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## Designing a Computer-assisted Language Learning(CALL) Program and Measuring its Effect on Saudi EFL Learner's Achievement in English.

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**Abstract:** *This study aims at investigating the effect of computer- assisted language learning program on EFL Saudi students learning of English. The computerized program used was prepared by the researcher. The sample of the study consisted of 41 students randomly selected from Al-Riyadh Teachers' College and assigned to experimental and control groups. An achievement test was used to collect data from the students who participated in this research. The findings of the study indicated that using computer-assisted English language learning (CALL) has a positive effect on the experimental group students' achievement.*

**Keywords:** CALL, CAI, Saudi EFL University Students, English language Instruction

### Introduction

Computer-assisted language learning (CALL) is an approach to teaching and learning foreign language where the computer and computer-based resources such as the Internet are used to present, reinforce and assess material to be learned. It usually includes a substantial interactive element. It also includes the search for and the investigation of applications in language teaching and learning. Except for self-study software, CALL is meant to supplement face-to-face language instruction, not replace it. In recent years, CALL researchers have investigated the advantages of using computers as teaching/learning tools in improving different language skills. Many studies indicate that CALL provides an innovative and effective alternative for language instructors (Warshauer and Healey, 1998). In addition, many studies indicate that there has been an increase in emphasis on computer technology and its integration at all level of education (Stepp-Greany, 2002). Furthermore, computer would allow learners to progress at their own pace and work individually to solve problems, provides immediate feedback, allows learners to know whether their answers are correct or not, and provides them with the correct answers if their answers are not correct.

Moreover, there are many more advantages of CALL. It motivates shy students to feel free in their own students-centered environment. This will raise their self-esteem and their knowledge will be improved. The computer can provide an individualized context and an interaction learning environment. The learner can use colors, graphics, painting, and TV screens (Al Abdel Halim, 2009). CALL is designed for retrieval and extraction of meaningful data analysis. Thus, computer programs may facilitate the process of content analysis, main theme perception, keyword recognition, syntactic categories, and the covert the printed language into communicative one (Wright, 2003). The use of technology inside and outside of the classroom tends to make the class more interesting. CALL can promote students' motivation (Jonita, 2002). Computer has the role of providing attractive context for the use

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of language rather than directly providing the language the students needs (Noemi, 2007).

In addition, it has been reported that CALL has/have a positive effect on the learners' attitudes towards using computers for learning EFL skills. Greenfield (2003) reported that the majority of Hong Kong 10<sup>th</sup> and 11<sup>th</sup> grade students said that computer-based learning is enjoyable because they confidence in learning language via computer. They feel that computer helps them improve their writing and speaking skills through developing their way of thinking and motivating them for more interaction and cooperation. Aacken (1999) stated that there is a positive interaction between students' positive attitudes towards CALL and instrumental motivation which lead to mastering language effectively. Warschauer (1996) also pointed out that CALL enhances students' motivation to learn language skills such as writing and improve communication and interaction. Moreover, Gousseva (1998) thinks that students' attitudes to electronic interaction in writing classes are generally positive because it allows them to see different viewpoints, and gives them a chance to read and learn more. In order to evaluate the success of CALL, Gillespie and McKee (1999) called for the investigation of the students' attitudes towards the effectiveness of the use of CALL approach, techniques, methods, and programs. Bernt et al. (1990) concluded that attractive benefits of computer applications play a dominant role in affecting one's attitudes towards using computers.

As educational decision-makers face the challenges of maintaining and expanding the instructional computing movement, they need current information about the past and potential impact of computer implications to help them invest their resources wisely. Moreover, the researchers think that technology may help teachers and learners to establish their own methodology for teaching and learning. They also think that teachers and learners should be motivated to use technology in the classroom. Teachers should have the courage, confidence and positive attitudes to utilize technology in their teaching. This, in turns, will enhance the learners' achievement and attitudes toward learning English. Very few researches on the effect of this move have been conducted in Saudi Arabia. Therefore, this study aims at investigating the effect of using computers in English language learning on the achievement of the university students.

