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The Effects of Computer-Assisted Language Learning (CALL) Instruction on the

EFL/ESL Classroom

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Resumen

El propósito de esta síntesis de investigación fue identificar los efectos reportados del aprendizaje de idiomas asistido por computadora (CALL por sus siglas en inglés) en el dominio del idioma de los estudiantes. Para esta investigación bibliográfica exploratoria, se seleccionaron veintiún estudios a los que se tuvo acceso mediante bases de datos digitales. En cuanto a los criterios de inclusión, los artículos pueden ser estudios empíricos o teóricos. Además, se tomaron en cuenta estudios aplicados a los diferentes niveles educativos. Un requisito para este estudio fue el uso de artículos de investigación publicados en los últimos 15 años dado este enfoque se considera relativamente nuevo. Para lograr este objetivo, se analizaron las ventajas y desventajas de este enfoque, así como las percepciones y actitudes que presentaron los participantes del proceso educativo. Los resultados de la síntesis de la investigación mostraron que CALL es eficaz para desarrollar y mejorar las habilidades lingüísticas y las sub habilidades de los alumnos. Además, este enfoque presentó más percepciones y actitudes positivas que negativas. El número de ventajas fue mayor que las desventajas. Finalmente, hubo algunas recomendaciones basadas en los problemas identificados a través del análisis de los datos, que podrían servir para futuros estudios de investigación.

Palabras clave: Aprendizaje de idiomas asistido por computadora. CALL. Dominio del idioma. Efectividad



Abstract

The purpose of this research synthesis was to identify the reported effects of Computer-Assisted Language Learning (CALL) on students' language proficiency. For this exploratory bibliographical research, twenty-one studies, accessed using online databases, were selected. With regards to the inclusion criteria, articles could be either empirical or theoretical studies. In addition, studies applied to the different levels of education were taken into account. One requirement for this study was the use of research articles published within the last 15 years given this approach is considered relatively new. In order to achieve this objective, the advantages and disadvantages of this approach were analyzed, as well as the perceptions and attitudes that the participants of the educational process presented. Research synthesis results showed that CALL is effective in developing and improving learners' language skills and subskills. Furthermore, this approach presented more positive perceptions and positive attitudes than negative ones. The number of advantages were greater than the number of disadvantages. Finally, there were some recommendations based on the issues identified through the analysis of the data, which could serve for further research studies.

Keywords: Computer-assisted language learning. CALL. Language proficiency. Effectiveness.



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Erika



Dedication

This research synthesis is dedicated to my dear mother, who unconditionally supported me throughout my years of study. Her constant love and encouragement motivated me to achieve my goals. Without her, this accomplishment would have not been possible.

Rabela

I want to dedicate this research synthesis to my beloved parents and siblings, who have been with me and have supported me on this long journey. Their love, affection, and immense support in each of the decisions I have made are what has placed me at this point. I am sure that thank to them, I am achieving this goal.

Erika



Introduction

Technology has been a part of language teaching for decades (Dudekey & Hockly, 2007). The current necessity of learning a new language in an accurate way, has brought about the development of a huge number of technological approaches and techniques to accomplish this necessity. Among them, we find CALL, defined by Davis (2002) as an approach to language teaching and learning in which the main aid is the computer. CALL has entered into the educational environment to stay because it has the power to transform language learning through the pioneering application of innovative research and practices (Beatty, 2013). Considering this technological approach, this study attempts to find relevant information about the effects of CALL on the ESL/EFL classroom by answering the following questions:

- 1) What are the presented effects that CALL instruction has on students' language proficiency?
- 2) What are the reported students' and teachers' attitudes and perceptions towards the use of CALL on the EFL/ESL classroom?

The present research synthesis contains six chapters beginning with the background, statement of the problem, rationale, research questions, and objectives which form the description of this research synthesis, all found in chapter one. In the second chapter, key definitions and terms from different authors about the topic of study are presented in the theoretical framework. The following chapter contains the literature review with a brief description of the studies that were selected to answer the research questions. Subsequently, in the fourth chapter, the methodology is explained followed by chapter five which includes the tables of the data analysis with their descriptions. Finally, the conclusions and recommendations of this research study are presented in chapter six, the final chapter.



CHAPTER I

Description of the research

Background

The English language, spoken by millions of people all around the world, has become a global language. According to Chavez, Saltos, M. and Saltos, C. (2017), the necessity to acquire English for different aspects of our lives including education and business has been created (p. 762). With the advances in technology and the evolving educational system, computers have become an important tool in acquiring language. Davies (2002), defined Computer Assisted Language Learning (CALL) as an approach to language teaching and learning in which the computer is used as an aid to the presentation, reinforcement, and assessment of material to be learned, usually including a substantial interactive element.

Diving into the history of CALL, Warschauer and Healey (1998) state that computers have been used for language teaching since the 1960s where they were first viewed as a mechanical tutor that never grew tired or judgmental and allowed students to work at their individual pace. At that time, exponents of communicative CALL stressed that computer-based activities should focus more on using forms than on the forms themselves and on teaching grammar implicitly rather than explicitly. To this extent, this 30+ year history can be roughly divided into three main stages: behavioristic CALL, communicative CALL, and integrative CALL. Each stage corresponds to a certain level of technology as well as a certain pedagogical approach (p. 57-58).

Chapelle (2008) study details the following:

Technology underlies forms of communication responsible for increasing language contact and globalization, which in turn affect language education. In many parts of



the world, learners engage in communication with peers and pursue their academic goals through the use of information and communication technology. Some educators portray technology as the solution to educational problems, and others see it as a plot to divert attention from the real aims of education, but the day-to-day reality for teachers and learners is that technology presents some new opportunities and challenges (p. 585).

English is considered one of the most important foreign languages taught in many academic institutions. Therefore, educators are concerned about implementing the most appropriate approach to teach English (Khamkhien, 2012). Because of the availability and widespread different technologies in modern times, computers have strongly influenced and dominated every aspect of people's lives (Kocaman & İskender, 2016). Thus, the majority of language teachers have now begun to think about the implications of computers for language learning. In addition, many studies indicate that CALL provides an innovative and effective alternative for language instructors (Warschauer & Healey, 1998).

Statement of the Problem

Despite the numerous advances in technology, especially technology applied in education, many educators throughout the world continue to use and rely on traditional teaching methods including the use of textbooks. Students, in turn, are expected to study and memorize lessons (Dina & Ciornei, 2013; Milli, 2016). Without technology, this traditional learning process may cause learning to be boring, and can be one of the reasons for learners' backwardness in learning a foreign language (Milli, 2016). The lack of technological implementations in the classroom may be due to several reasons some being that the school facilities do not have enough technological support, or educators are not aware of the benefits that a CALL approach could have on the students' performance. Therefore, we intend to



study the effects CALL has on English language teaching as well as the advantages this approach presents when it is present in both teaching and learning.

