Professional Development of Computer Assisted Language Learning (CALL): Saudi Arabia Language Teachers

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Abstract

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Professional Development of Computer Assisted Language Learning (CALL): Saudi Arabia Language Teachers

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The focus of this work was to examine the preferences that male, Saudi Arabian teachers of the Arabic language have for learning about Computer Assisted Language Learning (CALL). This study questioned teachers' preferences pertaining to the fundamental aspects of CALL training. The study also assessed the degree to which teachers' level of computer experience, year of graduation, and types of undergraduate program influence their preferences pertaining to CALL training. A survey instrument, developed in English, was translated into the Arabic language for data collection. The questionnaire covered eight survey topics representing three areas of training: the structure factors of training (i.e., time of training, grouping trainees, training environment), the delivery methods of training (i.e., on job training and off job training), and the training content and skills (i.e., generative vs. generic content, the focus of content of teacher vs. student, and the technical support content). A sample of 164 teachers, from 36 randomly selected elementary schools in Medina city, voluntarily participated in the study, yielding a 76.63 % response rate. Descriptive analysis and multiple regression procedures were used to analyze the data.

The study found relatively little variation in terms of training preferences. That is, the majority of teachers preferred learning in a constructive environment, and grouped

with other teachers who teach the same grade level and have similar equipment available in their school. They also prefer on the job training rather than off job training, generative rather than generic content, and technical support to be a part of their content. Conversely, the time of training and the focus of content on teacher vs. student were characterized by relatively high variation and a range of preferences. Multiple regression was used to check if any of the demographic variables (i.e., teachers' computer experience, year of graduation, and the type of undergraduate program received), predict the training preferences. Year of graduation, computer experience, and type of undergraduate program influenced the teachers' preferences for the time of training. Jointly, they were responsible for about 26.1% of the variation in the time of training. However, there was a low ability for them to predict the preferences on the focus of content on teacher vs. student. Together, they explained about 4.1% of the variation in the focus of content on teacher vs. student.

Dedication

For my beloved wife, father, mother, children, brothers, and sisters

Because of what has been happening in the Middle East (2011-now), I would like to express my honest feelings and support to people in Syria. May Allah bless their revolution against oppression and injustice.

"If, one day, a people desire to live,
then fate will answer their call.
And their night will then begin to fade,
and their chains break and fall.
For he who is not embraced by a passion
for life will dissipate into thin air.
At least that is what all creation has told me,
and what its hidden spirits declare"
Abu Al Qasim Al Shabi, Tunisian poet, 1909-1934

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In the name of Allah (God), the Most Gracious, the Most Merciful, all the unlimited praise and thanks are to Allah, the Almighty, the exalted one, for his blessings, help, and assistance. All blessings and mercy of Allah are on the Prophet Mohammed and the other prophets; peace be upon them all.

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Chapter 1: Background of the Study

Introduction

The purpose of this chapter is to provide an overview of the research questions that are addressed in this dissertation. The fundamental focus of this work is to examine the preferences that male, Saudi Arabian teachers of Arabic have for learning about Computer Assisted Language Learning (CALL). CALL, which is defined in detail below, is an empirically supported approach for the teaching of language (Chao, Yang & Huh, 2010; Egbert, 2005; Egbert, 2010; Egbert, Paulus & Nakamichi, 2002; Egbert & Yang, 2004; Fawzi, 2010; Healey, Hanson-Smith, Hubbard, Ioannou-Georgiou, Kessler, & Ware, 2009; Hubbard, & Kessler, 2008; Hubbard & Levy, 2006; Huff, 2010; Judy & Youngs, 2006; Kessler, 2006; Kessler, 2007; Nelson & Rossetti, 2010; Ngeow, 2010; Yildiz & Tatar, 2010), but it is also the case that recipients of training are likely to benefit from it more if their learning needs and preferences are accounted for (Alshamiamari, 2008; Alshumaim & Alhassan, 2010; Egbert et al., 2002; Huff, 2010; Kessler, 2006; Kessler, 2007; Yildiz & Tatar, 2010).

Accounting for such preferences represents a novel series of questions when applying CALL in Saudi Arabia. Indeed, a search of the literature (e.g., EBSCO, ERIC, PsychInfo, Educational Abstract, and Google Scholar) was conducted during the Winter of 2012. This search identified a few studies of CALL application in the country (e.g., Alabbad, 2011; Alahmadi, 2011; Al-Maini, 2010; Alshamiamari, 2008; Alshammari & Albalawi, 2011; Alshammari, 2007; Alshumaim & Alhassan, 2010). Importantly, all of these studies focused on English as a Foreign Language (EFL) and none dealt directly

with teacher preferences for CALL training in the context of teaching the Arabic Language. This is the particular focus of this dissertation.

The chapter discusses the scope of CALL as a field. It also provides an overview of the importance of Arabic language and how it is influenced by other languages, especially English, in the age of globalization. Moreover, it discusses the government's efforts to develop Saudi teachers and digitalized education. A brief background of the study is provided, followed by the purpose of study, the statement of the problem, the significance of the study, and the research questions. Definitions of terms are addressed in addition to the delimitations and limitations of the study.

The Definition and Scope of CALL

The definition of CALL has been developed and changed over time. Levy (1997) defined it as "the search for and study of applications of the computer in language teaching and learning" (p.1). According to Beatty (2003) CALL is "any process in which a learner uses a computer and, as a result, improves his or her language" (p.133). Egbert's (2005) definition describes it as "learners learning language in any context with, through, and around computer technologies" (p.4). As defined by the TESOL Technology Standards Task Force, CALL is an acronym standing for "computer-assisted language learning; the use of computer and other digital technology to enhance language instruction" (Healey, Hanson-Smith, Hubbard, Ioannou-Georgiou, Kessler, & Ware, 2011, p. 240).

The word "Assisted" in the acronym of CALL indicates that CALL does not mean learning without the help of a teacher. It simply implies that technology is a tool

that teachers use to support language learning. Nowadays, CALL is commonly used to refer to the instructional use of all technology rather than just computer in language learning. Although computer literacy when engaged in CALL is necessary, the purpose of the approach is to promote language rather than computer literacy.

Because CALL includes all activities related to the integration of technology into classrooms, it is more than teaching or learning language with the assistance of computers. Hubbard and Levy (2006) mentioned that there are four general trends in CALL research and practice. First, production of training material directed toward teachers in the classroom; second, establishing literature in CALL at the level of research and practice; third, defining CALL practice based on language learning theories; and fourth, transferring the skills and exercises from CALL courses to the language classroom.

Overall, there are two main dimensions of these trends: First, the integration of technology in pre- service and in- service teacher education program projects and workshops, and second, the technology integration by language teachers in the classroom. Another more basic concern in CALL is the role –based framework for CALL education. Regarding this framework, the literature addresses two different roles: the institutional role and the functional role. The institutional role, or the position of CALL inside the school, includes pre-service classroom teachers, in-service classroom teachers, CALL specialists, CALL professionals, administrators, and private tutors. The functional role of CALL includes practitioners, developers, researchers, trainers, assessors, and language informants (Hubbard & Levy, 2006).

CALL is an increasingly popular topic in the linguistic field. Hubbard and Levy (2006) noted that the significance and the size of CALL as a field have been rising rapidly. Recently, there have been many recommendations to use computers in language learning and teaching. Because of this, there is no longer the concern of whether to use computers in language teaching, but rather how to use them.

Language teaching instruction has changed tremendously over the past two decades. The change occurs in two general dimensions, especially with the increase of using technology in schools. The first dimension is great interest in introducing technology in schools as a tool for teaching and learning English as a Second Language (ESL), as well as the emergence of many conferences and organizations that focus on this field, such as TESOL. This leads to a reform in the approaches of prospective teachers' preparation and a developmental program for in-service teachers. The second dimension is the proportion of other languages to English in this development, whether as a first or second language. However, the largest proportion of the evolution in the field of language and technology takes place in English as a second language (ESL) or English as a foreign language (EFL). This might be because English is the language of technology and the language the globalization; it is the most dominant language in the world.

The Future of Arabic in the Age of Globalization

The phenomenon of globalization does not merely mean the speed of the transformation of goods, services, people and ideas across continents; it also means the rapid spread of the strongest language of popular culture as Spring (2009) described in his book the *Globalization of Education*.

Arabic can be categorized into three categories: classical Arabic, Modern Standard Arabic (MSA), and colloquial or spoken Arabic. The spoken language is different from the written language on the grammar level and even in vocabulary usage (Cote, 2009). Arabic language is facing the dominance of English. The problem of dominance of English constitutes a concern for all the countries of the world including Arab countries. However, "globalization of communications … leads us towards a monolingual society… all minor language communities find themselves dependent on the English language, in particular at the terminological level" (Holljen, 1999, p. 1). The information revolution and information technology play the greatest role in the elimination of other languages. Although Arabic language is not a language of minor community, it is not isolated from the effect of English in its Arab community (Elkhafaifi, 2002).

It is evident that English has an impact on the Arabic language not only when talking about technology but in daily use as well. More than that, it is noticeable today in Arab societies that young people are writing English words in Arabic script which might lead to the duplication of language in society. Examples of this usage are computer, software, hardware, internet, wireless, cable, etc. Although these words are technology-related vocabularies, the widespread use of English goes beyond that to some daily use words such as Okay, group, stop, tire, etc. Moreover, these words pluralized using Arabic rules (Arabic morphology) to change the structure of words from singular to plural. For example, they say: "groupat" instead of "groups" when talking about three or more groups.