### Statement of the Problem

The researcher noticed that many Saudi EFL university students encounter many difficulties in learning English language. In addition, they lack the motivation to learn English. Consequently, they develop negative attitudes towards English. This has been obvious through the tests and the instructors' evaluation of the performance of the students. It seems that the current methodology employed in my college didn't help the students to overcome the difficulties they face in learning English, even it didn't motivate the students to learn English ; enhance their ability to learn it; or develop positive attitudes towards it. The researcher thinks that the use of technology in general and CALL in particular may help in changing the situation. As a result, the need arises to study the effect of using computers on the students' achievement in English. The researcher intends to investigate the effect of Computer-Assisted EFL Instruction alongside the traditional method on the university students' achievement in English.

### Significance of the Study

The role of CALL in the foreign language classroom has been the concern of many teachers and scholars; however, its validity as an equal complement to language learning has not been fully investigated . Moreover, a great deal has been written about CALL. It is impossible to completely cover such vast topics but researchers may cover as many areas as possible to enable us to come up with a clear understanding of the role of CALL inside the classroom. This study invest ages the effect of CALL on the achievement of EFL learners in English .

Computers have become so widespread in universities, schools and homes, and their use have expanded so dramatically in a way that motivates some language teachers to use CALL in their classes. As the technology brings about changes in the teaching methodologies of foreign language, teachers and learners should meet these changes. The computer itself does not constitute a teaching method, but rather the computer forces teachers and learners to think in new ways to exploit the computers; benefits and work around its limitations. For this purpose language-teaching specialists are needed to promote a complementary relationship between computer technology and appropriate educational programs (Al Abdel Halim, 2009) .

Therefore, it is hoped that this study results in the following advantages:

- 1- It will help researchers involved in the educational process gain insights into CALL and seek to improve it over time.
- 2- It may encourage further research, which in turn, may lead to the enrichment of the field of CALL in general and language teaching and learning in particular.
- 3- It will help teachers to better understand the issue and integrate CALL into their classroom routine.
- 4- The information gathered in this study will aid proponents of CALL in better understanding the educational effects of their craft.

5- The findings of this study may be able to open the mind of the students towards the importance of using CALL to improve their performance in English.

6. The findings of this study and of other studies may help students to see the difficulties in learning English that they may face if they do not have the habit to use CALL in learning English .

### Objective of the Study

Because CALL should be an important part of the university curriculum, and especially because CALL has not been widely studied in Saudi Arabia, the present study attempts to investigate whether using computers in teaching English to university students is significantly different from teaching English without the aid of computers. The purpose is to compare using Computer-Assisted EFL Instruction with using the traditional method and decide which is more suitable for the students under investigation.

### Question of the Study

The present study attempts to answer the following questions:

- 1- Does CALL Instruction have a positive effect on the Saudi EFL University students' achievement in English Language?

### Variables of the study

The variables of the present study include the following:

- The independent variable is the method of teaching which has two levels, the extensive reading program and the traditional method.
- The dependant variable is the students' performance in writing.

### Limitations of the study

The generalizability of the findings of this study may be limited by the following:

- This study is restricted to two groups of students at the Riyadh Teachers College.
- The findings are bound by the time limit for the period in which the study was conducted.
- Females were not included in the present study.

### Review of Related Literature

The review of the literature on CALL revealed that most of the studies in this field were conducted in the western countries where English is a first or second language, whereas very few studies were conducted in countries where English is a foreign language. The researchers reviewed some of the most related studies to the topic of this study.

Fletcher and Atkinson (1972) carried out one of the earliest studies in which the students of the experimental group received eight to ten minutes of computer assisted language instruction per day for five months; the remainder of the day was the same for all students. The findings of the study revealed that the performance of most students who received computer-assisted instruction was better than the performance of those who did not.

