The impact of CALL instruction on English language teachers' use of technology in language teaching

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Abstract

This study investigates the impact of CALL training on in-service language teachers' use of CALL-based activities in their classrooms. The participants included 35 pre-service English as a Foreign Language (EFL) teachers who took an undergraduate-level elective CALL course (FLE318) offered during the 2008-2009 academic year in the Department of Foreign Language Education at Middle East Technical University and 25 of these participants who started teaching English during the Fall semester in the academic year 2009-2010 at several private and state institutions. The journals kept by the participants during and after the training, the lesson plans of micro and macro teaching, the questionnaires given to the participants to determine their perceived computer knowledge, the interview sessions held with the participants' on their practices showed that the training provided to the participants helped them infuse a variety of CALL-based materials and tools into their classroom practices.

Keywords English language teachers, CALL, computer assisted language learning, technology integration

1. Introduction

In recent years, technology has been used in all parts of our lives from communication among friends to shopping, from education to media tools. By means of computers and inevitably the Internet, it is getting easier for people to communicate throughout the world. Furthermore, the development of technology has not stopped and no doubt it will go on developing and this makes "the world flattened". As Friedman (2005) claimed "The world is being leveled"; and this leveling process is continuing on every minute. No matter where someone is, in Turkey, in India, in Australia, or elsewhere, s/he has the opportunity to contact with people around the world without time constraints; and this communication occurs through the computers and the Internet. As for the field of education, it is becoming more important to study the integration of technology. However, the other question is whether teachers are ready for integrating technology into their classrooms. In other words, it is questioned whether teachers who are "digital immigrants" are ready to teach the generation in the 21st century who are "digital natives". These two terms – digital immigrants and digital natives – were coined by Prensky (2001, p. 1). He stated that "Our students have changed radically. Today's students are no longer the pupils our educational system was designed to teach", considering how technology is used by students and

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teachers. Technology also may affect the way we teach, the way we learn and affect teachers' choice of teaching and learning styles as put forward by Watson (2010, p. 15):

> Teachers may face a conflict of teaching and learning styles. Older teachers generally teach face to face and proceed in a logical or step-by-step basis. In contrast, younger students tend to jump around from one idea or thought to another and expect sensory-laden environments as a matter of course. They also want instant results and frequent rewards, whereas many teachers regard learning as slower and serious and consider that students should just keep quiet and listen.

Considering the technological developments which happen at a breath-taking rate and the tools available which are frequently used by students, though not often for educational purposes, it has become necessary that teachers change and be trained in terms of technology integration. Moreover, they should be equipped with the required tools to meet the current needs of our schools and students who are looking forward to coping with various educational contexts. Yet, teacher training programs often ignore training in the use of information and communications technology and teachers are often far less knowledgeable and skilled than their own students when it comes to using current technology in life. As happened in the previous years, teachers will have to update their skills, teaching styles and learn to integrate new tools into what they teach to improve learning and teaching. As Pilus (1995) puts forwards,

> Teachers have to realize that computers are not used in the classes just because they are sophisticated or state of the art. Computers cannot perform magical tasks and they are not substituting for the teachers. Computers have to be treated like other teaching aids thus; appropriate training in this aspect is crucial (p. 10).

an appropriate Computer Assisted Language Learning (CALL) training should be provided to pre-service and in-service teachers

1.1. **Literature review**

As Hubbard (2009) says,

> As computers have come more a part of our everyday lives- and permeated other areas of education- the question is no longer whether to use computers but how. CALL researchers, developers and practitioners have a critical role in helping the overall field of second language learning come to grips with this domain (p. 1).

each day we are getting involved with technology and it is getting more present in the daily life. Technology have imbued a great many students' lives especially in developing and developed countries witch technology such as mobile phones, interactive videos and games (Moyle, Wijngaards, & Owen, 2012). Although there are differences in the access and the intensity of technology use (Sanchez, Salinas, Contreras, & Meyer, 2011) and their use is generally is not linked to educational purposes, new generations of

students are more comfortable with technology though using it in their life for a variety of purposes such as communicating with friends, gaming and listening to music. Given that students access to the Internet easily and use it for several purposes, teachers also must be open to join their students to benefit from their being comfortable with technology to infuse into daily activities in classrooms (Barsotti, & Martins, 2011; Gray, Andrews, & Schroeder, 2012) and to individualize learning processes more than that in a traditional classroom (Volman, 2005; Larsen-Freeman & Anderson, 2011).