There is no doubt about the effect of globalization on the languages; globalization threatens all the existing languages of the world including the Arabic language in spite of its dependence on religious and national factors for survival. It is the language of the holy book, the Qur' an, the Islamic Sacred book and the language of 22 countries. Cote (2009) stated that Arabic is one of the fastest growing languages in the world. It is spoken by more than 400 million people in twenty four countries and the fifth most widely spoken language in the world.

Various factors contribute positively or negatively to the influence on the Arabic language. Negatively, globalization and technology are considered the main of these factors. Another factor is the dominance of English as a universal language and its impact on Arab societies due to these factors. On the other hand, the sanctity of Arabic for all Muslims around the world and its relation to the religious factor is a positive factor help Arabic not only for survival, but widespread use.

Given these points, the key question that faces Arabic nations is how to harmonize the impact of globalization while engaging in it as a reality and preserving the national identity which uses the language as a main factor for survival.

Language Instruction in the Kingdom of Saudi Arabia

Arabic language is the medium of instruction in Saudi school. In Saudi elementary schools, students learn to read in grades one through three while they then read to learn in grades four through six. The act of reading to learn continues until the end of grade 12, which is the last grade of high school (Othman, 1997). The elementary national reading curriculum in Saudi Arabia provides for the sequential development of

reading skills. Reading and literacy development goes through four stages: readiness (pre-reading), initial reading and decoding in the first grade and the middle of second grade, consolidation and fluency in the second and third grades, and reading to learn in fourth grade through sixth grade (Al-Jarf, 2007). Reading plays an essential role in connecting all subject matters with Arabic language in teaching children during elementary school in Saudi Arabia.

Al-Jarf (2007) conducted her research, *Developing Reading and Literacy in Saudi Arabia,* and found that the reading program in Saudi elementary schools is derived from the philosophy that spoken, read, and written language have to "flow naturally from the child and must be used in meaningful ways to communicate real needs. The basal readers use a balanced approach: analytic, synthetic, and whole word phonics, whole language and language experience" (p. 14-15). In addition, Al-Jarf (2007) criticized the currently applied instruction in elementary reading. She found that the elementary reading instruction is whole-class instruction with a lack of individualized instruction to reach each student's needs at all reading levels including accelerated and frustration level. In addition, the reading program "emphasizes word identification, comprehension and vocabulary acquisition" (Al-Jarf, 2007, p.15).

Reading instruction in Saudi Arabia is based on traditional basal reading instruction, which focuses on identical books and other supplemental material for each grade throughout the country. Although the method of teaching reading is left to the teachers' selection, they are expected to follow the guidelines that have been addressed in the teacher's manual by The Ministry of Education. As a result, many teachers are

concerned about finishing the reading content in the timeframe given in the study plan (Tarabishi, 2002).

Teachers' Development and Technology in Saudi Arabia

In developed countries, technology plays a main role in the classroom. Many of the learning goals have changed due to technology. Teachers' roles have also changed; they have become learning facilitators and supervisors. Teachers and text books are no longer the only sources of knowledge. Rather, Sunal, Scheffler and Sunal (1995) (as cited in, Alzamil, 2003) explained that technology is expected to take a center role in the reform of education.

Technology integration leads to changes in teaching methods to correspond with the modern style of acquiring knowledge. The Saudi Embassy in the USA (2002) (as cited in, Alzamil, 2003) mentioned that change in the teaching methods was the reason for the huge change in human life during the past two generations in Saudi Arabia. The Ministry of Education has recently paid more attention and exerted a lot of effort to reform the Saudi educational system to prepare Saudi students for the twenty-first century and improve the quality of education.

Teachers' development and technology in Saudi Arabia can be addressed in four dimensions: teacher recruitment in Saudi Arabia and the quality-chain reaction, Teachers' preparation programs, government efforts, and the recent efforts of The Ministry of Education,

Teacher recruitment and quality: A chain reaction. Saudi Arabia has gone from a poor country to one of the richest countries in the world. Government efforts have

been made to provide educational services for every citizen. The number of state-run school teachers needed by The Ministry of Education is rapidly increasing because of the huge land area of the kingdom and the spreading out of citizens all over the country. Teaching was among the best job choices for most high school graduates in Saudi Arabia. Al-Hazmi (2002) mentioned that although teaching is described as an inadequate and non-systematic service, prospective teachers were the most popular choice of service for most students who graduate from high schools.

For many years, The Ministry of Education hired untrained teachers in order to meet the increased demand of teachers and schools to provide education for every citizen. Because of the lack of Saudi teachers, the government sought out a partnership with some Arab countries to fill the increased demand for teaching positions. The ranks of teachers were filled mainly by Egyptian teachers (Jordan, 2011). Along with these efforts, The Ministry of Education as well as all the ministries in the kingdom worked hard to Saudize educational jobs, but this was at the expense of the quality of education and the quality of teacher preparation (Al-Hazmi, 2002).

Teachers' preparation programs. Saudi teachers graduate from various colleges and universities and receive training from various undergraduate programs. Not all these programs are designed for teacher training. Because of this, teacher qualifications, for many years, have varied from a bachelor degree from a teachers' college or a college of education to a bachelor degree from a literature-based Arabic program. Moreover, even someone with a background in Islamic studies could become an Arabic language teacher.

Alahmadi (2011) has believed that Saudi education is a hierarchical educational system and that Saudi learners are exam/certificate-oriented.

Today, there are over 23 colleges and universities that prepare teachers in Saudi Arabia. All of them provide at least one technology course, which is not sufficient for preparing pre service teachers for three reasons. First, an individual technology course has limited value. Second, most technology courses focus on teaching software and hardware and lack ideas for integration of technology into teaching. Third, content is not in line with the evolution of technology; it is out of date content (Alhawiti, 2011).

The researcher, as an ex-Saudi teacher, would argue that 2005 was a turning point in hiring Arabic language teachers. Before this time, there were more vacancies for Arabic language teachers than teachers' candidates. However, the situation changed when The Ministry of Education closed this gap and met the demand for Arabic language teachers. Now, it is in the stage of systematic vacancies. That is, hiring is restricted to opening new schools or replacing old teachers with new teachers in case of retirement, death, or firing.

Al-Hazmi (2002) mentioned that it is not enough for English preparation programs to provide only one methodology course. The same can be said for Arabic language preparation programs. If we include literature-based programs provided by non-educational colleges, the problem becomes very complicated. Not all Arabic language teacher programs provide a sufficient clinical practicum.

The high demand for qualified teachers has pushed colleges of education to invest in in-service programs alongside pre-service programs. Administratively, over eighteen

teachers' colleges were moved from being under the umbrella of The Ministry of Education to The Ministry of Higher Education and were incorporated into closer universities in the kingdom. Recently, colleges of education in Saudi Arabia offer opportunities for in-service teachers who graduated from non-educational programs to pursue graduate studies and seek a one-year diploma in education.

Government efforts. The General Authority of Shura Council in Saudi Arabia discussed adopting a system of practicing the teaching profession in the kingdom proposed by the Committee of Academic Affairs and Research. The proposed resolution and system required prospective and current teachers to obtain a teaching license, which would be valid for a period of five years, and stressed the renewal of the license upon its expiration or no later than one semester after its expiration (Riyadh newspaper, April 21, 2011).

Alzamil (2003) stated that officials in The Ministry of Education in Saudi Arabia have begun to realize the valuable role of technology in education, which leads to the implementation of technology in the different areas of education to gradually shift from conventional to modern classrooms. He also continued that The Ministry of Education has provided schools with computer labs to help students benefit from the shift through computer training. In addition, many companies and organizations that work in the field of education have begun supporting the use of technology in classrooms (Alzamil, 2003).

The Ministry of Education faces many challenges and barriers with integrating technology into Saudi Arabian schools. Some of these barriers are related to teachers' attitudes and efficacies while others are related to software availability. The main

concerns of The Ministry of Education are changing Saudi teachers' attitudes toward technology, training them and developing their technological skills, and providing schools with appropriate software and technological devices.

A language teacher's job is one of the most innovative in Saudi schools today. The Ministry of Education encourages language teachers to increase their use of technology in their classrooms. To that end, The Ministry of Education conducted many professional development programs focusing on technology and education (The General Administration for Developing Teaching Techniques and Learning, 2010).

The Ministry of Education in Saudi Arabia has developed a number of projects in order to integrate technology into education: WATANI, Nooor, and Learning Resources Center (LRC). WATANI is an educational project that provides country-wide schools with a network to link all schools together. It is designed to use the computer and internet in education (Almaraee, 2003). Nooor is a project that provides schools with Internet-based curriculum. It is a part of the WATANI project, but it seems to lack all psychological, technological and philosophical aspects. Nooor simply scans text copies into computers (Almaraee, 2003). The Learning Resources Center's goals are to provide students with a proper educational environment and to provide teachers with a variety of learning resources. Moreover, it enhances teachers' research and opportunities for exploring. Furthermore, the Learning Resources Center helps teachers learn new strategies and then use them when teaching and evaluating students (Almaraee, 2003).

These projects face the major obstacle that in-service teachers are unprepared to use the computer as an educational tool in their curriculum. In addition, pre-service

teachers lack training in their program. With all the efforts of the Ministry of Education, the reality shows that integration of technology in Saudi pre service teacher programs is a step behind other kinds of development in the kingdom (Robertson & Al-Zahrani, 2012). Thus, training teachers is one of the challenges that The Ministry of Education faces (Almaraee, 2003).