Saracho (1982) compared the performance of two groups of 256 Spanish-speaking 6<sup>th</sup> grade students. The experimental group participated in a CALL instructional program and the control group participated in a regular instructional program for five months. The findings of the study revealed that the students in the experimental group gained higher scores than the students in the control group. The difference in the achievement is due to the use of CALL.

Cook (1985) determined whether there were significant differences between the growth of writing performance of seventh grade students who received computer-assisted writing instruction and those who did not. He found that the students who received computer-assisted writing showed better performance in writing than those who did not.

Copper and Copple (1985) compared the achievement effects produced by all forms of computer-based instruction with the effects of traditional instruction. The results indicated that computer-based instruction approaches produce higher achievement than traditional instruction approaches.

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Stennett (1985) reported that well designed and implemented drill and practice or tutorial computer assisted language learning (CALL), used as a supplement to traditional instruction, produced an educational significant improvement in students' final examination achievement. He assured that call lessons foster a kind of dialogue between the teacher and the computer as a way to strengthen the value of the lesson.

Kolich (1986) investigated the effectiveness of computer programs in teaching a list of unfamiliar words to 171 11<sup>th</sup> grade students. The experimental group were exposed to fifteen low frequency words via a computer program entitled "Word Attack", while the control group were taught by using the traditional method. The findings of the study showed that there were statistically significant differences between the scores of the experimental group and the scores of the control group attributed to using the computer software program.

Kleinmann (1987) studied 76 ESL college students enrolled in a basic college reading course over a semester. The experimental group had been taught via computer while the control group had been taught via the traditional method. He concluded that it is important to create more innovative reading software programs that foster more interaction between students and the computer.

Orndorff (1987) implemented a course at Duquesne University in Pennsylvania, which combined the teaching of reading skills with computer aids that provided different kinds of support. He employed two computer programs focusing on critical reading and thinking. The first one was designed to teach students how to analyze a work of literary genre and structure and to be used with a book. The second one allowed teachers to create tutorials which featured different types of question and answer formats, an on-line dictionary, screen manipulations. These two programs also included different activities such as summary writing and short essay questions. The findings showed that because of such programs, the students' levels of achievement and retention increased.

Arroyo (1992) studied the effect of using computers on reading achievement of seventh grade students. The findings showed a statistically significant increase in reading achievement of the subjects who used computers. Moreover, Arroyo stated that, in addition to the improvement in reading scores, the use of computer appeared to increase the subjects' motivation to learn.

Due to the importance of using computers in teaching foreign languages, Hamilton (1995) conducted a study on 46 6<sup>th</sup> grade students. He divided them into two groups to see the differences between the Computer-Assisted Instruction group and the traditional instruction group. The result was in favor of using the computer but with very limited generalization due to the small sample size.

Avent (1994) investigated the language learning achievement differences between students using computer-assisted language learning courseware and students using the traditional language laboratory. The findings of the study revealed that the mean scores were significantly higher for computer taught items than for non-computer taught ones.

Chen (1996) studied the differences between male and female Taiwanese students using the same software and receiving the same type of feedback in a Business English class. The findings showed that computer application improved the students' writing ability in punctuation, grammar and spelling.

Pigg (1996) investigated the effect of the computer-assisted language instruction program Paragraph Builder on fifth grade students' topic sentence identification. The results of the posttest showed that the program significantly increased the mean score of the posttest. The results also showed that the students who worked with computer enjoyed learning about topic sentences by using the program.

Cantos-Gomez (1997) carried out a study to investigate the use of computer-assisted language learning activities in English and their effect on the students' motivations to learn. She found that the students in the experimental group, who used computer, showed more motivations to learn English than those in the controlled group.

Machado (1997) investigated the effect of computer-based technology on the language acquisition rates of sixth, seventh and eighth grade second language students in writing and speaking. The study revealed that the experimental group showed a faster rate of second language acquisition than that of the control group students. He recommended that language teachers receive training in computer-assisted teaching and learning methodologies for second language acquisition.

