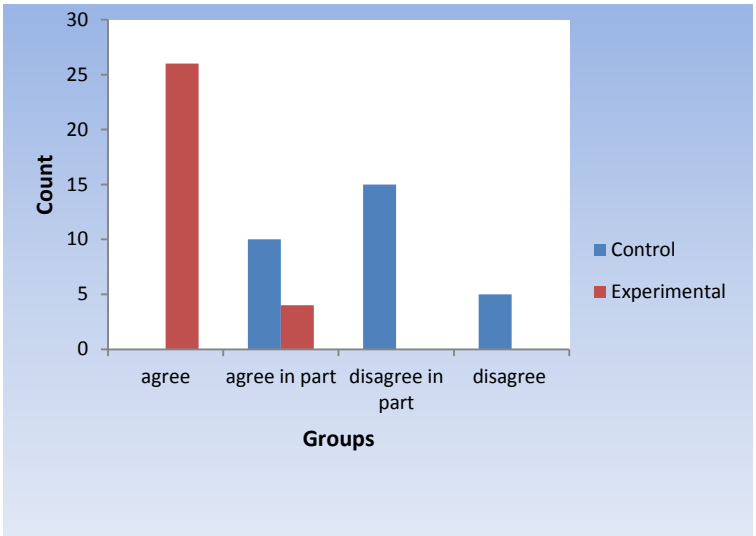

Figure 9: Graph Representations for Q4

4.17 Participants' Performance in the Fifth Question

The last question of questionnaire was about the participants' motivation to learn English language. A chi-square test of independence was applied and the statistical results are illustrated in tables 18, 19 and the graphic representations of these findings are shown by Figure 10. Based on these findings, there is a significant difference between both groups' attitudes towards this question, $X^2 = 48.57$, $P<0.5$. Again participants in the experimental group were more motivated to language learning because of the nature of CALL which increases student's motivation.

Based on the results obtained from the assigned questionnaire, the second null hypothesis was also rejected.

Table 18: Q5 Cross Tabulation Data

Count

		Q5				Total
		Agree	Agree in part	Disagree in part	Disagree	
Groups	control	0	10	15	5	30
	experimental	26	4	0	0	30
Total		26	14	15	5	60

Q5: I motivated to learn English more.

Table 19: Q 5 Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	48.571[a]	3	.000
Likelihood Ratio	66.426	3	.000
Linear-by-Linear Association	41.940	1	.000
N of Valid Cases	60		

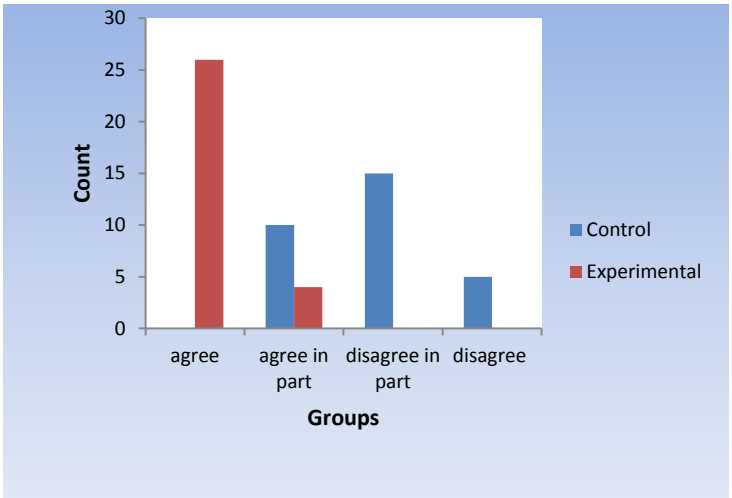

Figure 10: Graph Representations for Q5

5. Discussion

This study examined weather computer-mediated explicit feedback has any impact on improving reading comprehension ability of Iranian intermediate EFL learners or not. Moreover, the attitudes of both groups towards the way of language learning were examined. Two research questions which were addressed in this experimental research would be discussed here.

The main purpose of this study was to investigate the impact of computer-mediated explicit feedback on reading comprehension of Iranian intermediate EFL learners. To examine the impact of computer-mediated explicit feedback on reading comprehension, *independent-samples t-test and paired sample t-test* were used. According to the research results, reading comprehension of EFL learners was improved through computer. This improvement was achieved by the use of computer-assisted language learning. Computer contributes to the improvement of reading comprehension. Through computer, learners receive individual feedback, are more independent from classrooms and are allowed to work on their learning material at any time of the day.

According to the results stated in table 5, p-value of mean (.00) was smaller than the level of significance (.05), so the null hypothesis for this research question is rejected. The difference between the mean achievements of the experimental group was too great and significant. As measured by the mean test scores, the experimental variable or treatment caused the differences in performance of the participants. All

evidences indicate that in this study experimental group outperformed the control group.

The second research issue under-questioned in this study was whether there is any significant difference between attitudes of both groups towards the way of language learning or not. In order to collect data for this research question, a questionnaire was given to the experimental and control groups and the results were analyzed by Chi-square test.

The statistics of the first question revealed a significant difference between attitudes of participants. Based on Table 10, the experimental group's participants agreed more on the first option. None of them chose disagree and disagree in part options, while 5 students in the control group chose disagree in part option.

In answering the second question, almost all of the participants in the experimental group believed that the feedback provided by the teacher helped them in getting enough information about their mistakes. It should be mentioned that the number of students in the experimental group who chose the last two options (disagree in part and disagree) is 0, while 5 and 15 students in the control group chose disagree in part and disagree options, respectively.

The aim of the third question was to draw the participants' feeling in the class. According to the statistical results, there was also a significant difference of both groups' attitudes towards this question. None of the participants in the experimental group chose the agree option, while the number of participants in the control group who chose this option is 24.

The students in both groups had different opinion about the fourth question. Most of the students (25) in the experimental group believed that they get the same amount of help from the teacher as do other students and chose the agree option. While none of the students in the control group chose this option and only 5 students in this group chose the option agree in part.

Regarding the last question, based on the findings provided in Table 17, we can observe that almost all of the students in the experimental group motivated to learn English more. 24 students in this group chose the agree option and 4 students chose the agree in part option. While in the control group the number of students who chose agree and agree in part options are 0 and 4, respectively. So, we can say that again there is a significant difference between the attitudes of both groups.

Therefore, based on the discussed results, the second null hypothesis was also rejected and it became clear that there was a significant different attitude towards the way of language learning between the participants of experimental and control groups.

6. Summary

This part started with an overview of the study and followed by a brief description of the methods applied to collect data. In the next step, the results obtained from the quantitative analyses of the gathered data were described and displayed by tables and

figures. The results were compared and contrasted to draw the experiment conclusions. Acceptance or rejection of the hypotheses was the evidence of participants' progress in terms of reading comprehension after the experiment. Finally, the research questions were discussed to examine and indicate whether computer-mediated explicit feedback is effective in improving reading comprehension ability of the learners or not. As was indicated, all results support the effectiveness of computer-mediated explicit feedback in developing language ability of the learners.

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