The recent efforts of the Ministry of Education. The quality of education was and still is the main topic in Saudi schools, but nothing is more important than the quality of teachers and education. The Ministry of Education paid great attention to develop general education teachers in all the educational operation aspects as well as the teachers' technology knowledge and skills. Recently, the ministry has increased its programs in terms of quantity and quality. Starting in 2008, the ministry's operational plan included a number of projects related to educational technology, assessment techniques and evaluation.

As an administrative step, The Ministry of Education established the General Administration for Developing Teaching Techniques and Learning. It aims to achieve a quantum leap in the teaching and learning processes, through the integration of technology into education, in order to support educational development in public education. It also aims to provide schools with various digital educational materials with their necessary standards along with providing devices that will be used to educate students.

The General Administration for Developing Teaching Techniques and Learning has worked to develop the techniques of teaching and learning by the implementation of

several developmental projects in the field of integration of technology in Saudi education. Among these projects are the development of school libraries to include learning resource centers, converting textbooks into digital formats, centers of educational technology, educational support materials, teaching studio, and the Journal of Educational Technology (The General Administration for Developing Teaching Techniques and Learning, 2010).

The development of resources of knowledge makes the textbook no longer the only source of learning. Many factors lead to much pressure to reform Saudi education. Among these factors are the great development of educational theories and modern global trends towards individualized instruction, taking into account individual differences, making the learner the center of the educational process, and the evolution of the role of the teacher to guide and become facilitator of the learning process. The close correlation between the sources of learning and the curriculum goes beyond the enrichment and cultural role of public school libraries to an essential role to achieve the curriculum goals and objectives and leads to the conversion of school libraries into learning source centers.

For a long time, the interests of school libraries have been limited to the administrative and technical aspects: book supply, indexing, and classification. The Ministry of Education has become aware of the urgent need to integrate libraries and learning technology sources into Saudi schools. There, they all become a single entity and must be viewed within the comprehensive framework of planning; the overall components of this entity must also be taken into account. So, the ministry converted

school libraries into Learning Resource Centers (The General Administration for Developing Teaching Techniques and Learning, 2010).

By 2010, The Ministry of Education established 3,027 Learning Resource Centers in all regions of the kingdom. In the same year, it began to offer a diploma degree of learning in resource centers in a number of teachers' colleges as well as training in-service teachers, principals and advisors in the school that have been chosen for the pilot phase of the implementation of this project (The General Administration for Developing Teaching Techniques and Learning, 2010).

The project of converting textbooks to digital formats is limited to the transformation of textbooks to pdf documents. This project aims to provide each student with a copy that can be searched and edited. They are also uploaded to The Ministry of Education website (The General Administration for Developing Teaching Techniques and Learning, 2010).

The ministry established centers of educational technology, which are administrative, technical and educational departments in the public administrations. They are interested in the assessment of the reality of teaching techniques and identifying the problems and proposing the appropriate solutions and implementation. It also established fourteen teaching studios that take into account the geographical distribution of the regions of the kingdom. These teaching studios aim to produce educational materials and share produced materials among all the public administrations of education in the kingdom (The General Administration for Developing Teaching Techniques and Learning, 2010).

Educational support materials are produced by private companies. In this area, The Ministry of Education trained forty companies and foundations, whereas it gave licenses and accreditation to twenty nine educational support materials. In addition, the ministry is working on the first issue of Journal of Educational Technology. The journal website has been booked and is currently under construction in preparation for its launch at the beginning of the next academic year (The General Administration for Developing Teaching Techniques and Learning, 2010).

In order to prepare test forms and educational outcomes, The Ministry of Education, represented by The General Administration of Educational Quality and Evaluation, established a project for creating tests of basic competencies and efficiencies for teachers (The Ministry of Education, 2008).

The Purpose of This Study

The purpose of this study is to examine elementary school teachers' preferences for how to best apply in-service training on CALL. That is to identify Arabic language teachers' preferences for CALL training. This research assesses teachers' level of computer experience, year of graduation, type of undergraduate program, and their preferences pertaining to CALL training. This includes time of training, grouping trainees, training environment, on the job training, off the job training, the focus of content on teacher vs. student, generative vs. generic content, and technical support content. It then aims to test the relationship between levels of computer experience, year of graduation, and undergraduate training on preferences for CALL training.

Table 1

Variables used in both descriptive analyses as well as predictor modeling.

No.	Area of training	Survey topics (Dependent variables)	Independent variables (predictors)
1.	The structural factors of training	• Time of training • Grouping trainees • Training environment	
2.	Delivery methods	• On the job training (school-based training) • Off the job training	• Computer experience • Year of graduation
3.	Content and skills	• The focus of the training content and skills on teacher vs. student • Generative vs. generic content • Technical support	• Type of undergraduate program

Table 1 provides an overview of variables used in both descriptive analyses as well as predictor modeling. Details are in Chapter 3.

Statement of the Problem

Focusing on state-run boys' elementary schools, this study identifies the Saudi male teachers' preferences for CALL training. Consequently, this research attempts to learn about preferred CALL training for language teachers from Saudi teachers'

perspective. The major goals of this study are: first, to discover an effective way of providing language teachers with training in technology; and second, to reveal the type of training needed for teachers to transfer their knowledge to language classrooms.

The Significance of the Study

It is hoped that this research, coupled with further research and studies, might provide a starting point in providing fundamental concepts and theoretical frameworks for the design and evaluation of CALL training for Arabic language teachers. The overarching purpose of this research is to identify effective approaches for training teachers to use technology for language teaching in an exemplary manner. Through an understanding of the present situation in the Saudi state-run boys' elementary schools, this study discusses the fundamental aspects that CALL training should accommodate for Arabic language teachers. Moreover, it focuses on the principles that should be taken into account when designing CALL training for Arabic language teachers and deciding the most effective way to integrate technology into the in-service classroom of Arabic language teacher.

The importance of this study can be viewed from several other dimensions:

- Identifying the need and the importance of technological and pedagogical consideration in any technology training that can be offered for Arabic language teachers in Saudi Arabia.
- As noted above, this is a new area of study in terms of studying CALL and taking into consideration the Arabic language. All of the previous studies conducted in

Saudi Arabia are about EFL (e.g., Alabbad, 2011; Alahmadi, 2011; Alshamiamari, 2008; Alshammari, 2007).

- The predictors used in the study have not been tested to predict the teachers' preference about CALL training in Saudi educational contexts.
- Fulfilling the need to spread out the culture of developing teachers among elementary school teachers, especially language teachers.
- The need to prepare a list of competencies necessary for technology training and CALL training to be a tool to evaluate future training.
- To provide the decision makers in general education with theoretical framework and guidelines for how teachers should be trained.
- To develop training aspects that can be adopted by teachers' colleges and teachers' training institutes as a guideline and theoretical background in designing new training approaches.

Research Questions

Through surveying in-service Saudi teachers' preferences about the fundamental aspects of CALL training, this study attempts to answer the following questions:

Q1) What are the Arabic language teachers' level of computer experience, year of graduation, and undergraduate program, as represented by the sample?

Q2) What are the teachers' preferences on the fundamental aspects of CALL training provided to Arabic language elementary school teachers? That is, what are their preferences about time of training, grouping trainees, training environment, off the job

training, on the job training, training content and skills focus on teacher vs. student, generative vs. generic type content, and technical support content?

Q3) Does computer experience, year of graduation, and/or type of undergraduate program predict the Arabic language teachers' preferences for the CALL training they receive? If yes, is there any interaction between the predictor variables?

Definition of Terms

The following are definition terms of this study:

- CALL: As defined by Healey et al. (2011), it is an acronym that stands for "computer-assisted language learning; the use of computer and other digital technology to enhance language instruction" (p. 240).
- Arabic language: In this study, Arabic language means the Modern Standard Arabic (MSA), defined by Suleiman (1985) as "any variety of Arabic that is found in contemporary books, newspapers, and magazines, and that is used orally in formal speeches, and learned debates in newscasts over radio and television" (p. 7).
- TESOL: as defined by Healey et al. (2011), "Teacher of English to Speakers of Other Languages, an international professional association for such teachers" (p. 245).
- Saudization: "Slowly replace foreign expert [teachers] with Saudi expert [teachers] until all the enterprise has been Saudized" (Jordan, 2011, p. 77).
- Training duration: It is the number of total training hours.

- Training intensity: It is the overall length of training time span and frequency of training session.
- Computer experiences: A teacher's computer experience is defined by the combination of computers used daily to support classroom instruction and teachers' evaluations of their computer experience.
- Generative content: It is the content that is authentic and readily transferable to a classroom setting.
- Generic content: it is the general content that is not focusing on specific skills or specific subject

Delimitations

This study is delimited to three criterions a participant and subject must meet in order to be included in the study. The participation in this study is delimited to teachers who (a) teach in state-run boys' elementary schools, (b) are male teachers, and (c) are current Arabic language teachers.

Limitations of the Study

This research faces a major limitation of identifying how this research fits the accumulating knowledge in the field of CALL because of the lack of literature written about Arabic language and technology. Comparing this research to other CALL research is limited to the research focus on adult learning technology and the similarity between Arabic and English in which both are alphabetic languages. They both consist of letters and words, and the sentence structure consists of subject, verb, and object with a different order. So, the ideas, skills, etc. remain similar in both languages.