Blankenship (1998) compared between computer-assisted instruction and the lecture-based instruction of college-level composition courses. The findings of the study showed that the performance of the students who received computer-assisted instruction was better than those who did not.

Campion (1999) investigated the effect of CALL on learning and transfer of vocabulary in primary stage pupils. The researcher tackled two issues: motivation and the role of educational technology in learning and transferring of passive vocabulary into the active. The findings of the study showed that the pupils who learned via CALL improved their results in both types namely in active vocabulary.

Cathy (1999) studied the extent to which computers can provide supplementary practice for 16 beginning readers, aged 6 to 7 years, and the effectiveness of specific design features. Two versions of the software were compared. One software version incorporated commonly available features only and the other was full implementation of the innovative design. It was found that electronic books

can complement teaching approaches in infant classrooms and can positively affect both cognitive and affective learning outcomes. It is evident that lower ability readers can benefit from common features alone, such as word pronunciations. Those children using enhanced software who had already acquired a limited sight vocabulary made significantly greater gains in key word recognition than the children using the basic software version.

Cunningham (2000) investigated the opinions of students towards using computers in a writing course. He indicated that students found the computer-based class more challenging but non-threatening. Students also think that computer is helpful because it enables them to pay attention to the mechanics of their writing. In addition, it was found that students' positive attitudes towards writing on computer contribute to improving their writing abilities by increasing their motivation to write and revise, and sharing their ideas with classmates.

Students' positive attitudes towards CALL motivate them and thus achieve more. Smith (2000) studied the phenomenon of students' positive or negative response to using CALL as a language learning approach. He concluded that there is a relationship between students' attitudes towards type of teaching/learning and their attitudes towards certain CALL activities. This means that students' positive attitudes towards CALL help them benefit more from technology in learning language skills.

Singhal (2001) investigated the effect of CALL on ESL. He used three reading passages of appropriate difficulty level and varied topics. Text 1 was the kind of text that we may find in academic journals related to language learning. Text 2 was a short story. Text 3 was an argumentative essay. Each of the three reading passages included questions testing various skills. The study revealed that computer played an important role in improving the students' reading comprehension achievement.

Brown (2002) thinks that learners should acquaint themselves with the new products of the global technology, like, the internet and computer programs. He thinks that learners become active participants when they are involved in the learning process and are encouraged to be explorers and creators rather than passive recipients. Therefore, this study was designed to measure the effectiveness of a computerized language-learning program on the achievement of the EFL university students in English.

Al-Makhzoumi and Abu Al Sha'r (2003) compared the effects of using computer multimedia approach and context based approach on EFL major university students' learning of English. The findings of the study revealed that students in the experimental group, who received instruction via computer multimedia, significantly outperformed students in the control group, who received instruction via context-based materials. The authors stressed the need for more emphasis on the use of computer assisted multimedia to promote the instruction and learning of English among English major students and teachers.

Lasagabaster and Sierra (2003) investigated the opinions of 59 university students about the effectiveness of CALL programs. They concluded that the students consider CALL programs as complementary tools in language learning and that CALL creates a less stressful environment for students as they can study on their own in a more flexible schedule.

AbuSeileek (2004) investigated the effect of a computer-based program on Jordanian first secondary grade students' writing ability in English. The study revealed that there were statistically significant differences between the mean scores on the writing task of the experimental group who received instruction via computer and the control group who received instruction via the traditional method in favor of the experimental group.

Al Bakrawi (2005) investigated the effect of a computerized ESP program on the proficiency of secondary stage hotel- stream students in English. The findings of the study indicated that the computerized ESP program has a measurable effect on the participants' proficiency in English. The researcher concluded that the high level of the proposed program apparently lead to an effective process of teaching and learning resulting in significant improvement.