Since the English language is one of the most important languages of modern history, it has become something essential to acquire it. Consequently, new and updated techniques are of a necessity to teach the language. Language teachers in the 21st century should have an awareness of the potential for adopting digital tools for real-world language practice, so that they can be adapted for the language classroom. (Kessler, 2018). As mentioned by Kocaman and İskender (2016), CALL is the most popular and common technique for teaching and learning a new language. According to Levy, CALL is defined as a broad term covering the search for the roles and applications of computers in ESL/EFL classrooms (as cited in Kocaman & İskender, 2016). The multiple studies on CALL have proved the effectiveness of such approach (Al-Mansour & Al-Shorman, 2012; Olibie, 2010; Naba'h, Hussain, Al-Omari, & Shdeifat, 2009).

As Kocaman and İskender (2016) affirmed, CALL is an effective technique to grab students' attention and make the language learning process smoother.

Thus, it is very important that every person involved in the education process become aware of the possible opportunities and challenges that CALL presents.

Rationale

Before the presence of technology, learning a language with traditional methods could not meet the learners' needs nor the expectations for effective communication (Derakhshan, Salehi, & Rahimzadeh, 2015). Nowadays, a lot more can be done in the classroom to help students meet their necessities and expectations from a language lesson. Computers could allow learners to progress at their own pace and work individually to solve problems



encouraging independence (Al-Nafisah, 2015). In addition, students also appear to gain confidence regarding their own learning.

As mentioned by Derakhshan et al., (2015), many different language aspects can be taught through CALL programs such as grammar, speaking and pronunciation, writing, and many other required skills. It can also provide feedback which is considered to be a crucial feature in any pedagogical practice.

In recent years, many researchers and educators have investigated the advantages of using computers as teaching/learning tools for improving different skills of the English language. In addition, there have been an increased number of studies on the effect of technology-enhanced instruction on achievement as well as studies on student attitudes regarding learning with technology (Salaberry, 2001).

On the other hand, there are some studies which mention certain disadvantages that CALL presents. Dina and Ciornei (2013) mention some of them such as “the deterioration of the teacher role in the learning process, the favoring of students with analytic thinking, but not those with synthetic thinking; and the excessive individualization of learning which can lead to denial of the teacher-student dialogue and the isolation of the learning process from its psycho-social context” (p. 251). Therefore, one of the disadvantages that technology has demonstrated is the distance between the student and the teacher, which can lead to inappropriate use of said tool by students who are not guided by teachers.

As Weiss (1994) noted, teachers' jobs are harder in the early stages of an implementation of technology. In addition, positive changes from technology are more evolutionary than revolutionary, and these changes occur as teachers become more experienced with the technology. However, as it was already mentioned, CALL presents both advantages and challenges. Therefore, before implementing such approach in the teaching



classroom, it is very important to acknowledge the influence of CALL. Lai and Kritsonis (2006) emphasize that we must recognize both advantages and disadvantages of using computers so we can get the maximum effectiveness of technology to enhance second language learning.

Based on what has been presented, analyzing the effects of CALL on the students' performance as well as the advantages and disadvantages that implementing this approach in the teaching classroom present, is important in order to determine the most appropriate way to implement the aforementioned approach to ensure efficiency of the use of computers in the classroom to benefit students. Therefore, this research synthesis becomes of importance because it will collect the most relevant and suitable literature regarding CALL to determine the most effective approach for its implementation.

Research Questions

After analyzing the relevant literature in the chosen field, this synthesis attempts to answer the following questions:

What are the presented effects that CALL instruction has on students' language proficiency?

What are the reported students and teachers' attitudes and perceptions towards the use of CALL on the EFL/ESL classroom?

Objectives

Technology has become significantly essential in peoples' lives and its implementation in the educational field has been necessary as well. However, both teachers and students face complications while implementing computer instructions and while being assisted by it.



Therefore, this research synthesis aims:

General:

To identify the reported effects of Computer-Assisted Language Learning on students' language proficiency.

Specific:

To analyze the reported advantages and disadvantages that Computer-Assisted Language Learning presents.

To examine the reported students and teachers' attitudes and perceptions towards the use of CALL on the EFL/ESL classroom.



CHAPTER II

Theoretical Framework

It is necessary to establish a pathway for the study of CALL and its effects on learning a new language. In order to achieve this goal, it is essential to review some important definitions. In the present section of the research synthesis, some concepts and theories of authors that researched CALL for learning and teaching English are presented. It will contain three sections: the definition of CALL, the development of CALL, and the attitudes and perceptions towards CALL.

Computer-Assisted Language Learning

In recent years, there has been an increased interest in using computers for language teaching and learning. For the present research synthesis, it is important to establish a background of the different concepts that involve CALL. According to Davies (2002), CALL is defined as an approach to teaching and learning a foreign language and a second language where the computer and computer-based resources such as the Internet are used to present, reinforce and assess material to be learned. CALL is considered a relatively new approach that is constantly evolving in the academic field where new methods to improve the learning-teaching process are continually being explored (Marzban, 2011).

According to Lai and Kritsonis (2006) computers have become a significant element of second language learning pedagogy. It is due to the rapid development of technology from the 1980s that computers have gained such importance. For instance, Mahmoudi, Samad, and Razak (2012) state that “CALL has become an important element of language learning which supports the idea that computers should be used as a medium to facilitate language learning” (p.490). Therefore, in the area of education, computers have been integrated more and more



over time in the learning-teaching practice. There is an increasing interest in studying the relationship between language proficiency and computer use for purposes in education (Mahmoudi, Samad, & Razak, 2012). With this in mind, it is fundamental that the effects of CALL on students' language performance should be taken into account and analyzed.

The Development of CALL

Computers have been used for language teaching since the 1960s. Warschauer and Healey (1998) divide the development of CALL into three main stages: behavioristic CALL, communicative CALL, and integrative CALL. According to the aforementioned authors, "each stage corresponds to a certain level of technology as well as a certain pedagogical approach" (p. 57). The introduction of a new CALL stage does not necessarily imply the rejection of programs and methods of a previous stage; rather the preceding one is incorporated within the following stage (Warschauer, 1996).

The first stage is *Behavioristic CALL*; it was designed in the 1950s and implemented in the 1960s and 1970s. Based on the behaviorist theories of learning, programs of this phase featured repetitive language drills that can be referred to as "drill and practice (Warschauer, 1996). Furthermore, as mentioned by Ahmad, K., Corbett, G., Rogers, M. and Sussex, R. (1985), this stage presented the best-known tutorial system known as PLATO which ran on its own special hardware and was mainly used for extensive drills, explicit grammar instruction, and translation tests (as cited in Lee, 2000). Lim, Tang, and Kor (2012) define the term drill and practice "as a method of instruction characterized by the systematic repetition of concepts, examples, and practice problems" (p. 1040). In this manner, computers served as the means of providing learners with instructional materials. Warschauer (1996) states three principles behind drill and practice. First, the constant exposure to the same material results beneficial or even essential in the learning process. Next, computers are considered ideal for



drill activities since computers can provide the same material over and over again. In addition, computers contribute to the learning process by providing immediate non-judgmental feedback. Finally, computers let learners access personalized materials that allow them to work at their own pace. In the late 1970s and early 1980s, two decisive factors undermined behavioristic CALL. First, behavioristic approaches had been rejected at the theoretical and the pedagogical level concerning language learning. Second, the introduction of the microcomputer allowed a completely new range of possibilities. These factors determined the path for a new stage of CALL (Warschauer, 1996).