The existing literature show that teachers are eager to integrate technology into their classrooms and benefit from CALL-based activities; however, what they did in their computer courses may not facilitate using CALL-based activities (Wentworth, 1996; Keirns, 1992; Hargrave & Huse, 2000). When the research on technology and the training of teachers are reviewed, it is seen that there are two approaches: One-course approach which focuses on the teaching of technology is found to be limited and too technical (Peters, 2006; Wong & Benson, 2006; Desjardins & Peters, 2007; Lambert, Gong, & Cuper, 2008) and the technology infusion throughout teacher education which focuses on exposing teachers to continuous technology. Desjardins and Peters (2007) examined whether a single-course approach would be sufficient to train pre-service teachers for teaching with technology, focusing on how well prepared these teachers felt they were able to integrate technology in the language classroom. The study was done in a university in Montreal and the participants followed a 45-hour-long course during the last semester of their program. The findings showed that although the training helped them develop their technological competencies, it was not enough for them to feel confident to infuse technology in their future classes. In several studies (Peters, 2006; Wong & Benson, 2006; Lambert, Gong, & Cuper, 2008) found similar results, showing that a single course approach or short in-service CALL training are not sufficient, though it affects participants' attitudes towards technology positively. In contrast with these studies, Thiemann's (2008) findings of the study conducted with the 223 pre-service teachers in this longitudinal 5-year study showed that 85% of the pre-service teachers infused several technology tools into instructional practice with their K-12 students. Kressler's (2007) web-based survey of 108 graduates of TESOL master's degree programs show that although the teachers were confident about CALL overall, they did not feel the same way in creating and integrating CALL materials.

The study conducted by (Fisher, 2009) on the perceptions of 5 trainee teachers over the nine months of their postgraduate training course in England showed that the teachers were reluctant at the very beginning due to a lack of confidence; however, when they are provided with good classroom practice, they adopted methodological approaches to their own teaching.

The need for technology education in the teacher education, professional development has been stressed out by several studies (Daniel, 2010). However, when the students are required to learn about technology throughout the program (Hegelheimer, 2006), it is not impossible to have technology-savvy graduates in English language teaching. Recognition of the importance of ICT curriculum integration has already occurred, and most

teacher education programs have introduced courses in ICT for future teachers. Teaching about computer or teaching with computers to enhance teaching and learning through integration ICTS within the curriculum. In the study conducted by Kessler (2006), 240 participants in the TESOL master's program reported a perceived lack of formal CALL training. The findings revealed that the participants were not satisfied with the CALL training and they tried to look for other sources of information to prepare them. They also participated in formal training outside their classroom and university.

Chapelle (2006) adds that "second-language teachers today need to be able to choose, use, and in some cases, refuse technology for their students" (p. ix). Teachers also need to know how technology can constrain as well as enhance their students' language use and know when it is better not to use computers (Kern, 2011). As Egbert (2010) points out, teachers should also find out the ways to work with technologically rich and poor environments, focusing on how to assess students' needs, interests and abilities. Whether and how the skills and knowledge that teachers "learn" during their education programs or professional development in CALL actually transfer to their teaching practice in real learning contexts requires utmost importance (Hong, 2010; Egbert, Huff & Lee, 2011). The important question is, then, how learning opportunities for teacher candidates and teachers can be made so that they learn how to infuse technology into their teaching. In other words, planning each and every detail of the training, as in each stage of life, is important (Sergeant, 2000; Mayo & Kajs, 2005; Toledo, 2005; Hockly, 2012).