Al Qomul (2005) investigated the effect of using an instructional software program on basic stage students' achievement in English language grammar. It was found that there were significant differences in the means scores of the students in the experiment group who were taught using CAI and those in the control group who were taught using the traditional method. The findings of the study confirmed the positive effects of CAI in teaching English.

AbuSeileek (2007) investigated the effectiveness of two-mediated techniques – cooperative and collective learning – designed for teaching and learning oral skills, listening and speaking. He also investigated students' attitudes towards using a CALL approach and techniques for teaching oral skills. The findings of the study showed that the cooperative computer-mediated technique is a functional method for learning and teaching oral skills. The survey conducted in the study also showed that students react positively to both the CALL approach and the cooperative computer-mediated technique.

Al- Menei (2008) studied the effect of computer-assisted writing on Saudi students' writing skill in English. The findings of the study showed that computer-assisted writing has a significant effect on EFL Saudi students' writing ability in two areas: paragraph writing and correcting grammar.

Al- Mansour and Al-Shorman (2009) investigated the effect of computer-assisted instruction on Saudi students learning of English at King Saud University. The findings of the study indicated that using computer-assisted English language instruction alongside the traditional method has a positive effect on the experimental group students' achievement.

Ferit (2009) conducted a study to find out the effect of an undergraduate-level computer-assisted language learning course on pre-service English teachers' practice teaching. Findings indicated that the participants have benefited from the topics discussed in the course and half of them tried to make use of the CALL tools in their practice teaching. They further state that they are willing to use these tools in their future career; however, they face some problems such as lack of equipment, support and modeling. Therefore, teacher educators and the faculties need to take a serious and wary approach to the implementation of CALL as it requires close attention, critically selected software, teachers' and learners' positive attitudes.

### **Method, Sample, Instrument and Procedures**

The present study was carried out with Riyadh Teachers' College students following a randomized control-group pretest-post test design. The subjects were randomly assigned to two groups. Each group was then assigned at random to either the control group or experimental group. The treatment consisted of two levels: using computers alongside the traditional method and the traditional method alone. The experimental group undertook the first level of the treatment and the control group undertook the second level. The experimental group used the computers for three 50-minute periods a week for the eight-week duration of the experiment. Both groups were subjected to a pretest immediately before starting the experiment and the same test was administered as a posttest immediately after it.

The population of the study consisted of all students at the English Department at Riyadh Teachers' College in the second semester of the academic year 2013-2014. The sample of the study consisted of 41 students who were chosen randomly through the random sampling techniques in the statistical package SPSS. Then the 41 students were randomly assigned into experimental group (20 students) and control group (21 students).

In order to answer the question of the study, the researcher used two instruments: an instructional program and an achievement test.

#### **A-The instructional program**

After reviewing the literature and surfing the internet about designing instructional software, the researcher prepared a preliminary version of the instructional program to evaluation and measurement and three educational psychologists. Based on the remarks of the jury, the preliminary version of the instructional program was modified. The instruction program consisted of two main parts. The first part contains reading texts, explanation of the grammar items, presentation of the vocabulary items, writing exercise and dialogues. The second part of the instructional program consists of exercises and drills on the reading passages, the grammar, vocabulary items, writing and listening skills. The instructional program was tailored towards meeting the learners' needs and interests. It was developed depending on the textbooks of Interactions 2. It was used in the study with the help of a computer expert. After being designed, the instructional program was evaluated by a jury of four English language university professors, three computer experts, four specialists in instructional technology, three specialists in

#### **B- The achievement test**

The researcher developed a 50-item-multiple choice test. Test items had 4 choices, only one of which is correct. The students were instructed to answer the questions by circling the correct choice. The test included items dealing with reading texts, vocabulary questions, understanding certain grammatical constructions, and writing and listening skills. In scoring, students' achievement was computed out of 100, allotting 2 points for each correct answer and 0 for each wrong answer. The time interval between the pretest and the posttest was 8 weeks; a period long enough to minimize the effects of the pretest on the results and the conclusions of the experiment. The test was designed and administered by the researcher. The researcher himself conducted the study. An Independent-Samples t Test was used to measure the gain scores of both groups on the pretest and then on the posttest. A One-Way Analysis of Covariance (ANCONA) was used to measure the gain scores of the subjects in order to eliminate any possible differences between the two groups on the pretest.