The second stage of CALL, *Communicative CALL*, was based on the communicative approach to language teaching that became popular in the 1970s and 80s. Supporters of this approach felt that the drill and practice method of the earlier stage did not promote sufficient authentic communication to be of significant worth (Warschauer, 1996). Warschauer and Healey (1998) stated that “Communicative CALL corresponded to cognitive theories which stressed that learning was a process of discovery, expression, and development” (p. 57). Popular CALL programs developed during this period included text reconstruction programs that enabled students to work alone or in groups to rearrange words and texts to discover patterns of language and meaning. Another program developed was simulations that encouraged students to use dialogue and discover while working in pairs or groups. For many proponents, communicative CALL focused on how students interact with each other while working with the computer, rather than on what students did with the machine (Warschauer & Healey, 1998).

Many teachers were moving away from a communicative teaching approach, looking for a way to teach in a more integrative manner, for instance using language in genuine social contexts. Task-based, project-based, and content-based approaches all worked towards the integration of authentic environments, and also of various skills of language learning and use.



This led to a new perspective on technology and language learning. The challenge for proponents of CALL was to develop programs that were able to integrate the different aspects of the language learning process. Fortunately, advances in computer technology contributed to opportunities to accomplish this. (Warschauer, 1996; Warschauer & Healey, 1998).

The third stage is *Integrative CALL*, it seeks to incorporate various skills of language learning (e.g., listening, speaking, reading, and writing) and also integrate technology more fully into the language learning process. In integrative approaches, students learn to use a range of technological tools as part of the language learning process, instead of visiting the computer lab on a once a week basis for isolated exercises (Warschauer & Healey, 1998).

CALL Integrative approaches are based on two important technological innovations of the last ten years- multimedia computers and the Internet. Multimedia technology allows a variety of resources such as text, graphics, sound, animation, and video to be available in a single device, the computer. What leads multimedia to cause a great impact is that it involves hypermedia (Warschauer, 1996). Hypermedia provides use in the most wide-scale and access where all multimedia resources are linked together. Therefore, students can explore at their own pace simply by pointing and clicking a mouse (Dina & Ciornei, 2013).

The Internet is viewed as an extremely helpful tool because it allows students to connect with the world creating an authentic learning environment. It is also a very useful tool because skills can be easily combined and integrated into a single activity naturally. In addition, it gives students control over their own learning, promoting at the same time student autonomy individualizing their needs accordingly, and improving the learning strategies (Dina & Ciornei, 2013).

The history of CALL provides a better insight into how computers have been used in language learning since its application in education. From the stages of CALL, we can see



that computers can serve a variety of uses for language teaching. It can be a tutor that offers language drills or skill practice and a stimulus for discussion and interaction. The development of the Internet allowed computers to become a medium of global communication and a source of endless authentic materials.

Attitudes and Perceptions towards CALL

According to Panagiotis, George, Nikos, and Ioannis (2005) attitudes represent mental evaluations about an object based on one's proximity or distance from it. Therefore, attitudes refer to one's perception of an object being favorable or unfavorable (as cited in Capan, 2012). The attitudes and perceptions towards computers indicate teachers' and students' evaluation of how they feel about utilizing computers in their own teaching and learning practices (Capan, 2012). As mentioned by Afshari, Ghavifekr, Siraj, and Jing (2013), "attitude is also considered as one of the affective variables in the success of implementing technology in the second or foreign language learning process" (p. 853). In addition, Afshari et al., (2013) indicated that students' perceptions are key factors of their attitudes towards CALL having a direct and significant effect on their attitudes.

Concerning the rapid development and increased use of computers in the language teaching and learning processes, research in CALL that focuses on students' attitudes towards learning a language with computers has increased (Rahimi & Hosseini, 2011). Afshari et al., (2013) found that both teachers and students present positive attitudes and perceptions towards CALL including perceptions such as usefulness and ease of use. Rahimi and Hosseini (2011) indicated that after students had some experience with computers, they improved their attitudes towards CALL acknowledging the value and benefits of computer-assisted instruction and its stress-free atmosphere. In addition, Mahmoudi, Samad, & Razak (2012) stated that students agreed that computers make their learning easier and enjoyable.



Furthermore, teachers affirmed that computers are effective educational tools saving valuable classroom time and enhancing students' motivation by enabling easy access to information (Capan, 2012).

On the other hand, teachers and students also present negative attitudes toward using CALL and feel uncertain about the integration of this approach into the classroom (Mahmoudi, Samad, & Razak, 2012). Rahimi and Hosseini (2011) demonstrated that students had negative attitudes towards using CALL alone as a replacement for the teacher and did not accept CALL as a replacement for traditional teaching. Subsequently, Aydin (2013) reported that teachers had negative perceptions about the technical and instructional support available in the school and its infrastructure, meaning that the inadequate technical infrastructure in schools prevents the implementation of CALL. In addition, Park and Son (2009) revealed that teachers feel stressed and frustrated about the demands and pressure that they encounter from school and society, which expects them to be professionals in special fields of study and computer specialists as well. Despite the negative attitudes and perceptions, CALL is considered a valuable tool for language teaching and learning (Aydin, 2013).

Finally, according to Capan (2012) "addressing teacher attitudes is essential because teachers take on a major role in deciding on the extent to which computer use is allowed or hindered in the classroom" (p. 248); as Park and Son (2009) added, teachers' confidence, positive teaching and learning experiences with computers improve their attitudes, which leads them to be more confident and implement CALL in their own classrooms. Additionally, Teo (2006) revealed that computer attitudes not only play an influential role in determining the extent to which students accept the computer as a learning tool but also future behaviors towards the computer such as using it for further study and vocational purposes.



There can be no doubt that the development of the theoretical framework was indispensable to understand the most meaningful theories about CALL. Additionally, this section contains valuable information such as different authors' theories, comparisons, and differences concerning each one of the theories and perspectives. Finally, this section provided essential data for the correct progress of the research, so it represents a fundamental piece of information.



CHAPTER III

The Literature Review

In the present section, we can find a review of the selected empirical research that will be helpful for the present research synthesis. The studies have been classified in a way that their analyses provide an outlook of the different effects that CALL has on the EFL/ESL classroom. The section includes the effect of CALL on students' English language achievement, the effect of computer-based activities on students' attitudes toward CALL, and the effect of computers on teachers' attitudes and perceptions toward the use of CALL on EFL/ESL teaching and learning.

The Effect of Using Computer-Assisted Language Learning to Improve Students' English Language Achievement

Since the beginning of its use, many researchers have investigated the effects of using CALL to improve students' language achievement. Al-Mansour and Al-Shorman (2012) conducted a study to determine whether using Computer Assisted EFL Instruction has a positive effect on the Saudi University students' English achievement. The purpose of the study was to compare the effects of using computers alongside the traditional method with the traditional method alone and decide which approach is more useful when learning English. In this study, 60 students randomly selected participated. They were assigned to a control group or an experimental group. The results of this study showed that using a computer in English language instruction has positive effects that helped students improve their language skills. Therefore, Al-Mansour and Al-Shorman concluded that using computers in English language instruction has a positive effect on students' achievement. It is important to add that the researchers recommended this study to be replicated with a larger number of participants and over the whole academic semester or a whole year. A similar



study was conducted by Al-Nafisah (2015), who aimed at investigating the effect of a CALL program and measuring its effect on Saudi EFL learner's achievement in English. The purpose of this study was to compare using Computer-Assisted EFL Instruction using the traditional method and decide which is more suitable for the students under investigation. The sample of the study consisted of 41 students who were chosen randomly and assigned to an experimental group and a control group. The results showed that the achievement of the experiment group was significantly better than that of the control group. By comparing the results achieved by the two groups, Al-Nafisah concluded that the difference in the results of the students was attributed to the use of computers in English language instruction.