The findings of this study might be limited by the following:

- Since no previous studies on the principles of technology training designed for Arabic language teachers have been conducted, this study is missing a research guideline and questions to be used as a starting point or comparison in this study.
- This study focuses on Arabic language, male teachers in Medina city in Saudi Arabia, which makes it less generalizable to the entire Saudi context or female teachers in the same city; however, those teachers share other characteristics with the rest of the teachers in the kingdom. Some context about teacher education programs of the country can offer some useful details about generalizing findings from a single city to the entire country. The Ministry of Education in Saudi Arabia has developed a highly standardized, universal teacher preparation program. Because of this reason, logical generalization (i.e., not probabilistic) may be possible. That is, although the sample was not reflective of all male teachers in the country, whatever is learned from it may nevertheless be somewhat reflective of teacher preferences about CALL training. There is of course limited capacity to empirically justify this conjecture; hence the reason for listing this as a limitation.
- It is limited to Medina city in Saudi Arabia.
- It is also limited to three independent variables (computer experience, type of undergraduate program and year of graduation).

Summary

This chapter offers a brief overview of the background of the current situation of the Arabic language in the age of globalization and the current requirement of language teachers. The fast move to global curriculum requires global teachers. In the era of globalization, the development of Arabic language teachers is needed more than ever. Technological development in all aspects of life is the reason for developing teachers, but at the same time, it is the method in which they are developed. Developing teachers' technological skill takes a great interest in the field of education and linguistics.

The definition of CALL is extending to include new aspects over time. It is more than teaching language by using a computer; it includes the use of all technology. CALL, in general, has two main dimensions: the integration of technology in pre- service and in-service teacher education program projects and workshops, and the technology integration by language teachers in the classroom. As a result of the growth of CALL in both size and importance, the field of CALL has its own standards (e.g., TESOL Standards). It depended on language teaching standards and technology standards until TESOL standards were created.

The Saudi government represented by The Ministry of Education made immense efforts to develop teachers and education. The Ministry of Education has developed a number of projects in order to integrate technology into education: WATANI, Nooor, and Learning Resources Center (LRC).These projects face the major obstacle that in-service teachers are unprepared to use computers in their teaching. Starting in 2008, The Ministry of Education has made recent efforts. Its operational plan included several projects to

develop educational technology, assessment techniques, and evaluation. The projects include, but are not limited to, converting textbooks into digital formats, centers of educational technology and The Journal of Educational Technology.

More importantly, the chapter closes with an overview of the purpose of study, the statement of the problem, the significance of the study and the research questions. It also goes through the definitions of terms, delimitations and limitations of the study. They are addressed in separate parts in depth.

Chapter 2: Literature Review

Introduction

The literature review begins with of the theoretical framework which takes three axes: the evolution of the curriculum theories, principles of adult learning theories, and constructivism as a model for integrating technology into higher education classrooms. This chapter also addresses the adoption of CALL in limited context focusing on the optimal CALL environment and the current situation of technology and CALL in Saudi Arabia. The literature about CALL in Saudi Arabia is addressed to show patterns in methods, subjects tested, results reached, and conclusions drawn about CALL in Saudi Arabia. The literature then switches to technology and language teaching and focuses on the importance of developing and training teachers in order to improve education.

This section also addresses aspects of the literature review that are directly related to the study goals and topic. It is executively summarized by the fundamental aspects of technology training. It presents that factors have a great impact on teachers learning technology and then their implementing and transferring the knowledge gained from training into their teaching classroom. As identified in existing literature, these aspects can be categorized into three main factors: *Structural factors of CALL training* as represented by time of training, grouping trainees, and training environment; *delivery method of training* as represented by 1) on-job training: follow–up training, mentoring, and One-on-One training, and 2) off-job training: traditional training and one-shot training; and *training content and skills* as represented by types of content and the level of skills, generative vs. generic content, and technical support.

Theoretical Framework

For many decades, educators have studied how learning occurs in order to end up with the best instruction for students. Learning models, as result of these studies and efforts, can be classified historically into four primary models of learning: Behaviorism, Cognitivism, Constructivism, and Humanism. As such, the curricula go through historical changes represented in four sequential periods: the traditional period, the conceptual-empirical period, the reconceptualization period, and finally, the interdisciplinary studies and internationalization period.

The theoretical framework for this research addresses three important themes: first, the development of curriculum theories, the change in the definition of the curriculum, and curriculum historical stages up to the today's interdisciplinary studies and internationalization; second, a brief review of some of the principles of adult learning theories; and thirdly, addressing in detail constructivism as an ideal learning model to integrate technology in higher education classrooms.

Development of curriculum theories. Curriculum has been developed and changed over time in terms of its definition and theories. These definitions and theories are always changeable and questionable and have been the target of some criticism (Flinders & Thornton, 2009). Over time and through all the efforts of curriculum theorists, curriculum definition debated in the discussion and criticism of curriculum theories. It is the starting point and the ground zero of all the curriculum theories and models.

According to Wiles (2005), Frankin Bobbitt looked at the curriculum as an *experience*. He stated that the curriculum is that series of things that children must do and experience. Many years after Bobitt, Ralph Tyler and Hilda Taba looked at the curriculum as a *plan*. Ralph Tyler stated "the curriculum is all of the learning of student that is planned and directed by the school to attain its educational goal." Hilda Taba affirmed that "the curriculum is a plan for learning." Elliot Eisnebvccr said "the curriculum of school can be conceived of as a series of planned events that are intended to have educational consequences for one or more students" (Wiles, 2005, p. 5).

In addition, the curriculum was defined as an *outcome* by scholars such as James Popham. According to Wiles (2005), James Popham's curriculum "is a plan learning outcome for which school is responsible" (p. 6). The oldest and more traditional definition of the curriculum is that curriculum is the *subject matter*. Some other curriculum theorists looked at curriculum as a context. This was the curriculum definition of Philip W. Jackson (1968) in his book *Life in Classrooms*, and before him, John Dewey (1938) in his book *Experience and Education*. Regarding the curriculum as a context, the curriculum extends to include the hidden curriculum as first mentioned by Philip W. Jackson (Jackson, 1968). However, the curriculum definition has been developed until it came to include all educational experiences offered by the school for pupils both inside and outside schools. It includes all the previous definitions.

Traditional theories and traditionalist scholars (1918-1969). This period started when John Dewey (1896) opened the University of Chicago Laboratory School to demonstrate alternative teaching methods and when Franklin Bobbitt (1918) published

his book *The Curriculum*, which was the first text in curriculum (Wiles, 2005).They are influenced by the nature of that era, which was the industrial age. According to Flinders and Thornton (2009), their works established and formulated the curriculum field and their writing is not only worth revising from time to time but also serves to provide enough historical information "to appreciate the antecedents and changing social contexts which the field's contemporary theories are rooted" (p.3). They are focusing on the content rather than the way it is delivered. The role of teachers is more important than the role of students. They also emphasize the rational and logical order of the content. In addition, they look at education as a practice rather than an art. Teachers have to have a good knowledge about the content and the students' evaluation. Students are passive and information receivers. It is easy for governments to centralize the curriculum in the traditionalist approach.

Conceptual- empiricists (started in 1960s). The Conceptual- Empiricists movement came as a result of the United States' criticism of the educational system after the Second World War and the Soviet Union's launching of Sputnik in 1959. This forced the U.S government to reform its education. Conceptual- Empiricists are measurement- and research-oriented. They question the content and focus more on the method of teaching. The content has to be organized in such a way that it is easily understood by the students. They emphasize experiment in learning, scientific thinking, critical thinking and problem solving methods. They are more focused on students' mental development and the process of mental development.

Reconceptualization period (started 1970s). The reconceptualists and Reconceptualization theory came in the 1970s as a reaction to the Empiricists' scientific and technological approach. Reconceptualists critique the Empiricists' focus on math and science and ignore the other subjects. Focusing on math and science was at the expense of the other subjects. It was at the expanse of teaching students' values, beliefs, human rights, etc. They believe that the current educational system enslaves students to a certain political and social system. They move from applying the scientific method in education and focusing on math and science to social science and humanity perspectives. Reconceptualists focus on human freedom and giving students freedom to choose their individual goals. They concentrate on the environment that provides students with the liability to practice their individual choices. They believe that learning is a process of self-actualization. Unlike Conceptual-Empiricists, they look at the students as a whole rather than focusing on only mental development (Flinders & Thornton, 2009).

Critical/Interdisciplinary studies and internationalization (2000-present). The need for global curriculum, global teachers, and global students has increased because of the global competence and the new requirement of the era. Spring (2009) mentioned that education has been impacted by many institutional players that have shaped education in recent years. These institutional players are the United Nation, the World Bank, UNESCO, International Nongovernmental Organizations (INGOS), Multinational Learning Corporations, and the Organization for Economic Cooperation and Development (OECD).

The fast move to global competence requires global curriculum and lifelong learning. Lifelong learning is one of the most important requirements of today's teachers in order to be able to prepare their students to be global citizens. Lifelong learning requires the fundamental education "that includes (1) learning to know, (2) learning to do, and (3) learning to be" (Spring, 2009, p. 70). In developing curriculum, three elements should be considered in order to have continuous development: society (understand the social institution), environment (being aware of the resources and the weakness of the physical environment) and economy (taking into the account the limits of fund resources) (Spring, 2009).

Zhao (2010) mentioned that education faces many challenges in the age of globalization. The challenges are global competitiveness, international testing and the globalization of educational standards and practices, and migration and the changing student population. Zhao (2010) also asserts that schools' responsibility in the age of globalization is to handle all the challenges to reach the desirable result of the ability of children to live in a global society by mastering the 21st century skills.

According to Flinders and Thornton (2009), Eisner states "the function of schooling is not to enable students to do better in school. The function of schooling is to enable students to do better in life" (p. 329). He also states that "we should be trying to discover where youngster strengths are and where additional work is needed" (p. 330). Integration of new technology into classroom leads to changes in teachers' roles, teaching style and method of teaching. In this cognitive acceleration time, our education has to lead to a high level of thinking. Adey (2006) stated that teachers must have an

understanding of approaches and principles that they can apply to rearrange their classroom structure.