As stated by Lee (2000) and Warschauer and Healey (1998), CALL technologies can support learning in a variety of ways, provide feedback, enable pair and group work, promote exploratory and global learning, enhance student achievement, provide access to authentic materials, facilitate greater interaction, individualize instruction, create opportunities to benefit from a variety of sources rather than limiting oneself to a single source, and motivate learners. Furthermore, technology can provide us with the necessary tools which enable us to benefit from the opportunities to make language learning more enjoyable, productive and effective. However, in order to achieve this, we need to have competent teachers in using technology as the anecdote provided by an Egyptian university lecturer and cited by Warschauer (2002, p. 472) "we have the hardware, we have the software, but we lack the humanware" indicates, it is imperative that pre- and in-service language teachers learn about computer tools which will support them in their teaching practices. Therefore, pre- and in-service language teachers should be equipped with skills and strategies in integrating CALL technologies into their classrooms.

Seferoğlu (2007), Seferoğlu, Akbıyık, and Bulut (2008), and Karakaya (2010) state that teacher candidates did not feel competent in using computers for teaching, in other words, how to infuse technology to their teaching. Moreover, Göktaş, Yıldırım and Yıldırım (2008) suggest that ICT courses can help to improve teachers' ICT competency; however, they add that in addition to the ICT courses offered to the students in the faculties of education, another ICT related course should be included in the curriculum

which will integrate their subject matter such as a foreign language. To the best knowledge of the author, there is no currently conducted on introducing an ICT related course that integrates teacher candidates' subject matter, which is English language teaching in the current study. Therefore, the current study concerned with the relationship of the integration of ICT into English language teaching and their use of computer technology in the classroom will fill this gap in the literature. Moreover, it will also help us find out the effect of contextual characteristics on the use of CALL-based materials, especially the school climate.

2. Methodology

2.1. Participants

The participants in the study were 35 pre-service English as a Foreign Language (EFL) teachers who took an undergraduate-level elective CALL course (FLE318) offered during the 2008-2009 academic year in the Department of Foreign Language Education at Middle East Technical University and 25 teachers who started teaching English during the Fall semester in the academic year 2009-2010 at several private and state institutions. The training lasted 14 for weeks, 5 hours each week. Considering the amount of the information that needs to be covered in the course, a two-hour lab class allowing structured practice was held for students, especially who were not comfortable with technology. The profile of the participants is provided in Tables 1 and 2.

Table 1. The profile of the participants before the training

First language	Turkish	33
	Mongolian	1
	Azerbaijani	1
Years of learning English	*5-10*	30
	more than 10	5
Age	18-20	29
	20-22	6
Gender	Male	7
	Female	28
Reason for taking the FLE course	Interested	20
	No other elective course	7
	Other	8

Table 2. The profile of the participants after the training

First language	Turkish	25
Current teaching level	K6-8	10
	K9-12	10
	College	5
Age	23-24	25
Gender	Male	4
	Female	21
School/College	Public School	19
	Private School/College	6

Research question

How does in-service EFL teachers' gained knowledge in their pre-service CALL training impact their teaching?

2.2 *Data collection instruments and procedures*

The content of the course, interview and the survey questions were based on the literature review and the content of the FLE 318 course. The questions were pilot-tested with several students who had completed the course offered during the academic year 2006-2007. The content of the training was also revised based on the suggestions made by the participants and the findings of the pilot test (Kılıçkaya, 2009). The participants who had taken the undergraduate-level CALL course (FLE 318) were interviewed on how they transferred their knowledge of technology gained in the course into their own classroom, what factors influence their use of computers in their classroom and how they continued to learn new technologies and how to apply them. The topics and the content of FLE 318 syllabus were changed according to the responses gained from the interviews.

Upon agreeing to participate in the study and signing the Informed consent based on the sample provided by Mackey and Gass (2005, p. 33), the participants enrolled in the training. After the participants started teaching, they were asked to keep a journal on their own blogs regarding what they learned and to chart their progress, thoughts and feelings about the training, how it affected their choice of CALL-based materials, when they used these materials and when did not and the reasons for their decisions on the use of technology.