The positive effect that CALL has on learner's English achievement can also be extended to the different levels of education, not only to the higher level of education as mentioned in the previous studies. This can be contemplated in a study carried out by Olibie (2010). The researcher aimed to find out whether CALL will be effective in improving students' achievement in English language grammar. The purpose of this study was to find out whether CALL will be more effective in improving students' achievement in English language grammar more than Conventional English Language Instruction (CELI). The study involved four classes of junior secondary III students, which were randomly assigned to the experimental group and the control group. The findings revealed that CALL enhanced students' grammar achievement, including the ability to produce grammatical sentences, to correctly change the order of elements in grammatical units, to accurately substitute a grammatical unit for another, and to respond freely to grammatical drills. It was also mentioned that success "... can be attributed to the versatility of presentation of material, computer analysis of student performance, instant feedback and flexibility of the computer programmes" (Olibie, 2010, p.70). In addition, Alian, Khodabandeh, and Soleimani (2018) conducted a study which purpose was to investigate the effect of CALL-based tasks on EFL



students' grammar learning. In the current study, 60 Iranian junior high school students participated. The participants were divided into one experimental group and one control group. The results indicated the superiority of CALL over traditional language teaching. After the results were analyzed, it was concluded that the two groups had significant progress in grammar learning. However, it was disclosed that the students in the experimental group had better results than the students in the control group.

The Effect of Computer-Based Activities on Students' Attitudes toward Computer-Assisted Language Learning

When teaching English through a specific approach, it is significant to recognize learners' attitudes toward the applied approach. Mahmoudi, Samad, and Razak (2012) consider that "students' attitude is a crucial factor that influences the decision on whether students can successfully adapt to new CALL programs" (p.490). In addition, the aforementioned authors state that students' attitudes toward CALL programs, especially positive attitudes, are important factors when acquiring a language. Afshari, Ghavifekr, Siraj, and Jing (2013) conducted a study with the purpose to investigate students' attitudes towards the use of CALL. In this study, 100 undergraduate and postgraduate students in the Faculty of Languages and Linguistics at the University of Malaya participated. A survey questionnaire was administered to the participants to determine their attitudes toward CALL. The results showed that students had moderate attitudes toward CALL. It is also important to mention that researchers emphasized that "the variables Perceived Usefulness (PU) and Perceived Ease of Use (PEU) had a very strong correlation with attitudes toward CALL, indicating that as students' perceptions of computer attributes (PU and PEU) improve, their attitudes will be enhanced as well" (Afshari, Ghavifekr, Siraj & Jing, 2013, p.858).



Another study to assess students' attitudes toward CALL was carried out by Rahimi and Hosseini (2011). The purpose of the study was to determine students' attitudes toward the use of CALL for learning English as a foreign language. The sample of the study consisted of 42 Iranian high-school students. The sample was selected according to the availability of computer labs and internet access in their school. In order to examine learners' attitudes toward CALL, a 20-item questionnaire A-CALL was implemented. The participants were instructed to complete the questionnaire before the experiment was conducted. In the same way, at the end of the experiment, students were asked to complete the questionnaire again. The results revealed a significant difference between students' attitudes before and after the experiment. Data collected before the experiment showed that students had moderately positive attitudes towards CALL. On the other hand, data obtained from the questionnaire after the experiment showed that an improvement in students' attitudes toward CALL. However, the findings disclosed that students had strong negative attitudes, before as well after the experiment, toward using CALL alone as a replacement for the teacher. Students did not consider that traditional teaching can be replaced by computers. Additionally, researchers concluded that computer-based activities improved students' attitudes toward CALL for learning English as a foreign language.

Regarding the relationship between attitude and language proficiency, Mahmoudi, Samad, and Razak (2012) carried out a study to analyze the connection between the attitudes toward Computer Assisted English Language Learning (CAELL) and student's English proficiency, especially learning vocabulary. The sample of the study consisted of 30 Iranian participants studying in Intensive English Course (IEC). The attitudes were determined via questionnaires and the effects of CALL on their performance were determined by using vocabulary tests. After analyzing the collected data, researchers concluded that students possessed an intermediately high attitude toward the use of computers as a means for learning



a language. Likewise, students demonstrated an increment in their vocabulary after using computers in their study. Additionally, researchers stated the strong relationship between participants' attitudes and performance alluding that "... if the attitude of students increases, they would be inclined to learn a language and particularly vocabulary" (p.497).

The Effect of Computers on Teachers' Attitudes and Perceptions toward the Use of CALL on EFL/ESL Teaching and Learning

As teachers encounter new demands and advances in the educational system, they are required to integrate new technologies into the foreign language classroom. This is done with the purpose of looking for better ways to provide students with linguistic skills, meaningful communication, and culture (Park & Son, 2009). Hence, teachers and their attitudes play an important role in implementing technological approaches in the language-teaching classroom. Capan (2012) conducted a study with the purpose to examine Turkish EFL teachers' attitudes toward the use of computers in the classroom. In this study, 70 elementary and high school EFL teachers participated. The study implemented a computer attitude scale. The participants were asked to complete the questionnaire online, which allowed the collection of data in a short time. The findings showed that Turkish EFL teachers had significantly positive attitudes toward computers. The results also demonstrated that participants possessed considerably high levels of competence in computer applications. Researchers concluded that given participant's positive attitudes and high levels of competence, once they are presented with the opportunity, they are ready and motivated to use computers in the classroom.

In the same context, Aydin (2013) carried out a study to determine teachers' attitudes, as well as their knowledge and confidence in integrating computers in the classroom. The sample of the study consisted of 157 Turkish elementary and secondary school EFL teachers. The instruments for collecting data included a background questionnaire to gather socio-



demographic information on the teachers and their schools. Five scales instrument was also administered that included knowledge, frequency of use, attitudes, self-confidence in integrating computers, and school climate and support. The results established that teachers had the necessary knowledge to use basic computer functions. They also possessed high levels of self-confidence in integrating computers into the teaching and learning process. In addition, teachers had positive attitudes toward the use of computers and the school climate, and the support offered. However, they presented difficulties in their ability to use more advanced computer functions as well as their ability to use program languages. Furthermore, they perceived problems in integrating computers into the school curriculum and in the school's ability to provide the necessary technical and instructional support.

Park and Son (2009) conducted a study that investigated the factor that affects EFL teachers' use of computers in the classrooms, also their perceptions toward CALL and ways to improve CALL practices in schools. The study included 12 EFL teachers working at secondary schools in Seoul, Korea. A questionnaire followed by an interview with each teacher was conducted to obtain information about participants' perceptions of and attitudes toward CALL implementation. The findings of the study revealed that EFL Korean teachers had positive attitudes toward the use of computers. In addition, teachers recognize the benefits of using CALL in the language classroom. The study also mentioned factors that include teachers encounters that affect the implementation of CALL. Such factors include teachers' attitudes and knowledge, as well as computer facilities and technical support. It is recommended that teachers should be constantly trained to improve their confidence and competence in the use of CALL.