Testing students is not the best method for a student's evaluation. Since the curriculum goal is preparing students for life, receiving a good grade could be meaningless in achieving this goal. Life is the real measure of student educational achievement. According to Flinders and Thornton (2009), Eisner stated that "it is not getting good grades in courses; they all get good grades in courses. Their biggest obstacle is in framing a dissertation problem [....] in a school that is doing well, opportunities for the kind of thinking that yields good questions would be promoted" (p. 331).

As a field initially emerged from the combination between language and technology, CALL is one of those fields which are overlapping that characterized this period of education. This is due to the tremendous technological development and seeks to take advantage of technology in the field of language teaching and learning. There is no doubt that this is closely linked to the needs imposed by globalization and international competition.

How adults learn. Adult learning theories are characterized by developing a new framework different from those previously used in education. They are a new knowledge revolution that impacts teaching and learning process, and they change the relationship between teacher and student. Adult learning theories also affect both curriculum and instruction. The teacher is the one who sets all stages of the learning objectives and curriculum and then the method assessment. However, adult learning theories move some of this role to the students. The title of this stage of education becomes student-centered

learning. This framework is consistent with the prevailing view of humanity at that time. These adult learning theories include but are not limited to Andragogy (M. Knowles), Characteristics of Adults as Learners (CAL) developed by K. P. Cross, Experiential Learning (C. Rogers), Functional Context (T. Sticht), and Minimalism (J. Carroll).

Some of the educational premises have been derived from these theories. Collectively, these premises are the title of the next phase of education in spite of the differences between these theories. Based on these theories, the learners must be aware of the reason behind what they are learning, but more importantly they should be involved in the decision to determine the content. In addition, subject matter must be directly linked to the learner. Learning occurs through passing experiences. One's previous experiences, including mistakes, are sources of educational content and curriculum. It is problem-based style learning.

Since education is student-centered, it must take into account the students' personal characteristics as well as other characteristics when designing a program for adult learning. Thus, Cross's (1981) model, Characteristics of Adults as Learners, contains two types of variables: personal characteristics and situational characteristics (Cross, 1981). According to Kearsley (2003), although there is a lack of research to support Cross's model, this model provides us with a guideline for adult learning programs.

Rogers divided learning into two types: cognitive learning, which he describes as meaningless, and experiential learning or learning that is significant (Combs, 1982). Since adult learning should be experiential, teachers are not only the source for education

but have to be facilitators for the process of learning. Thus, the teachers' role is to create a proper learning environment, clarify the goal of learning to the student, and provide students with the necessary resources for learning as well as make learning based on the principle of participation. Thus, the importance of full participation from the learner in all the steps of learning is a concentration of Roger's theory. The approach relying on the experience is derived from the learner's personal, practical and social problems as well as the problems derived from researchers. Roger's model as summarized by Kearsley (2003) stressed self-initiated learning and a threat-free environment. The more we reduce external threats, the easier assimilation becomes and the faster, more lasting and more pervasive learning becomes.

Sticht's Model (1997) stressed several principles that show the importance of linking new experiences with learners' working context and the importance of relying on the previous knowledge as a tool for learning new knowledge. Sticht's Model shares with the Situated Learning Theory the same emphasis on the importance of the role of environment in the learning operation. Although this model is applied to the teaching of basic skills, it is commonly used by the U.S. Department of Labor and Department of Education in on-job training programs (Kearsley, 2003). One of the most distinguishing features of this model from other models in adult learning is the method of evaluation, which must distinguish between functional learning and academic learning.

The theory of Minimalism developed by Carroll is one of the latest theories with a focus on designing training programs for the use of computers in adult learning. Carroll built his theory upon the basis of Andragogy and experiential learning theories (Kearsley,

2003). General principles of Minimalism are similar to principles of these two theories in terms of type of content and instruction. From Carroll's (1990) viewpoint, the training content must be meaningful from the outset, include self-contained activities and be free of dependent sequence. Training materials must be based on the recognition of errors. In addition, training content must be closely linked to the system which training is made for. In terms of the instructions and methods of teaching, they must be self-directed. Carroll also supports the main principle that most adult learning theories and constructivism theories are based on, which is the idea that the mind of the learner is not a blank slate that can be filled with the wanted information. As cited in Kearsley (2003), Carroll (1990) stated that adult learners "don't have funnels in their heads; they have little patience for being treated as "don't knows" [. . .] new users are always learning computer methods in the context of specific preexisting goals and expectations" (p.11). From here, Carroll emphasizes the importance of reducing the passive form of education, such as reading, and focusing on activities that support self-directed learning.

Constructivism theories. Learning theories are categorized into four groups that include Behaviorism, Cognitivism, Constructivism, and Humanism. Some educators categorize them into three groups and look at constructivism as a part of cognitivism. Different learning theories look at learning from different perspectives. For example, Multiple Intelligence theory asserts that human intelligence has to be taken into account in learning because of its complexity. On the other hand, constructivism says that knowledge is constructed, while Situated Learning Theory perceives that learning happens in social contexts. Constructivism received a recommendation to be the most

appropriate theories for integrating technology into higher education programs (Witfelt, 2000).

Basic concepts. Among these theories and models, constructivism is a theory about the philosophy and style of knowledge-building steps. Constructivists focus on the learner's thinking about the learning rather than the message or the subject to be taught. The learner interacts with the message he/she receives and then builds a unique understanding. Constructivism has two fundamental assumptions: Knowledge is constructed and knowledge is adaptive.

Knowledge is constructed. Knowledge is not acquired in a passive way, quoting from the others, but it is actively built by individuals themselves. The ideas and beliefs are not transmitted by sending them from one to another like a mailed package sent by one individual to another. Constructivism denies the principle of the transfer of knowledge (Knowledge Transmission) as a tool and source of acquisition. Therefore, we should not put ideas in the minds of students, but they must build their own unique meanings of the ideas. Contact we have with others does not lead to transmission of our ideas to them, but interpretation may raise different implications for each individual student (Wheatley, 1991). This is the main assumption to be adopted by constructivism, which generally aims to create knowledge structures and fit the experimental world.

Knowledge is adaptive. The function of the cognitive process is adaptation (Adaptive). It is to organize the world and its services, not to discover the truth of the absolute existential world. Constructivists see that the function of knowledge or true

knowledge does not stem from being a match for existential truth, but in being useful and helpful for the individual to interpret what is happening through his/her life experiences.

Constructivist theories are the educational approaches mostly advocated by educators in the modern era; these theories share cognitive theories in many ways but are characterized by their emphasis on learning through real contexts and focus on the importance of social dimension in creating learning. Generally, the constructivism perspective of learning confirms that learners interpret the information and the world around them based on their personal vision. Learning occurs through observation, treatment, explanation or interpretation and then is adapted. The adaptation of information is based on the knowledge structure of the individual. Individuals learn in realistic contexts and direct applications in order to create their own meaning (Anderson & Elloumi, 2004).

Constructivism approach has several ways of learning. Piaget, (1960) and Bruner (1990) confirmed that what happens in a learner's mind must be built by the individual through knowledge discovery with a focus on the process of assimilation and accommodation of knowledge. Making sense of meaning is related to the interpretation of the individual.

Dewey emphasizes that learning occurs through activity, experience, and the connection between things. He also focuses on the interaction with the environment, including society. Learning is an active process for building knowledge, not the acquisition of knowledge. In addition, knowledge is not limited to the mental state but goes beyond that to the experience in relationships between things which have no

meaning outside of these relationships (Dewey, 1910/1981). From another perspective, Vygotsky offers Social Constructivism, which emphasizes that cultural and social context influence the learning of children through interaction with their peers, parents and teachers in the cognitive development.

Learning is an active building process that cannot be acquired in passive ways. Knowledge can be built in a social context. The interpretation of knowledge depends on previous knowledge and beliefs in memory and the cultural and social context through which they are built (Hung, 2001).

Constructivism is a theory concerned with the internal cognitive process of the learner and provides a learning environment to help the student build knowledge of his own through his/her experiences. This means the pattern of knowledge is based on the individuals themselves. For example, what someone learns about a particular subject is different from what another learns about the same subject because of the different experiences undergone by each of them and the different knowledge that each of them already has about the subject.

Several assumptions reflect the Constructivism philosophy. First, learning is an activity, an ongoing, and a goal-oriented process of building knowledge. Second, when students face a problem or are asked to do a task, the educational environment has to be prepared well. Wheatley (1991) pointed out the importance of Problem Centered Learning. He believes that this type of learning helps students to build a sense of what they learn and develop their abilities to solve problems. They should rely on themselves, not wait for anyone to tell them the solution. In addition, students feel that learning is not

just receiving information but also making sense of that information. Constructivism always asserts the importance that the problem of learning is real. This means tasks should be relevant to learners' life experiences. Third, the process of learning is to rebuild one's knowledge through a process of communicating with others. Fourth, prior knowledge of the learner is an essential condition for building meaningful learning. Lastly, the objective of the learning process is to make adaptations in life.

Universal attempt to move toward constructivist practices. Nowadays, it clearly noticeable that there is a great interest in finding a model of education in line with the development in the Saudi education, where technology is the most important element of this evolution. The increased use of technology in Saudi educational context led to reform the educational approach to fit with today's development because of technology (Alturki & Alfadda, 2007). In general, there is an educational movement has taken great steps towards the constructivism approach in education.