The usability of the test was tested through a pilot study of 15 students who were excluded from the sample. The reliability coefficient of the test was calculated using Cronbach-Aalpha and was found at 0.87. The test was also given to the same jury to elicit their views as to the accuracy, clarity, and appropriateness of the instrument. Then the test was reviewed and modified according to their recommendations.

### **Findings, Discussion and Conclusion**

This study aims at investigating the effect of a computer-assisted language learning (CALL) program and measures its effect on Saudi EFL learner's achievement in English. It compares using the computer with using the traditional method. The data were collected through a pretest-treatment-posttest design for equivalent groups and analyzed via the statistical package SPSS. An independent-

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samples t test was carried out to determine whether there are any statistically significant differences between the achievement of the two groups on the pretest. Table (1) represents the results.

**Table (1)**  
**Results of the t Test of the Means of the Achievement of the Two Groups on the pretest**

PRETEST	Group	N	Mean	Standard Deviation	T	Sig.
	Control Group	21	11.619	3.154		
	Experimental Group	20	11.550	2.929		

Table (1) shows that the difference between the achievement of both groups on the pretest is not statistically significant at  $\alpha = 0.05$ . Thus, since there is no statistically significant difference between the control and experimental groups on the pretest, the two groups were assumed equivalent. Another independent-samples t test was conducted to determine whether or not there is a statistically significant difference between the two groups' achievement on the posttest. Table (2) shows the results.

**Table (2)**  
**Results of the t Test of the Means of the Achievement of the Two Groups on the posttest**

POSTTEST	Group	N	Mean	Standard Deviation	T	Sig.
	Control Group	21	24.95	2.25		
	Experimental Group	20	28.40	1.64		

Table (2) shows that there is a statistically significant difference at  $\alpha = 0.05$  between the achievement of the experimental group and that of the control group on the posttest in favor of the experimental group. This indicates that using the computer in English language instruction to the university students has a positive effect on students' achievement. The mean score for the experiment group on the posttest was 28.40 while that of the control group was 24.95.

Moreover, in spite of the fact that the difference between the achievement of the experimental group and the control group on the pretest was not statistically significant, to eliminate initial differences, a one-way ANCOVA was carried out. Table (3) shows the results.

**Table (3)**  
**Results of the Test of Between-Subjects Effects**

Source	Sum of Squares	df	Means of Squares	F	Sig.
Pretest	56.677	1	56.677	22.653	0.000
Group	123.681	1	123.681	49.433	0.000
Error	95.075	39	2.502		
Corrected Total	273.512	41			

Table (3) shows that there is a statistically significant difference between the experimental group and the control group on the posttest. The achievement of the experiment group, measured by the difference between the pretest and the posttest, was significantly better than that of the control group.

The researcher demonstrates that the difference in the achievement of the students was attributed to using computer in English language instruction. The experimental group subjects managed to significantly improved their achievement in English in a period of one semester. The improvement achieved by the control group subjects, however, was not statistically significant. By comparing the results achieved by the two groups, the researchers reached the conclusion that the improvement achieved by the experimental group may have been attributed to the way he rendered instruction; CALL.