The research conducted on the different effects and the effectiveness of CALL on the EFL/ESL classroom not only provides a better understanding of how CALL has been employed, but also on the complications that arise while implementing computer instructions



and while being assisted by them. In consequence, the purpose of this synthesis is to find out the advantages and disadvantages that CALL presents, as well as the effects that CALL instruction has on students' language proficiency.



CHAPTER IV

Methodology

This investigation is a research synthesis. According to Cooper and Hedges (2009), a research synthesis can be defined as the combination of a particular set of literature review characteristics, which attempts to integrate empirical research for the purpose of establishing generalizations. To collect relevant studies about the effects of Computer-Assisted Language Learning instruction, online databases such as Scholar Google, ERIC, ScienceDirect, and ResearchGate were used.

In order to develop this research synthesis, the criteria that were taken into account to select the articles are the following: First, studies had to have been published in journals or books. However, if relevant information is found in theses or dissertations, such papers were taken into account. Second, articles could be empirical and theoretical studies. Third, studies about the topic, regardless of its application to the different levels of education were taken into account. Finally, since CALL is considered a relatively new approach that is constantly evolving in the academic field (Marzban, 2011), articles published within the last 15 years were considered.

The following keywords were used to look for the requested material: (a) CALL, (b) Computer-Assisted Language Learning (c) computer instruction, (e) effects of Computer-Assisted Language Learning, (f) computer instruction advantages, (g) computer instruction disadvantages. In addition, there were not any restraints regarding the design of the studies. That being so, qualitative, quantitative, or mixed methods were considered for the present study.



The journals that were taken into account are the following; *Computer Assisted Language Learning*, *Procedia - Social and Behavioral Sciences*, *The Electronic Journal for English as a Second Language*, *Frontiers of Language and Teaching*, *European Journal of Social Sciences*, *Journal of English Language and Literature*, *Procedia Computer Science*, *The International Arab Journal of Information Technology*, *Interdisciplinary Journal of Contemporary Research in Business*, *Cypriot Journal of Educational Science*, *International Journal of Educational Research and Technology*, *International Journal of Pedagogies and Learning*, *International Journal of Language Learning and Applied Linguistics*, *International Journal of Research in English Education*, and *Cendekia*. (Appendix).

Twenty-one studies were selected for the present research synthesis. The studies were classified according to different criteria that emerged through the analysis. Finally, the findings from this research were considered for recommendations for further research and the application of this approach in the classroom.



CHAPTER V

Analysis of the data

In order to answer the research questions proposed in the present research synthesis, 21 studies were gathered and divided into different categories for analysis. The studies were classified in the following way: year of publication, location, the effects of CALL in the English skills and subskills, advantages and disadvantages, and the attitudes and perceptions towards the use of CALL. The collected data has been organized in tables followed by a description based on the information obtained from the selected studies.

Table 1

Year of Publication of the Studies

Author/Year	Year of Publication	N	(%)
Park & Son (2009); Naba'h, Hussain, Al-Omari, & Shdeifat (2009); Olibie (2010); Wiebe & Kabata (2010); Marzban (2011); Rahimi & Hosseini (2011); Capan (2012); Nachoua (2012); Saeidi & Yusef (2012); Mahmoudi, Samad, & Razak, (2012); Jafarian, Soori, & Kafipour (2012); Nadeem, Mohsin, Mohsin, & Hussain (2012); Aydin (2013); Bhatti (2013); Afshari, Ghavifekr, Siraj, & Jing (2013)	2009-2013	14	66.7
Poursalehi, HabibAboulalaei, & Zohrabi (2014); Zaini, & Mazdayasna (2014); Lakshimi & Reddy (2015); Rochmahwati & Pamungkas (2015); Rahnavard & Heidar (2017); Nejati, Jahangiri, & Salehi (2018)	2014-2018	7	33.3

N=21

Table 1 shows the number of studies organized by the year of publication. Most of the studies (66.6%) were published at an earlier period than the remaining studies (33.3%).

Although the majority of studies were published at an earlier period, all of them were published within the last eleven years. The fact that the studies were published within the last few years suggests that CALL has become an important element for language learning which



supports the idea that computers should be used as an aid to enhance language learning (Mahmoudi, Samad, & Razak, 2012). The year also suggests that teachers recognize its importance and efficacy, which leads researchers to continue studying CALL and its effects on language learning. As it was mentioned by Capan (2012), teachers agree that the computer is an effective educational tool that could enhance the learning process as it offers relevant learning experiences for students.

Table 2

Location

Author/Year	Location	N	(%)
Wiebe & Kabata (2010)	North America	1	4.8
Naba'h, Hussain, Al-Omari, & Shdeifat (2009); Marzban (2011); Rahimi & Hosseini (2011); Jafarian, Soori, & Kafipour (2012); Capan (2012); Saeidi & Yusef (2012); Aydin (2013); Poursalehi, Zohrabi, & Zohrabi (2014); Zaini & Mazdayasna (2014); Rochmahwati & Pamungkas (2015); Rahnavard & Heidar (2017); Nejati, Jahangiri, & Salehi (2018)	Middle East	12	57.1
Olibie (2010); Nachoua (2012)	Africa	2	9.5
Park & Son (2009); Mahmoudi, Samad, & Razak (2012); Nadeem, Mohsin, Mohsin, & Hussain (2012); Bhatti (2013); Afshari, Ghavifekr, Siraj, & Jing (2013); Lakshimi & Reddy (2015)	Asia	6	28.6

N=21

Table 2 shows the location where the selected studies were conducted. As seen above, the majority of the studies were conducted in the Middle East followed by Asia, as opposed to North America where only one study was conducted. This suggests that there is a proneness to carry out studies about CALL in countries where English is taught as a foreign language. This result also suggests that countries where English is not spoken as a first



language exhibit an important interest in studying new approaches for teaching that involve technology, in this case, CALL, as well as their effects when implementing them as tools to teach a language. For example, as mentioned by Olibie (2010), one of the biggest challenges in secondary education faced in Nigeria is the fomentation of educational programs that would improve students' achievement in the English Language. In the context of education in Nigeria, as the world enters a digital era, the education system experiences enormous changes as well. Therefore, in order to provide students with the necessary skills to enhance their knowledge, institutions must provide them with relevant experiences that promote and encourage their development, as they could be enhanced by using CALL (Olibie, 2010). Finally, the table shows that there is a gap in research regarding CALL in Latin America since only one study conducted in this location was found. However, the aforementioned study was not taken into account for the present research synthesis.