Some of the recently published studies criticized the learning and teaching approaches that are based on behaviorism model. They support moving to a constructivism model in learning (Alhawiti, 2011; Bingimlas, 2013; Isman, Abanmy, & Hussein, 2012). The principles of constructivism (e.g., helping students to construct knowledge rather than just receive information, making learning active and goal-oriented steps for building knowledge, and preparing learning environment in a way that allow students to effectively participate in learning activity) are commonly used as new factors of learning approach in Saudi Arabia.

Constructivism moves some of the role in learning and teaching process from teachers to students. Saudi teachers are beginning to change from being a "dispenser of information" to being learning facilitators. This reflects the shift from the adoption of the behaviorism model in Saudi education to the constructivism model of learning. This shift was a result of teachers' better understanding of the needs and interests of their students. Technology contributed significantly to the acceleration of this transformation in the role of both teachers and students in Saudi Arabia (Alhawiti, 2011; Alturki & Alfadda, 2007). In sum, the new vision that is widespread in Saudi schools supported by factors such as technology integration in teaching, push forward the adoption of constructivist practices in education.

Constructivism and technology. Although all learning theories try to explain how learning occurs, every theory looks at learning from a different perspective. According to Witfelt (2000), learning theories exclude each other by no mean. Multiple intelligence theory asserts that human intelligence has to be taken into account in learning because of its complexity. Constructivism says that knowledge is constructed. Situated Learning Theory perceives that learning happens in social contexts.

All these perspective are valid. Collectively, they enable us to make sense of how learning occurs. Witfelt (2000) stated

> These three theories remind us that knowledge is constructed in the mind of the learner and that ICT learning environments should be constructed to support team-learning and that I should use them as the very versatile media that they are

> to make it appealing and motivating to many kinds of intelligence-constellations (p. 237).

For the purpose of technology integration into the classroom, constructivism is the most appropriate approach. Cooper and Hirtle (1999) stated that

> A new pedagogical orientation will be required to serve the kinds of students who go beyond (simply) having a set of skills and a body of knowledge. Dynamic, students-centered pedagogy will be important for all learners as we enter this new century (p. 2).

Based on some aspects such as "the high-level implementation of ICT" and "the formation of cooperating communities of practice," Boshuizen et al., (2003) analyzed the requirement of the content and strategies for teacher technology training in terms of "learning to know," "learning to do," "learning to live" and "learning to be." They stated that

> We also find a clear trend in the way teacher training institutions teach these skills and insights. The program chosen as a best practice conform largely to the ideas of modern constructivist education and learning, where learning is seen as an active process by the student and where a balance is required between learner support and teacher guidance (p.154).

Learning environment and students' needs. Learning environment is one of the major factors that play a role in learning and teaching operation. Setup of the learning environment and its characteristics always differ from one learning theory to another. Learning environment always has to be identified and described to differentiate between

learning theories. It is one of the reasons behind the success or failure of any educational system.

From the constructivist perspective, the main idea regarding learning environment is that the environment has to help students to construct their knowledge through interaction with each other in order to acquire problem-solving skills and be able to think critically. It is described frequently as an active environment that is full of collaboration. Technology assists in creating this kind of environment that the constructivists are looking for.

*Collaboration, group work and interaction***.** Literature frequently suggests collaborative learning and group work as one of the best learning approaches. Swan, Van ‘t Hooft, Kratcoski, and Schenker (2007) found that the computing classroom helps in increasing the interaction between student and teacher and among students themselves. McLoughlin and Lee (2007) mentioned that effective learning requires active students to interact with others, including fellow students, teachers, and the community. With the increased demand for knowledge, building communities is a fundamental requirement to reform the pedagogical approaches in education. Web 2.0 plays a major role in providing that. This also increases the importance of the Internet as a tool for collaborative learning (Carr, 2008). McLoughlin and Lee (2007) stated that collaboration and cooperation are essential factors for any effective pedagogy. As an example, Google Docs and Spreadsheets are recommended tools for improving students’ conventional writing approaches. In addition, Mirel (1998) argued that the human-computer interaction should

be based on the constructivist approach. He is against the behaviorism approach because it is mindless interaction and fails to transfer the new knowledge that students acquire.

With the increase of collaboration as an ideal teaching style, constructivism takes a great place in integrating technology into higher education classrooms. In addition, it is noticeable that most of the recent technology tools (e.g., web 2.0 applications) are collaboration tools. Collaborative and communicative functions are among the factors that determine whether an application is a successful educational tool or not, especially in online courses and distance learning.

CALL in Limited Technology Context

An optimal CALL environment. With the continuous evolution of CALL as a field, implementing it in an educational context is not a simple process. It is made especially difficult by the increase of factors that resist its adoption in language teaching and learning. There are many developed aspects of CALL, including the use of CALL in a limited environment, or what is referred to repeatedly in literature as '*CALL in limited technology context'*. Hearing this term might bring to mind the lack of technology equipment, internet connection, and other technology-related aspects. However, the actual definition of the term goes beyond that to include other aspects related to educational philosophy and the adoption of CALL in classrooms. The limitations are no longer restricted to technical problems.

Egbert (2010) defined this concept as going beyond the digital divide of whether or not teachers and students should use technology to assure that the available technology is used effectively and efficiently. That is, the main focus should be how the technology

is used for language learning and teaching. Ngeow (2010) stated "what underlies success in learning is not technology tools per se but rather the use of sound pedagogical approaches that underpin the technology applications on learning context" (p. 96). The issues that are created by limited context in CALL cannot all be identified with their solutions in this section. Egbert (2010) defined an optimal technology context by saying that it is a context

> in which the use of any digital technology (e.g., old or new equipment, computer, cell phone, calculator) makes language learning more effective (i.e., lead to greater success by, for example providing optimal levels of challenges for learners, supporting differentiated instruction, supplying access to otherwise inaccessible interaction or data) and /or more efficient (i.e., speeds the rate of learning by , for example, allowing students and teachers to spend more time on effectively language-focused tasks) in pursuit of whatever language and content goals, objective, and standards are to be achieved (p.2).

Egbert (2010) identified some technology contexts and conditions that lead to a limited technology context. These include limited access to technology, limited or unreliable internet connection, no software, old software, and mandated software, all of which need to be considered in a technology context. Moreover, the limited technology context might be caused by limited hardware, limited time, big classes, limited or lack of adequate CALL training, limited funding, limited support, lack of culturally related electronic resources, and lack of strategies.

Each of these limitations has different solutions based on its causes and the particular situation in which it occurred. For example, the lack of using computer labs in schools may be due to the lack of internet access, scheduling problems, a large number of classes, or the lack of adequate software. Generally, language learning and teaching activities can be supported by technology in limited context (Egbert & Yang, 2004). The issue of CALL in limited context can be overcome by teachers' creativity, effort, and collaboration (Chao et al., 2010; Egbert 2010; Huff, 2010; Ngeow, 2010; Rossetti & Nelson, 2010; Yildiz and Tatar, 2010). With the limited context, teachers need to find alternative modes of delivery for students (Ngeow, 2010).

Inadequate teachers' training and lack of professional development is addressed as a common issue among the reviewed studies about CALL in a limited technology context. This is addressed alone or with some other issues (e.g., lack of funding, lack of planning, etc) as causes for the limitation of CALL adoption. Yildiz and Tatar (2010) mentioned that when Turkey wanted to adopt this proposal and integrate technology into its schools, it was viewed as a matter of supplying these schools with hardware and software. Most of the budget was allocated for purchasing them. This software and hardware, however, left them with insufficient funds for teacher training or even technical support. As a result, CALL has been ineffective in Turkish schools (i.e., it has lead to a lack of instructional planning in schools). Yildiz and Tatar (2010) offered a solution to this problem by suggesting having a new vision that supports the intended attitude toward the new curriculum and planning the total cost of ownership, including on-going support, teacher training, and networking in addition to hardware and software.

Similarly, Huff (2010) mentioned that technology training alone is not enough for effective professional development and suggested several criteria for designing professional development for teachers: "Assessing the needs and skill level," […] "Clearly stated goals and outcomes,"[…] "Building on previous knowledge,"[…] "Combining skill development with contextualized pedagogical applications,"[…] "long-term commitment,"[…] and "collaboration" (p.32-34). Fawzi (2010) asserted that teachers' training provided for the language teachers by United Nations Educational, Scientific and Cultural Organization (UNESCO) and nongovernment organizations in Sudan should focus on the challenges they face in a particular situation.

The lack of technology equipment, problems with internet connectivity, and large classes are common issues in developing countries. To overcome the issue of limited access to the internet and the lack of broadband availability, Ngeow,(2010) suggested providing offline access to selected web pages to show internet resources without the need for internet connection in the classroom. Teachers would then be able to download the needed web pages before class onto CD or USB flash drive. Also, to avoid the need for an access restriction policy and the administration's concern about the legitimacy of content provided to students through the internet, Ngeow (2010) found it very workable if the publishers embed technology tools inside the course materials. As such, Braga (2010) suggested asynchronous activities instead of synchronous activities to overcome the lack of computers for large classes.

Technology in Saudi Arabia. Technology assists teachers with their job while the Internet provides them with various resources. In the educational environment,

technology helps teachers with transferring knowledge, which gives them time to focus on creating the proper supportive educational environment. In addition, it allows teachers to overcome the problem of rigidity of the academic content and take a more active and effective approach to presenting the educational material. Technology has made it easier to individualize education than before.

The rapid change in technology and teachers' roles, along with the increasing importance of learning, makes teacher training and development an increasingly important topic in the field of education in Saudi Arabia. Roles of the teacher change with globalization, the revolution in communication, the speed of progress, and the development of the field of education. Technology innovations change the role of the teacher in schools around the world as well as in Saudi Arabia.