When the participants graduated and started to teach, they were asked to keep a journal in English on their blogs. They were asked to note down what worked and what did not when they used CALL-based materials and the reasons for their decisions on the use of technology. Moreover, the researcher also interviewed 25 participants, as ten of them did not opt for any teaching position, on their use of integrating technology into their teaching using Skype. The interviews were semi structured, conducted in

English and the role of the questions was just to initiate the discussion. The main questions were as follows:

(1) Have you benefited from any technological tools in your classroom? Can you please give examples? If your answer is no, can you provide reasons for that?

(2) Did your school support you when you wanted to infuse technology into your teaching?

(3) What are the difficulties that you have faced while using CALL tools? What are the main reasons for not using CALL tools?

(4) Did you have the chance to observe your colleagues at your school practicing the use of technology in their classrooms?

2.3 Data analysis

2.3.1 Lesson plans, journals and the interviews

The data collected through lesson plans, journals and interviews were subjected to content analysis and code analysis through *MAXQDA version 10*. Content and code analyses were conducted on the steps suggested by Stake (1995, as cited in Schreiber & Asner-Self, 2011). The first stage included organizing the data about case chronologically and hierarchically. Then, the researcher began to categorize the data and developed categories in order to cluster data into meaningful units. As a final stage the researcher examined the data in relation to the case overall, leading to patterns and codes. During this process, the researcher collaborated with another field expert, compared the codes and patterns, discussed and made necessary changes. While providing the participants' quotations throughout the data analysis, and results and discussion sections, the following abbreviations have been applied:

Participant ID : PI
Participant group : Pre-service (Pre)/ In-service (Ins)
Gender : Male (M)/ Female (F)
Data source
Interviews : Int
Journals : Jrl
School type : Private (Pri) /Public (Pub)

In order to ensure consistency between the coders and the reliability of the content analysis, Kendall's Coefficient of Concordance Law was calculated. For critical reviews, coefficient of concordance was .863; for lesson plans prepared by the participants, it was .943; for interviews, it was .853; and for the journals kept by the participants, it was .883. All coefficients of concordance were higher than .85, leading a statistically significant reliability.

2.3.2. CALL course

FLE318: *Audio-visual aids in ELT* is an elective course offered by the researcher at the Middle East Technical University in Turkey. The most unique feature of this course was its focus on classroom applications of technology (i.e., conceptual development) rather than on technical skill development. Moreover, the focus was on preparing teachers to use technology for instruction taking SLA theories into consideration to evaluate and create CALL-based materials rather than merely focusing on the digital literacy or software specific orientation (Kessler, 2006; Kessler & Bikowski, 2011). The topics included in this course were revised taking the suggestions and comments provided the students of the course offered in the academic year of 2006-2007. As can be seen, there are three parts in this syllabus – software based applications, web based applications and theoretical information about the use of CALL; and the syllabus is mostly based upon web based applications (Table 3).

Table 3. Topics covered in the CALL course in 2009-2010

Theoretical Information	Software Based Applications	Web Based Applications
• Introduction to the History of CALL • SLA theories, Language Teaching Methodology and CALL: How do they come together? • Conditions for optimal language learning environments and CALL • Social, Ethical and Human Issues	• Creating Online Quizzes using Hot Potato Software and online quiz generation tools • Advanced use of PowerPoint: Adding Interaction • Course Management Systems: Moodle and Dokeos	• Computer Mediated Communication (CMC) (Synchronous and Asynchronous tools) • Creating and Using Blogs and Wikis in education

3. Data analysis and results

Table 4 shows the emerging tools and applications that the participants used in their language teaching practices, taking language skills into consideration. Some of the tools or websites used by the participants in their activities with their students can be used in more than one skill. The journals kept by the participants clearly showed that the participants mainly focused on the tools that helped them have the students improve their listening and writing skills, together with grammar and that PowerPoint was the commonly used software for introducing grammatical structures as well as brain-storming activities to the classrooms. In relation to the language skills, the journals and the interviews indicated that their integration of CALL-based materials particularly helped their students improve their listening and the use of grammatical structures, leading to better writing abilities. One of the participants put forward how these materials helped the students expressing that:

> My students were not interested in writing a sentence, let alone a paragraph. However, when I introduced blogs and wikis to them and told them that we were going to use them throughout the semester, they got excited. In a way, it increased their motivation. Even students unwilling to write anything in Turkish

> tried to post something on my blog or theirs. I think seeing other students write something in English led the others to write. [PI:08, Ins, M, Int, Pri]

Table 4. Sample description of how in-service teacher candidates applied CALL-based tools into their English language activities

CALL-based tool	Skill/Content	Pedagogy
Listening websites (Elllo and esl-lab) Videos (YouTube) Digital Story-telling Dokeos	*Listening/Speaking* (Audio files as well as the videos; course management)	The teacher, using *Dokeos*, published listening materials based on the audio files available on *Elllo.org* and video materials on *YouTube* and asked the students in groups to create listening questions. Then, the other students tried to answer these questions. Another teacher assigned homework in which students had to prepare a story using their own photos through Photo *Story 3*, freely available Microsoft tools for educators.
Blogs and Wikis (Blogger and PBworks)	*Writing/Grammar* (review of grammatical mistakes)	The teacher prepared a list of his/her students' grammatical mistakes and published them on their blogs and wikis. Then, s/he asked them to find any mistakes and correct them. The students worked in pairs and groups.
WiziQ	*Listening/Speaking* (Recorded online classroom session)	The teacher created an online classroom, where s/he and his/her students had a synchronous communication using the webcams, microphone and the speakers available. The topic included a story discussed last week. The session was recorded and downloaded to be sent to the students. Then the students checked their pronunciation as well as their use of grammar and choice of vocabulary.
Concordance (COCA and Jukuu) Online Dictionaries (Cambridge, Macmillan and Longman Dictionary of Contemporary English)	*Reading and Writing/Grammar* (Word choice, sample sentences and worksheets)	The teacher prepared a worksheet including the highlighted vocabulary items for class for the following week, focusing on definitions and sample sentences, using online dictionaries such as *Cambridge and Longman Dictionary of Contemporary English* and concordance website such as *Jukuu*. Then, the students reviewed the materials for the coming lesson and as a homework activity; they were required to find the synonyms and antonyms of these words using these websites.
Authoring tools (Hot Potatoes, QuizFaber and QuizStar)	*Listening/Reading* (Recording a voice and creating an activity based on the recorded voice)	The teacher recorded his/her voice using a free audio editor, *AUDACITY* and created a multiple choice activity based on this recorded voice using *Hot Potatoes*. The students, then, answered the corresponding questions and got feedback, depending on the answers that they provided.
PowerPoint as a presentation and authoring tool	*Reading and Speaking, Writing/Grammar*	The teacher provided a summary of the grammatical items using the *PowerPoint* as a presentation tool. Another teacher used pictures and ideas as a brain storming activity for the speaking topic that day, how to overcome air pollution.

In line with what the previous participant expressed, another participant explained how he infused Wikis into his writing class saying that:

> While I was thinking about how to integrate Wikis into my grammar classroom, I got a simple but useful idea. Without writing the students' names, I published mistakes frequently made by Turkish students as well as the ones made by my own students on a wiki page which I created in less than 5 minutes. I was surprised at how they were willing to correct the mistakes. [PI:24, Ins, F, Int, Pri]

The journals and the interviews also revealed that compared to the past, the participants had the opportunity to make the best of the freely available materials such as audio and video files on the Internet. One participant clearly illustrated this saying:

> When I look back to the years at the secondary school, I can say that it was difficult if not impossible to find audio materials, let alone the video materials. I remember myself trying to find graded readings to improve my English. Through graded readings, learners are exposed to and encouraged to produce varied and creative language. I know very well that my students should be exposed to input as much as possible and thanks to the Internet and the authors publishing materials. I benefited from a lot using websites providing audio materials such as Elllo and Esl-lab and many others to have my learners be exposed to varied language. [PI: 05, Ins, F, Jrl, Pub]