Table 3

The Effects of CALL in the English Skills and Subskills

Type of skill	N	Specific language skills	Author/Year	N
Receptive	5	Listening	Nachoua (2012); Lakshimi & Reddy (2015)	2
		Reading	Marzban (2011); Saeidi & Yusef (2012); Bhatti (2013)	3
Productive	4	Writing	Jafarian, Soori, & Kafipour (2012); Zaini & Mazdayasna (2014)	2
		Speaking	Poursalehi, HabibAboulalaei, & Zohrabi (2014); Rochmahwati & Pamungkas (2015)	2
Subskills	6	Vocabulary	Mahmoudi, Samad, & Razak (2012); Nejati, Jahangiri, & Salehi (2018)	2



Grammar	Naba'h, Hussain, Al-Omari, & Shdeifat (2009); Olibie (2010)	2
Pronunciation	Nadeem, Mohsin, Mohsin, & Hussain (2012); Rahnavard & Heidar (2017)	2

N=15

Table 3 was elaborated by taking into account 15 studies that show the effects of CALL in English skills and subskills. As can be seen, there is not a significant difference between the number of studies regarding the skills and subskills. This suggests that CALL influences all the skills and subskills of English in an equal manner. The studies were placed into 3 main categories: Receptive skills, Productive skills, and Subskills. Subsequently, each category was divided into specific language skills. Listening and reading belong to receptive skills and writing and speaking belong to productive skills. Additionally, vocabulary, grammar, and pronunciation were grouped under the category of subskills.

The Effects of CALL in the English Skills

The use of CALL has been proved to be effective in developing and enhancing students' language skills. Regarding the receptive skills, Nachoua (2012) mentioned that CALL provides students with authentic listening materials, such as interactive CDs and videos that expose learners not only to an auditory environment but also to a visual one. This allows students to observe and analyze the speaker's body language and facial expressions that help them understand the language meaning more easily (Nachoua, 2012). Furthermore, Bhatti (2013) revealed that the implementation of computers in reading activities produces a lot of interest in students. Bhatti (2013) added that students enjoy readings that included a variety of pictures, sounds, and animations. Therefore, the use of CALL may provide students with a wide range of materials and exercises that enhance their learning process.



Concerning the productive skills, the writing skill is one of the language elements that can be influenced the most by the use of computers in the classroom (Zaini & Mazdayasna, 2014). Zaini and Mazdayasna (2014) demonstrated in their study that through the use of CALL learners gained experience in writing, thus improving their skills. Also, computers allow writers to use a great variety of tools to evaluate their writings facilitating the task of editing, organizing, and revising a text (Jafarian, Soori, & Kafipour, 2012). Moreover, Rochmahwati and Pamungkas (2015) verified that CALL contributes to increasing students' speaking ability by providing learners with opportunities to interact with the language in real-life situations. For instance, the aforementioned researchers stated that "dialogue studies can be made by the computer with the aid of the movies, students watching these dialogues can see the conversation, setting and cultural atmosphere clearly" (p. 343). This allows students to hear the native pronunciation of English in real contexts, which leads them to improve their speaking skills. Therefore, CALL may offer students opportunities to enhance their language abilities by making use of the target language.

The Effects of CALL in the English Subskills

Based on the selected studies, we can suggest that the use of CALL has positively influenced not only the improvement of learners' language skills but also the improvement of subskills, fundamental for language learning. According to Nejati, Jahangiri, and Salehi (2018), CALL offers students a great variety of exercises to enhance their vocabulary learning process. For instance, students can listen to the pronunciation of a word, practice the spelling and meaning, engage in games related to the vocabulary, and also take part in vocabulary tests. In addition, through the use of CALL students are able to assimilate the rules and structures of English relatively easily and clearly (Naba'h, Hussain, Al-Omari, & Shdeifat, 2009). In a study by Olibie (2010), students worked on drills and practical exercises



that provided model answers for each exercise. Furthermore, CALL provides students with opportunities to learn the proper native pronunciation of English through different activities and sources. This is especially important for students who are learning English in an EFL environment and do not have many opportunities to hear the language as it is produced by native speakers (Rahnavard & Heidar, 2017). Hence, learners can practice the different sounds produced in the English language through CALL lessons that provide students with valuable material. For instance, students can engage in different activities, such as minimal pair quizzes, sentence rhythm, and intonation exercises (Rahnavard & Heidar, 2017). Therefore, CALL provides an interactive and communicative environment for students to learn and improve their English abilities (Mahmoudi, Samad, and Razak, 2012).

Having analyzed the studies mentioned in table 3, we can conclude that CALL provides students with relevant material, sources, and experiences that enable learners to enhance their language abilities in the target language. Therefore, students are able to improve their listening, reading, writing, and speaking skills, as well as other subskills essential for language proficiency.

Table 4

Advantages and Disadvantages of CALL

Advantages	Author/Year	N_a
Motivation and interest	Nachoua (2012); Lakshimi & Reddy (2015); Marzban (2011); Bhatti (2013); Jafarian, Soori, & Kafipour (2012); Rochmahwati & Pamungkas (2015); Naba'h, Hussain, Al-Omari, & Shdeifat (2009); Nejati, Jahangiri, & Salehi (2018); Mahmoudi, Samad, & Razak (2012); Park & Son (2009)	10



Individualization	Lakshimi & Reddy (2015); Marzban (2011); Rochmahwati & Pamungkas (2015); Poursalehi, HabibAboulalaei, &Zohrabi (2014); Olibie (2010); Naba'h, Hussain, Al-Omari, & Shdeifat (2009); Nadeem, Mohsin, Mohsin, & Hussain (2012); Nejati, Jahangiri, & Salehi (2018); Park & Son (2009)	9
Interactivity	Nachoua (2012); Marzban (2011); Saeidi & Yusef (2012); Naba'h, Hussain, Al-Omari, & Shdeifat (2009); Rahimi & Hosseini (2011);	5
Immediate feedback	Zaini & Mazdayasna (2014); Jafarian, Soori, & Kafipour (2012); Olibie (2010); Naba'h, Hussain, Al-Omari, & Shdeifat (2009); Nadeem, Mohsin, Mohsin, & Hussain (2012); Nejati, Jahangiri, & Salehi (2018)	6
Disadvantages	Author/Year	<i>N_a</i>
Lack of computer knowledge	Nachoua (2012); Bhatti (2013); Olibie (2010); Nejati, Jahangiri, & Salehi (2018); Afshari, Ghavifekr, Siraj, & Jing (2013); Aydin (2013); Park & Son (2009)	7
Lacking or inadequate computer facilities	Bhatti (2013); Aydin (2013); Nejati, Jahangiri, & Salehi (2018); Park & Son (2009)	4
Teachers' lack of time	Park & Son (2009)	1

N= 18

"Studies were included in more than one category.

Table 4 was created considering 18 studies that emphasize the advantages and disadvantages of CALL in the classroom. The table shows that more studies emphasize the advantages than the disadvantages of implementing CALL in the language classroom. The



four main advantages mentioned by researchers are motivation and interest, individualization, interactivity, and immediate feedback. On the other hand, researchers mention three disadvantages which include lack of computer knowledge, lack of or inadequate computer facilities, and teachers' lack of time.

Motivation and interest, and individualization are the advantages predominantly mentioned by researchers. It is suggested that learners feel motivated and interested when computers are part of their learning process. Lakshimi and Reddy (2015) expressed that the use of authentic material that CALL provides increases students' motivation and interest by raising their confidence, which encourages them to improve their skills. For instance, students feel motivated to work on extra activities outside the classroom (Jafarian, Soori, & Kafipour, 2012). In addition, Lakshimi and Reddy (2015) mentioned that shy or inhibited learners can be greatly benefited by the individualized environment that CALL offers. For instance, students can work on and select activities that are appropriate for their level. Also, they can practice and repeat tasks as many times as necessary according to their needs (Nejati, Jahangiri, & Salehi, 2018). In addition, CALL creates a stress-free environment because students can work at their own pace, thus, they don't feel pressured (Marzban, 2011).