The telecommunication infrastructure and Internet service in Saudi Arabia is being regularly developed. With an increased number of companies providing telecommunication and Internet services, the threat of not receiving the right bandwidth is minimized, if not removed altogether. This contributes to the possibility of adopting technology in Saudi schools.

According to Alkhalaf, Nguyen, Nguyen and Drew (2011), the data of Communications and Information Technology Commission (CITC) published in 2010 show that Saudi Arabia is one of the fastest growing countries in adopting e-learning in higher education. The data also shows that the number of Internet users increased from 200,000 in 2000 to 4.8 million in 2006. According to Saudi Arabia General Investment

Authority (SAGIA), Saudi Arabia is the largest investor in the field of information technology among the Middle Eastern countries (Aljahni, Al-Begain & Skinner, 2011).

Nawafleh, Obiedat and Harfoushi (2012) studied similarities and differences between e-government programs in Finland as a developed country and Saudi Arabia as a developing one. They found that Saudi Arabia was able to overcome the challenges in terms of infrastructure, social, technical, and cultural aspects. By the end of 2010, Saudi citizens were able to access most of the needed services electronically.

Education is one of the main fields influenced by this development of technology in Saudi Arabia. Saudi teachers are beginning to change from being a "dispenser of information" to being learning facilitators. This reflects the shift from the adoption of behavioral theories in Saudi education to the constructivism model of learning. This shift was a result of teachers' better understanding of the needs and interests of their students. Technology contributed significantly to the acceleration of this transformation in the role of both teachers and students in Saudi Arabia (Alturki & Alfadda, 2007).

The number of learning resources does not put an end to the teacher's role in the educational operation, nor does it decrease the importance of his or her role. Teachers' roles have changed but are still in the center of the educational operation. In addition, technology changes teachers' roles, learning style, and tasks in the classroom. Due to these changes, teachers have to be trained well in order to do the new tasks effectively.

Alaenzi (2007) concluded in her research *Development of the Competencies of Teachers* with a list of factors that should be considered during the development program of the Saudi in-service teachers. As it can be translated, Alaenzi (2007) stated it is not

enough to ensure teacher education students graduate with a high score; it is more important to develop their teaching ability from good to the best in the field of school work. Therefore, in-service training determines the quality of education received by students in schools. To aid in the professional development of teachers, the quality standards, teachers' role, self-learning, and continuing education are the focal point of the process (Alaenzi, 2007).

A theme emerged from the literature (Studied area). Themes that emerged from the literature show that research about technology in Saudi education varies. There is a clear interest in e-learning in Saudi universities more so than other areas of study. Alkhalaf, et al. (2011) mentioned that the growing number of research conducted about e-learning in Saudi Arabia was a reaction to the growing use of e-learning in Saudi universities, which is due to the human capacity issues in higher education (Alkhalaf, et al., 2011). The research topics vary as well; there is an interest in studying people's attitudes towards technology. Some research focused on the assessment of the existing technology and the quality of its implementation, whereas others focused mainly on teacher preparation and prospective teachers' technology training. Clearly, there is great similarity among the recommendations and findings of the research studies while each study retains its own characteristics in term of the purpose of the study, sample, and conducting method. Most studies have shown that teachers, students, and even university faculty members have positive trends towards the use and implementation of technology in education. These studies share similar results about the barriers in the implementation of technology.

***Attitudes*.** Technology is very attractive for most young Saudi people, and its popularity is increasing by the day. This creates the ground for the acceptance of e-learning (Sahab, 2005). The positive attitudes toward technology, especially e-learning and blended learning, push forward for the continued expansion of using them in higher education (Al-Qahtani and Hugginst, 2012). Zeen (2009) evaluated the implementation of On-Line Instruction (OLI) in Arab Open University. Although the result does not show that the instruction has a statistical significance on students' achievements, students show positive attitudes towards OLI. Faculty and students also share this positive attitude, though some are hesitant.

Albalawi and Badawi (2008) surveyed the faculty members' attitudes towards learning and the relationship between their attitudes and their major and experience. While the majority of older faculty members have negative attitudes toward e-learning, newer faculty members (less than five years) show more positive attitudes and readiness for adopting e-learning. Arabic major faculties are among those who have positive attitudes. They would agree that there is a need for more e-learning training.

Challenges and impediments. Numerous barriers are reported at different levels of adoptions: individual, organizational, and infrastructure levels. At the individual level, limitations include language barriers (e.g., Alturki, 2009) lack of technology skills (e.g., Alhawiti, 2011; Alturki, 2009), concern of losing privacy (e.g., Al-Wehaibi, Al-Wabil, Alshawi & Alshankity, 2008), and lack of prior experience and personal interest (e.g., Alturki, 2009). At the organizational level, there is a lack of support and training (e.g., Alhawiti, 2011), a lack of planning and polices (e.g., Alkhatnai, 2009), and a lack of

technical support (Alkhatnai, 2009; Lai, Sanchez, Chang & Huang, 2006) Lastly, at the infrastructure level, there are barriers in terms of Internet connectivity (e.g., Alkhatnai, 2009; Lai et al., 2006) and the availability of computer and technology equipment (e.g., Albalawi & Hirzallah, 2010).

The novelty of technology in Saudi education creates many adoption issues. Being familiar with the traditional approach makes it difficult for some to accept the new pedagogy. For example, the physical absence of an instructor in e-learning might be considered a disadvantage in e-learning content, particularly where the students are used to receiving traditional instruction (Al-Qahtani & Hugginst, 2012). They also found that students do better in blended learning, where there is a similarity of attainment in e-learning and face-to face methods. Students' being familiar with the new context is necessary for applying technology to their context. According to Chaurasia, Asma and Ahmed (2011), E-learning is a fairly new education tool that challenges traditional education techniques. Therefore, it is understandable that some individuals may initially oppose the e-learning pedagogy.The widely accepted and practiced traditional approaches decrease the opportunity for implementing technology effectively (Robertson & Al-Zahrani, 2012). Due to the novelty of e-learning in Saudi Arabia, many shortcomings are expected within the next few years (Sahab, 2005)

Alturki (2009) studied the knowledge and skills of the faculty members of Teachers' College at King Saud University. He found that they lack technology knowledge and skills. The faculty members' current usage of computers does not reach the desirable standards of the college and the age of technology. They are using

computers less than 10 hours a week. Internet and email are the most commonly used technology. Instructional software packages are rarely used because of the lack of the awareness of their importance. On the other hand, Al-Wehaibi et al. (2008) found that faculty members experience barriers in the loss of privacy and intellectual property issues in the adoption of Internet use in their teaching, communication, and research.

Although they believe in the importance of technology innovation for teaching in the university, the faculty members indicate some of the challenges of implementing technology in their teaching. These challenges include lack of prior experience, personal interest, encouragement, and interest in having new experience. The internet is a predominantly English-based means of information which is reported as a barrier by some faculty. These faculty members indicated that physical setting and negative attitudes are the main problems they faced when applying internet in their college (Alturki, 2009).

BinTaleb (2007) studied the faculty and pre-service teachers' perspective about using laptops in learning and teaching. He reported that faculties have a higher level of agreement than pre-service teachers about the benefit of using laptops in learning and teaching. Specifically, these faculties agree it will ease the communication between students and teachers and make planning and organizing courses more convenient. Students will also have access to a wide variety of resources in their own classroom. On the other hand, faculty members are less optimistic about encouraging active learning and they are annoyed by the students' off-task behavior during classroom activities. Pre-service teachers have neutral or negative perceptions about receiving prompt feedback.

Lai et al. (2006) compared the use of technology in secondary schools. Among nineteen countries studied, Saudi Arabia is listed among countries with significantly more teacher training than technology training. Less than 40% of Saudi schools were provided with a professional technology supporter; they were given a limited number of computers (fewer than seven) and few computers had access to the internet. Moreover, internet connectivity and physical setting are reported frequently in the literature as one of the major barriers (Alturki, 2009; Al-Wehaibi et al., 2008). Alhawiti (2011) argued that the teacher preparation programs in Saudi Arabia do not prepare teachers well. Their programs need to be redesigned because they do not offer sufficient technology training courses. The current course content is out of date and teaching the software and hardware make their training unrelated to the practice.

Recommendations and suggestions. The recommendations reported in the literature show that there is a need for more technology adoption in term of technical aspects and for more investment in training and developing teachers' and students' skills. To overcome the barrier of the lack of technology in Teachers' College, Alturki (2009) has emphasized the importance of organizing compulsory training courses for the faculty and proposed providing computer and internet service for all departments in the college.

Alhawiti (2011) stated that teacher preparation programs need to increase and adopt more courses to prepare pre-service teachers for integrating technology into their classrooms effectively. He also proposed a guideline for designing programs of study that aid in teacher preparation including three types of technology courses: Inquiry-Based Technology, Seminar in Elementary and Secondary Education, and partnership with local

schools. Albalawi and Hirzallah (2010) evaluated the attitudes of pre-service teachers at Tubuk University toward using internet in their teaching practicum. They suggested establishing teaching labs for pre-service teachers to provide them with skills needed for teaching.

Similar conditions are reported about in-service training. Aldayel (2011) stated that "in-service training programs should be held in the fields of evaluation and the utilization of the most recent technology particularly the recent applications of computers in education" (p. 2328). Robertson and Al-Zahrani (2012) found that increasing training and access to technology can contribute to an increase in pre-service teachers' self-efficacy and formalizing the use of computers.