Some of the participants also benefited from technology to prepare their students for the nation-wide exams held and help them enter the departments of the faculties of education where their students would be a teacher of a foreign language. One of the participants explained this in this way:

> This semester I am teaching a language class where the students are willing to enter the teacher training departments of the universities. As you know, since the exam mainly focuses on the grammar, reading and vocabulary knowledge, I greatly benefited from concordance websites to create vocabulary worksheets for my students. I used concordance software to analyze the frequency of the words used in the previous exams and also encouraged my students to use these websites. [PI:23, Ins, F, Int, Pub]

The majority of the participants also expressed that they mostly used the software given together with their course books as CDs and DVDs, providing audio and video materials. Using these materials, they tried to increase their students' motivation as well as providing input. Some of the participants used websites such as VoiceThread and WiziQ to help their students improve speaking in English. Regarding how the participants improved their students' speaking skill, one of the participants expressed that:

> To me, the most difficult part of teaching speaking is to encourage my students to speak. Most of the time, they do not want to speak as they think their friends will laugh at them and considering the time allocated to the English lessons, it is not always possible to have each and every student speak in English. Then I decided to use VoiceThread website, similar to the way I once recorded my voice on a tape recorder and listened to it. At first, I asked my students to briefly introduce themselves recording their voice on the website. At the beginning, it was difficult to achieve it as most of them did not have their own computer at home. However, I managed to use the lab for that, scheduling it for my students. Now, my students frequently use it and they talk on the subject they choose. They love it. [PI:17, Ins, F, Int, Pri]

Only 5 participants had the opportunity to deliver course materials through course management software such as Dokeos and Moodle as their school environment had been already using course management systems. One of these participants expressed that

> While I was thinking that I would not be able to infuse technology although we had learnt a lot in the course, I was surprised to see that my school was already implementing tools for instructional purposes. My school had a Moodle system where teachers of English as well as other teachers were actively using it. [PI:01, Ins, F, Jrl, Pri]

However, the rest of the participants stated that they could not benefit from course management systems as the school environment and the students' access to the computer and to the Internet were very limited. They added that most of the students did not have a computer at home and the lab at their school was not available outside the classroom hours. Supporting this view, one of the participants voiced his disappointment:

> I knew that most of the public schools were not equipped with the up-to-date technology. However, it was good to have a computer and a projector in my class and I felt happy because I thought I could implement what I have learnt. I was planning to use WiziQ, blogs and other tools. I later discovered that most of my students did not have a computer at home, not to mention the Internet. Instead of leading them to spend time in the Internet cafes, I tried to benefit from the computer and the projector in class providing listening and grammar activities, though in a limited way. [PI:04, Ins, F, Int, Pub]

Especially during the interviews, another important aspect of technology integration into classroom emerged: How the participants continued learning about new technologies. In other words, could the participants move further apart from the CALL-based materials that they have covered during their training? As all we know and expect, technology changes every day and what we know today may be outdated or updated with new tools and information. Most of the participants stated that they tried to follow the journals on the integration of technology into classrooms and attended online sessions held by the famous online community of practice, Evo sessions. Some of the participants added that they got in touch with the instructor of the course on the possible uses of new technology and got suggestions through the website of the course. One of the participants clearly expressed that:

> This semester, our classrooms have been equipped with boards called smart boards or interactive whiteboards. During the lab hours of the course I had taken before I graduated, I had the opportunity to learn about these boards although not in detail. I knew the basic things about these boards. The technicians setting up these boards just showed how it worked but nothing else. Then, I just read the tutorial in English and asked for help from the people on the Internet working with these boards and got an idea on how I could use them. I think we, English teachers, are in a good position as we all know English and can figure out how things work. That is the good part. [PI:24, Ins, M, Int, Pub]

To summarize, in light of the journals and the responses given in the interviews, the participants tried to infuse technology into their classrooms

to help their students practice language skills, especially listening and writing skills, together with grammar in the classroom as well as outside the classroom. The materials supported by the integration of technology into the classroom aimed at making classroom activities more engaging and motivation for the students. Moreover, the participants in the study also found their own way to keep their knowledge up-to-date through various journals and the websites.