With regards to the other advantages of interactivity and immediate feedback, Saeidi and Yusef (2012) mentioned that the use of CALL allows a deeper and more meaningful interaction between the learner and the computer. For instance, CALL programs enable students to easily move to different points of the task according to their needs (Naba'h, Hussain, Al-Omari, & Shdeifat, 2009). In addition, CALL evaluates learners' performance, points out mistakes, and provides explanations and suggestions on their work (Jafarian, Soori, & Kafipour, 2012). As mentioned by Jafarian, Soori, and Kafipour (2012), due to the



feedback provided by the computer, learners become more aware of their mistakes, hence they are able to correct them and improve their language abilities.

Although CALL seems to present more advantages than disadvantages, it is important to analyze the disadvantages that influence the use of CALL in the classroom. The disadvantage mentioned the most, is the lack of computer knowledge in both students and teachers, which creates difficulties in the learning/teaching processes. For instance, Nachoua (2012) mentioned that in the case of Algeria, CALL is not practiced, so students needed more time to get acquainted with computers and to get involved in this new environment. Nachoua (2012) added that learners who do not have proficiency in using computers encounter more difficulties with tasks than others. Concerning teachers' knowledge, Park and Son (2009) indicated that if teachers do not feel confident about their computer skills, they may negatively influence the implementation of CALL in the classroom.

Regarding the other disadvantages, the lack or inadequate computer facilities and the teachers' lack of time, Aydin (2013) mentioned that the inadequacy of technical infrastructure in schools prevents teachers from using computers actively in the classroom. Park and Son (2009) added that despite teachers' positive attitudes towards CALL, the limited access to computer facilities can discourage the use of computers to implement CALL. Furthermore, teachers also consider the lack of time a factor that influences the use of CALL; Park and Son (2009) pointed out that teachers consider that finding the appropriate materials and modifying them according to the textbooks and the level of students is time-consuming.

The implementation of new approaches for language teaching that involves technology, for instance, CALL, has become necessary. However, CALL programs still present benefits and limitations. Therefore, the advantages and disadvantages that CALL



programs present should be taken into account in order to take advantage of the benefits to enhance the teaching and learning processes.

Table 5

Attitudes towards the use of CALL

Attitudes	Author/Year	N ^a
Positive Attitudes	Afshari, Gavhifekr, Siraj & Jing (2013); Aydin (2013); Capan (2012); Mahmoudi, Samad & Razak (2012); Park & Son (2009); Rahimi & Hosseini (2011); Wiebe & Kabata (2010)	7
Negative attitudes	Afshari, Gavhifekr, Siraj & Jing (2013); Aydin (2013); Park & Son (2009); Rahimi & Hosseini (2011); Wiebe & Kabata (2010)	5

N= 7

^a Studies were included in more than one category.

Table 5 was elaborated taking into account teachers' and students' attitudes towards the use of CALL. This information was selected from seven studies. The table shows that more studies accentuate positive attitudes than negative attitudes at the moment of using CALL in the classroom. Furthermore, all the selected studies for analyzing this category include positive attitudes, and the studies which present negative attitudes include positive attitudes too.

Concerning positive attitudes, Park and Son (2009) mentioned that teachers and students have positive attitudes toward the use of computers in general, and also recognize the benefits of using CALL in the language classroom because they think that the future of CALL is bright since the computer has become a basic tool for learning and teaching.



Furthermore, Capan (2012) indicated that the participants were positively inclined to accept and integrate computer applications into their teaching practices as they were identified with significantly positive behavioral attitudes towards computers. Complementing this idea, Mahmoudi, Samad, and Razak (2012) highlighted that students showed positive attitudes toward using computers as an educational tool to learn English, and also that if the attitude of students improves, they would be inclined to learn a language. Afshari, et al., (2013) also explains that training should be provided for learners to improve both their computer skills and their attitudes.

On the other hand, negative attitudes are linked to misunderstanding because as Wiebe and Kabata (2010) mentioned, instructors do not always have a good understanding of their students' use of CALL, and in the same way, students do not necessarily understand their instructor's goal for using technology-enhanced materials in their classes. The negative attitudes occur because students do not show much faith in CALL, so they do not accept computers as a replacement for traditional teaching, preferring blended learning (Rahimi & Hosseini, 2011). Finally, both teachers and students perceived problems in their ability to use concepts like mapping, databases, among others as well as their ability to program languages which leads to creating negative attitudes (Aydin, 2013).

Changes modify our lives in many aspects, and each one has to be accepted and applied for our well-being. This is the case of CALL. As an innovative approach, it has to be implemented in our educational environment. Therefore, the attitude that each participant of the educational process has about CALL is vital for the use of it. Contemplating that attitudes can be both positive and negative, it has to be considered that knowledge of CALL and its use are essential factors for shaping attitudes that may be favorably or unfavorably. Thereby, if there are negative attitudes, the best option is that both teachers and learners become familiar



with CALL. Furthermore, teachers have to try to implement it in the classroom on a more constant basis, and in that way, they can build a positive attitude towards its use.

Table 6

Perceptions towards the use of CALL

Positive perceptions	Author/Year	N _a
Easy to use	Afshari, Gavhifekr, Siraj & Jing (2013); Aydin (2013)	2
Enjoyable	Mahmoudi, Samad & Razak (2012); Park & Son (2009)	2
Instructionally effective	Afshari, Gavhifekr, Siraj & Jing (2013); Aydin (2013); Capan (2012); Park & Son (2009); Mahmoudi, Samad & Razak (2012); Wiebe & Kabata (2010)	6
Valuable	Afshari, Gavhifekr, Siraj & Jing (2013); Aydin (2013); Park & Son (2009)	3
Useful	Afshari, Gavhifekr, Siraj & Jing (2013); Aydin (2013); Mahmoudi, Samad & Razak (2012); Park & Son (2009); Wiebe & Kabata (2010)	5
Negative perceptions	Author/Year	N _a
Could not ensure high-quality education.	Park & Son (2009); Rahimi & Hosseini (2011)	2



N= 7

^a Studies were included in more than one category.

Table 6 takes into account seven studies that focus on the different perceptions of both teachers and students towards the use of CALL. It is shown that a higher number of studies present positive perceptions and even the ones that present negative perceptions include positive perceptions too. The positive perceptions about CALL are that it is easy to use, enjoyable, instructionally effective, valuable, and useful; and on the other side, the negative perceptions include that CALL could not ensure high-quality education, and that it could be discouraging.

Positive perceptions contribute to building a positive attitude, so as students' perceptions of computer attributes improve, their attitudes are enhanced as well (Afshari et al., 2013). Aydin (2013) mentioned that learners consider the computer to be a valuable and helpful tool for effective teaching and learning, and also, they found that computers are easy to use and fix when they encounter technical problems. Besides, Capan (2012) stated that teachers have positive perceptions of computer attributes because the compatibility with teaching activities was the strongest computer attribute, so CALL is considered as instructionally effective. Relating to the usefulness, Park and Son (2009) reported that teachers consider CALL as an effective way of improving the quality of their teaching because CALL can provide both teachers and students with useful information and resources. Finally, regarding the positive perception that CALL is enjoyable Mahmoudi, Samad, and Razak (2012) stated that computers make learning easier and enjoyable.