Furthermore, the differences between the two groups may be attributed to many other reasons. First, using computer in English language instruction is a novelty. This novelty may have encouraged the students to deal with the computer enthusiastically, which may have been reflected in better achievement. Second, computers depend on programs that are based on individual learning and

consider the level and pace of the individual. This may enhance learning as the learner may feel that s(he) is in control of the whole learning process. Third, using computers allows the students to repeat the same piece of information or drill as many times as necessary for them to understand. Moreover, they are able to refer to the learning material any time they want. Fourth, using computers in instruction makes the students become less shy of committing mistakes, which encourages them to learn much better and then improve their achievements. Fifth, students using the computers might have felt that they were not being watched or judged and, thus, that the work they did was their own private property. Therefore, they were relaxed about pooling information and seeking help from other students. Sixth, the instructional material was presented in an easier way and in a sequential and logical order than that in the traditional method where the aided means are very limited. Seventh, teachers are recommended to be aware of this technological revolution, and to be up to date with its use. They should learn about computer use noticing that CALL could enhance learning in various ways and means. It gives room for group work, and elevates the level of learning. It also improves the students' achievement by giving room for interaction with the materials to be learned. Finally, computers have many positive characteristics such as speed, accuracy, variability of presentation and flexibility of use and control, which explains why it outdoes other presentation modes such as books.

Current research indicates that CALL in English language instruction will produce positive results. The findings of this study concur with the results of the studies conducted by Fletcher and Atkinson (1972), Saracho (1982), Cook (1985), Copper and Copple (1985), Stennett (1985), Kolich (1986), Kleinmann (1987), Orndorff (1987), Arroyo (1992), Hamilton (1995), Cathy (1999), Avent (1994), Chen (1996), Pigg (1996), Cantos-Gomez (1997), Machado (1997), Blankenship (1998), Campion (1999), Cunningham (2000), Smith (2000), Singhal (2001), Lasagabaster and Sierra (2003), Al-Makhzoumi and Abu Al Sha'r (2003), AbuSeileek (2004), Al Bakrawi (2005), Al Qomul (2005), AbuSeileek (2007), Al- Menei (2008) and Ferit (2009). All of these studies showed that using computer in English language instruction has positive effects that helped students improve their language skills. They also found that CALL programs do offer EFL students certain educational benefits.

### A Final Word

In the light of the findings of the present study, the researcher can say that the CALL program has a positive effect on improving the students' understanding to the course components; enhances their desire to learn English; is more interesting than the traditional method, motivates them to learn English via computer, and provides them with immediate feedback, which benefited them a lot.

Using CALL in English language instruction does have a positive impact on EFL students' performance. It built interest in the learning process, stimulated discussion, and enhanced self-confidence in the participants. It made even poor students more active and gave them the chance to show their abilities. Although it was only an experiment where the control of all variables was not possible because of its nature, the study did definitely show significant results stressing the value of the treatment. Therefore, the whole language curriculum can be organized around CALL, providing students with comprehensible and interesting language.

Although the results achieved in this study are sound and significant, the researcher found many areas of further inquiry within the framework of this study. There were questions still unanswered about this issue which could be answered in further studies. One area the researchers found lacking was the self-esteem aspect of this research. Did the CALL program build greater self-confidence in the students? Therefore, they chose to participate more actively in this competition. Further research is needed for a thorough understanding of this issue and for confirming of its findings. This is especially true when conducting research with more variables than those in the present study. It is also recommended that this study be replicated with a larger number of participants and over the whole semester or the whole year. In addition, it would be interesting to compare results across levels of proficiency as well as gender. Researchers may study the implications if experiments were carried out with younger or older school students. Moreover, there is a need to investigate whether and what theories of learning with technology could teachers adopt. In addition, further studies might describe what teachers should do with technology in their own classrooms. Research in this area should identify the needs of both language learners and instructors and the role that effective technology education and integration can play to meet learners' needs. Finally, universities, ministry of education and other educational institutes are recommended to make use and benefit from the instructional program of this study as well as similar ones when computerizing their curricula.

The possibilities for continued research in the area of CALL seem endless. With each question posed new ones arise. Each avenue that is explored, each genre that is touched leads the researcher to question, who will benefit from this technique and who will each student benefit?

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