4. Discussion and Conclusion

Considering the findings provided in the data analysis chapter, together with what participants' responses on their journals and the interviews, it is clear that the training provided to the participants helped them infuse a variety of CALL-based materials and tools into their classroom practices. The training aimed at both providing a link between SLA theories as well as optimal conditions for language learning and building upon what the participants have learned in their previous computer courses and knowledge. A knowledge of how-to-use a computer does not necessarily imply ability in knowing how to infuse CALL-based materials into language classes appropriately and effectively. In other words, technology training which merely engage language teachers in gaining ICT skills in purely technical issues do not help develop their ability in applying technology in language teaching effectively and appropriately. There is a need for training with a certain degree of content knowledge such as the optimal conditions for language learning and SLA theories that parallel as closely to the appropriate choice of technology as possible. Therefore, the training provided in this way helped them combine language teaching activities with computer technologies, focusing on what works and what does not for their language classrooms.

Data collected at the very beginning of the study on the participants' perceived computer and technology integration knowledge indicated that the participants do not consider themselves competent especially in planning and designing learning environments and experiences. However, after the training was conducted, there were statistically significant differences in their perceived computer knowledge and technology integration. As the data were related to their perceptions, it was not clear whether this change in their perceptions would lead to better integration of technology into their classroom. The analyses of the journals and the interviews, however, showed that the participants tried to include a variety of tools covered during the training and the ones available on the Internet, based on their own evaluation. This finding is in alignment with the one suggested by Kessler and Plakans (2008), showing that teachers' positive sense of competence can lead to the use of technology in the classroom more than those who have lower competence level.

The training especially allowed the participants to infuse technology into their classrooms that helped improve their students' language skills, especially listening, and writing skills, together with English grammar. This can be attributed to the fact that teachers of English as well as EFL students can easily access the rich environment of the Internet and the websites allowing easy publishing of materials especially audio and video files. The

participants also helped their students improve their writing skill, which is generally found to be the most difficult ability after listening by the students through, blogs and wikis. Most of the participants benefited from blogs and wikis as they thought these tools would encourage their students to practice writing as well as to share their opinions and reflect on what they had learnt. These tools also functioned as an information sharing place that led to collaborative writing. As for speaking, some of the participants benefited from web-based tools such as WiziQ and VoiceThread and they were content with the results as using these tools found a way to have some unwilling students speak in class due to several reasons. However, factors such as the lack of sufficient technology and students' not being able to access to the Internet prevented the other participants to use these tools, which will be discussed in the next section.

With everything considered, it can be put forward that despite several problems and factors, the majority of the teachers integrated CALL-based materials into their classroom activities. Possible explanations for this, as also stated by Thieman (2008), include the training provided to the participants, focusing on the link between optimal language learning conditions and the use of technology for instructional purposes, as well as building on the participants' previous knowledge that greatly benefited from the previous computer courses.

Considering the technology environment in the schools where the participants started teaching upon graduation, the analyses of the surveys and the interviews indicated that all the classrooms were equipped with at least a computer and a projector, which is connected to the Internet although private schools had more access to various technologies. The majority of the participants working at public schools had limited access to the lab and the Internet compared to the ones working at the private schools, which implies that the public schools are at a disadvantage (Top, 2007). In relation to the language skills, the study showed that the in-service language teachers used a variety of tools such as WiziQ and Wikis to help their students to improve their listening and writing skills, together with grammar. The in-service language teachers especially valued CALL-based materials as they observed that these tools helped their students improve their listening and the writing abilities through online and in-class activities based on the materials available through the Internet such as audio and video files. As perceived by the in-service language teachers, the study also showed that the materials supported by the integration of technology into the classroom helped make classroom activities more engaging and motivation for the students. Regarding the discussion on the factors that affect EFL teachers' use of CALL tools in their teaching contexts, the findings showed that school policy, the available hardware and software, the use of the computer labs, time constraints and the discrepancy between the curriculum and national exams were the main factors that play an important role in technology integration. As a final note, having language teachers implement technology successfully resides in the importance given to pre-service teaching given by the faculties of education, as well as to the implementation of the desired changes in the undergraduate curriculum and in-service training to be given by the Ministry of Education and the Higher

Education Council. However, they also need to be aware of that, as stated by Hocklyon on a debate with Alan Waters (Waters & Hockly, 2012):

> Technology is not a magic bullet. … Depending on context and how it's used, technology can be effective or not, just like any other teaching tool.