Concerning negative perceptions, Rahimi and Hosseini (2011) reported that students consider that CALL could not stand alone as a replacement for the teacher, and even after the experiment, they did not believe that computers could take the place of traditional teaching. Besides, not only students consider that CALL could not replace teachers because as Park and Son (2009) mentioned, teachers also agreed that using computers in the classroom cannot completely ensure a better quality of education. Therefore, “teachers’ role is important in improving students’ autonomy in computer-based instructions” (Rahimi & Hosseini, 2011, p.188). Another negative aspect is feeling discouragement; that is the case reported by Park and Son (2009) who mentioned that teachers are anxious about the expectation that they should be capable of teaching with computers in the information age. Therefore, they seem to feel stressed and have discomfort about the criticism and pressure from society.

Taking into account the studies analyzed in Table 6, it can be concluded that both negative and positive perceptions about CALL play an essential role in creating positive or negative attitudes towards the use of it. Besides, both teachers and students must be exposed to different technological programs for learning or teaching English for a greater amount of time. Consequently, a stronger bond with technology would be created. Once this is achieved, perceptions towards technology will change because teachers and learners will accept and use this in an enriching way which will lead to the mastery of the new language

After analyzing the selected studies, it can be said that CALL has positive effects on the educational environment considering that learners’ skills and subskills have improved with the use of this technological approach. Furthermore, although the use of CALL presents some disadvantages as well, it has to be emphasized that a higher number of studies report more advantages of its use. Finally, teachers' and students’ perceptions tend to be positive which means that their attitudes towards the use of CALL will be favorable as well.



CHAPTER VI

Conclusions

The purpose of this research synthesis was to analyze the effects of CALL on students' language proficiency, as well as the attitudes and perceptions that teachers and students have towards the use of CALL in the classroom. The use of computers has gained importance in the language teaching process as technology keeps rapidly developing (Lai & Kritsonis, 2006). Consequently, CALL has become an important element in the language teaching process which facilitates language learning (Mahmoudi, Samad, and Razak, 2012). Therefore, the information gathered from the selected studies suggests that the use of CALL in the classroom has positive effects on students' language proficiency and their attitudes towards CALL, while also taking into account the advantages and disadvantages that this approach presents. In addition, the criteria for selecting the studies included that articles had to be published in journals or books. Also, articles could be empirical or theoretical studies. Furthermore, studies could be applied to any of the different levels of education. Finally, studies had to be published within the last 15 years.

Regarding students' language proficiency, the analysis demonstrates that CALL provides students with relevant materials, sources, and experiences that allow them to enhance their language proficiency. For instance, students can work on drills and practical exercises, which results beneficial or even essential in the learning process as one of the principles of drills is the constant exposure to the same material (Warschauer, 1996). Also, learners are able to work individually or in groups in activities such as rearranging words and texts to discover patterns of language and meaning; likewise, students are encouraged to dialogue and discover while working in pairs or groups (Warschauer & Healey, 1998). Furthermore, CALL provides a variety of multimedia resources such as graphics, sound,



animation, and video which creates a lot of interest in students and exposes them to an audiovisual environment (Warschauer, 1996). Together with the use of the internet, students are given the opportunity to connect with the world creating an authentic learning environment (Dina & Ciornei, 2013). Therefore, CALL has been proven to be effective in developing and improving learner's language skills and subskills essential for language proficiency.

In relation to the attitudes and perceptions, addressing teachers' attitudes is fundamental considering that teachers are the ones who decide to which extent computers are used in the class (Capan, 2012). In the same way, students' attitudes determine the extent to which they accept the computer as a learning tool and also their future behavior towards the computer (Teo, 2006). Research selected for analysis has found that students and teachers present both positive and negative attitudes and perceptions towards CALL. However, positive attitudes and perceptions exceed the negative ones, meaning that teachers and students consider CALL an effective and useful tool for language learning (Aydin, 2013). In addition, the attitudes and perceptions, whether positive or negative, are based on the individuals' experience with computers. Therefore, positive teaching and learning experiences with computers contribute to a greater acceptance of CALL in the classroom (Park & Son, 2009).

Another important aspect to take into account is the advantages and disadvantages that CALL presents. Through the analysis of the selected studies, four main advantages were identified, (1) motivation and interest, (2) individualization, (3) interactivity, and (4) immediate feedback. First, students consider that computers make their learning easier and enjoyable. Moreover, teachers believe that computers enhance students' motivation by enabling easy access to information (Capan, 2012; Mahmoudi, Samad, & Razak, 2012).



Second, computers allow learners to access personalized materials that enable students to work at their own pace giving them control over their own learning, while promoting autonomy. Additionally, computers can provide access to the same material over and over again, so students can practice and repeat tasks as many times as necessary according to their needs (Dina & Ciornei, 2013; Warschauer, 1996). Third, students can access information and explore the different materials and resources that CALL offers at their own pace by simply pointing and clicking (Dina & Ciornei, 2013). Fourth, computers contribute to the learning process by providing immediate non-judgmental feedback through drill and practice processes (Warschauer, 1996).

On the other hand, through the analysis of the selected studies, three main disadvantages were identified (1) lack of computer knowledge, (2) lack of or inadequate computer facilities, and (3) teachers' lack of time. First, teachers need to have enough confidence in their abilities to control computers for them to apply CALL in their classes, otherwise teachers could feel stressed and frustrated and the implementation of CALL will be affected (Park & Son, 2009). Second, if institutions do not count with the appropriate resources for the application of CALL, its implementation and use may be discouraged (Aydin, 2013). Third, although computers are effective tools that save valuable classroom time (Capan, 2012), teachers consider that they need more time and effort to find the adequate material for their classes (Park & Son, 2009).



Recommendations

Based on the analysis and its results, some recommendations are essential to mention. The most important one being, the application of this approach in the classroom because as the studies revealed, CALL helps both learners and teachers in several ways like improving their skills and subskills and providing them with advantages such as motivation, interactivity, and individualization. Furthermore, the educational system should consider this approach as a powerful teaching-learning tool because, as it was mentioned in the studies, participants mostly present both positive attitudes and perceptions towards its use because they considered it valuable, enjoyable, useful, and effective. Therefore, incorporating this approach in educational institutions and applying it in classes is an important decision that should be taken by the educational system which is in charge of looking for educational well-being.

Lastly, certain recommendations for future research studies should be considered. As mentioned in the analysis, the studies that were selected for this research synthesis were mostly from countries of Asia and the Middle East, so there could be a focus on studies in the American continent. Additionally, it is evident that CALL helps to improve learners' skills and subskills, but it would be good for future research studies to focus on each skill or subskill deeply to know which of them is mostly developed and which needs more attention. Contemplating these recommendations, wider and enriching knowledge about the effects of CALL on the ESL/EFL classroom will be part of the academic community.



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Appendix

List of Analyzed Studies

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