Providing the necessary tools and access to technology, combined with constant support and training, language teachers will be more willing to integrate technology into their teaching contexts. As the journals and the interviews analyzed in this study show, if pre-service teacher candidates are provided with the opportunity to practice infusing technology into their subject matter and the environment where they work support them, they can manage in spite of the problems or difficulties they face or may do. The important point is that they should be given the opportunity to do as Mercer (2012, p. 28) states:

> "……. The overwhelming trend is to also accept the capacity of every learner to 'grow' and develop their abilities, possibly beyond their expectations, given the right context, environmental support, and a personal willingness to invest time and effort and engage in repeated practice"

In light of the data analysis and the discussion above, the following implications for teaching can be presented:

A course that covers integration of ICT in language teaching and learning in subject matter should be included in the pre-service English teacher education curriculum in Turkey. This course should be offered in the 6th semester of the candidates' undergraduate curriculum as most of the methodology and approaches courses on English language teaching will have been covered by that time. However, before introducing teacher candidates to the integration of technology into classrooms, they learners should be provided with the necessary skills required to use the computers properly and comfortably, which will ensure that learners will be freed from computer anxiety and negative attitudes towards computers. This can be achieved through the computer courses focusing on the basic skills of Information and communication and the Instructional Technologies and Material Development.

This course should build on the previous courses and *emphasize subject specific technology,* as stated by (Lei, 2009). In other words, the course should expose teacher candidates to a variety of technologies (Lei, 2009), taking into consideration English language teaching, methodology, SLA theories and optimal conditions for language learning. Use of instructional technology should be ongoing, rather than being treated as a part of the curriculum. This can be achieved by the active involvement of the all the staff that are in the department (Berger & Thomas, 2011). The instructors of the course offering methodology courses on English language teaching and learning should encourage the use of technology in their classrooms and be a model for exemplary practice (Larose, 2009; Meagher, Özgün-Koca, & Edwards, 2011).

Teacher candidates should be aware of the fact that technology should be used provided that it will facilitate meaningful classroom activities, rather

than an alternative to classroom teaching. They need to understand how learning technologies work and can help us to improve learning and teaching (Collins & Halversont, 2010). The key point is not the use of technology or a specific technological tool, but how it can be used to improve language learning and teaching. As Watson (2010, p.162) states, "computers are supposed to be tools to help us to think, not prevent us from thinking".

Teacher candidates and in-service teachers of English who did not participate in any training on CALL and/or do not feel competent in infusing technology into the classroom should be exposed to face to face or online training. Through online trainings, if conducted properly and effectively, many more teachers of English can be trained, which could be more practical and cost-effective. This can be done through a dedicated website for all teachers, not just English teachers, providing tutorial videos and forums for common problems and questions.

3.1 Suggestions for Further research

The participants in the study were not selected randomly and a convenience sample was used. Therefore, the study can be repeated with a larger number of participants to decrease the likelihood that the results obtained were a one-time occurrence. Moreover, the training did not include some of the tools like *Second Life* and mobile learning, which the further studies can also deal with. Moreover, there were some differences in the responses provided especially to the school environment as some of the participants worked at private schools. Therefore, future research can also focus on how the private and public schools are different in terms of technology infusion into the language classrooms. Moreover, the researcher could not have the opportunity to observe and record the sessions where the participants infused technology in their language teaching and learning activities, how the students reacted towards these materials. Therefore, the data analysis relied on the participants' self-report through journals and lesson plans. Future research can also compare what the participants reported in their journals with the recordings of the classroom practices, which will lead to a more accurate portray of technology integration into the classroom.

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