Alkhatnai (2009) evaluated the implementation plan of e-learning in King Saud University. He highlighted strengths and weaknesses of the e-learning Maturity Model (eMM). The university must take a major step in the support, organization, and optimization dimensions of the e-learning process of implementation. Alkhalaf, et al. (2011) indicated that Saudi students show low level of interaction in e-learning although they are satisfied with the technology infrastructure. They also assert the benefit of using collaborative learning methods to increase the students' learning outcomes. The interaction increases when they are encouraged to interact with the teachers and other classmates even by completing compulsory collaborative tasks.

In sum, Saudi Arabia has witnessed a remarkable development in the technology field. This development is a reflection of the development of education. It also was the result of the great interest in the integration of technology in education, especially in the

field of e-learning in higher education. However, many obstacles appeared. The novelty of implementing technology in education is one of the main obstacles, along with the difficulties faced in the transition to the adopting of modern educational approaches. Although the technical aspects have had a significant impact in most of the research, training and developing teachers' and students' technology skills is one of the most prominent topics that have been addressed in the study, discussion, and recommendations.

CALL in Saudi Arabia. CALL is still in its infancy in Saudi Arabia and still faces many difficulties. These difficulties do not differ significantly from those that are faced by the adoption of technology in other subjects. Alshumaim and Alhassan (2010) provided an overview of the current technology available for EFL teachers at Saudi schools and highlight both the opportunities and the challenges. Teachers use technology mainly for reviewing updates in teaching English. However, they are facing a lack of administration support, technical support, equipment and inadequate computer experiences. Specifically, computer training, the use of home PC, and having access to computer labs in schools are reported as factors that influence the students and teachers' opinions of whether to integrate computers into their classroom instruction. In terms of training, Alshumaim and Alhassan (2010) reported that "more research is needed to determine the most effective way to enable both schools and teachers to make better use of ICT" (p.531).

The internet plays an important part in language learning for Saudi students. In a study conducted by Alshammari and Albalawi (2011) at the Institute of Public

Administration (IPA), they found that half of the students are using Internet for language learning even though it is not required in their courses. Also, vocabulary skills take the largest proportion when using internet for language learning, followed respectively by reading, writing, listening, oral skills, and grammar.

One of the most commonly measured issues and studied aspects of CALL in Saudi Arabia is the perceptions or attitudes of teachers toward CALL in general or toward CALL software and the implementation of CALL in different Saudi Arabian institutions. Most of the studies intend to investigate the reaction to CALL or CALL software. Alahmadi (2011) conducted a study to measure Saudi students' reactions and attitudes toward Computer Assisted Class Discussion (CACD) as a facilitator of communicative interaction. Alabbad (2011) focuses on the performance and the attitude variables in order to study the impact of CALL and CALL software on students' attitudes and achievement of learning English as a foreign language (EFL). Other studies differentiate the attitudes of Saudi students toward CALL due to their years of English learning, years of computer knowledge, and gender (Alshammari, 2007).

Alshamiamari (2008) studied the impact of three variables: computer training attendance, using school computer labs, and CALL training program, taking into consideration the gender effect on these variables of English as a Foreign Language (EFL) and teachers' attitudes toward using computers in their language teaching. This study is the only study that includes both technology training and CALL training in one research focus. This indicates the start of shaping the interest of pedagogical aspects of technology training provided for language teachers. Making the distinction between

computer training and CALL training is the starting point of developing new training programs and new training knowledge. It outlines the next phase of training language teachers.

The similarities of these efforts are very noticeable in terms of the approaches taken in conducting research, the tools used, and the findings of the research. Surveys alone or with other instruments are the main research tools in most of the literature reviewed about CALL in Saudi Arabia. Conducting surveys is common among researchers because it works well in investigating perceptions and attitudes (Alabbad, 2011; Alahmadi, 2011; Al-Maini, 2010; Alshamiamari, 2008; Alshammari, 2007). Collectively these studies show that students and teachers have positive attitudes toward CALL and toward specific software and application. Most importantly, Alshamiamari (2008) found that computer training and CALL training have a great impact on teachers' attitudes toward using CALL in Saudi language classrooms. Al-Maini (2010) studied the Saudi teachers' experiences with and attitudes toward teaching EFL and the administrative support. Teachers who receive appropriate training can be very useful for teachers and students in terms of providing ideas for integration of technology and its implementation into the classroom. Al-Maini (2010) suggested that schools are encouraged to exchange resources in hopes that this will establish community relations and help creating the culture of professional development. This point demonstrates the importance of establishing collaboration between teachers from different schools.

Alshumaim and Alhassan (2010) highlighted the importance of continuous training and support after CALL training to prevent teachers from returning to old

methods .They (2010) suggested providing more for technology availability and training teachers. Teachers need sufficient time to familiarize themselves with technology in order to be able to integrate it into their teaching practices effectively.

It is noted that the research which dealt with CALL still focuses mainly on the technical aspects more than the language itself. This perhaps is due to the technical constraints imposed in the situation of Saudi education. With the expected wide adoption of CALL in Saudi education, the pedagogical aspects of CALL are expected to take a place in CALL research in Saudi Arabia.

Standards and Teachers' Education in CALL

Applying standards for education has become the norm for schools in the United States. Murphy-Judy and Youngs (2006) asserted that top-down support is necessary in order to bring the educational system into the global 21st century. Without the support of those in high positions, the CALL theory will not be successful. With the increase of applying standards in education, applying standards in CALL takes more than one stage: general technology standards and then CALL standards. As a field, CALL was facing restrictions due to lack of appropriate standards that take technology and language into account simultaneously. CALL is based on technology standards in education such as National Education Technology Standards (NETS) and National Council for Accreditation of Teacher Education (NCATE). Previously, these were general standards that could fit the use of technology into any subject matter. There were no particular standards for CALL. The standards were either about technology in education or about language teaching, none of which dealt with both language and technology until Teachers

of English to Speakers of Other Languages (TESOL) standards were created by a group of educators from six universities (Healey et al., 2009).

According to Oxford and Jung (2007), most of the guidelines for teacher education such as NCATE, NETS-T, and NCLB include a "strong basis for technology integration, both in teacher education programs and in P-12 public schools" (p. 29). Technology standards of learning impact public education and higher education in the United States as well as teacher education programs. Teacher education programs in United States universities need to ensure that the teacher is able to achieve the desired learning outcomes through the integration of technology (Murphy-Judy & Youngs, 2006). Standards play a major role in developing teacher education programs and evaluating teacher preparation institutions. It is noticeable how standards direct and focus on the quality of teacher education programs. It aims to reach a desirable level of technology integration and shape and identify knowledge and skills that teachers must acquire and master.

One of the standards that deal with CALL is Teacher of English to Speakers of Other Languages (TESOL). According to Healey et al. (2009), teacher standards distinguish between "basic" and "expert" levels of technological knowledge and skills. According to the project, implementing standards in CALL is presented in two major sections: Technology standards for teachers and technology standards for the language learner. The purpose of student standards for teachers and CALL specialists is to help them understand the role of students and to provide them with instruction for both students' training and students' technological knowledge and skills assessment. On the

other hand, the purpose of teacher standards for teachers and CALL specialists is to evaluate technological knowledge and skills, develop the pre-service teacher program, and integrate standards into their courses in order to show them how these standards can be implemented (Healey et al., 2009).

In 2006, TESOL Technology Standards Task Force, a group of six members from different universities, collectively developed TESOL Standards. It is built on reviewing the existing general technology standard such as International Society for Technology in Education (ISTE-S and ISTE-T). In addition to their aim to draft a set of standards for language teachers and learners, TESOL standards are designed in international scopes and are relevant for a wide range of ESL and EFL settings: elementary, secondary and adult settings (Hubbard & Kessler, 2008).

The efforts of the TASK Force are briefly summarized in setting goals and standards for both teachers and learners. Each standard has two or more performance indicators that demonstrate the role of both teachers and learners and for both basic and expert levels as well as vignettes to describe a specific context of language learning and teaching settings (Hubbard & Kessler, 2008). The authors (2008) stated that "an online component has also been proposed to make the standards available to a wider audience and to allow others to submit vignettes from their own experiences thereby covering a wider range of settings" (p.3).

Healey et al. (2011) worked together to create and build goals and standards for language teachers with a non-sequential approach. They have believed that it is important for "training workshops to be complementary […] and overlapping because each focuses

on a different goal" (p. 5). Sequential goals and standards might work well for pre-service teacher programs because there is plenty of time for training. The result of the training shows after the teachers' graduation when they are hired to be teachers. However, the goal and content of workshops designed for in-service teachers should not be sequential. They have to be complementary and overlapping because of the time consuming matter.

Four goals of TESOL were built in the non-sequential approach:

1. Language teachers acquire and maintain foundational knowledge and skills in technology for professional purposes.
2. Language teachers integrate pedagogical knowledge and skills with technology to enhance language teaching and learning.
3. Language teachers apply technology in record keeping, feedback, and assessment.
4. Language teachers use technology to improve communication, collaboration, and efficiency. (Healey et al., 2011, p. vii).

By reviewing these goals, it can be noticed that they are independent of one another. This, in turn, establishes the foundations of the importance of independent training content so that it is not sequential. The content follows and relies on the goals and objectives.

This entire set of standards, whether student standards or teacher standards, pushes teachers to integrate technology into their language classrooms. It provides them with instructional guidelines and expectations. Guidelines and expectations are always in the teacher's interest. They are two of the major questionable things in educational operation: what is the guideline and what is expected from me as well as from my

students? Thus, standards answer these considerations. More than that, student standards and teacher standards create new characteristics of both students and teachers.

Technology and Language Teaching

Computerized learning is a new issue for education in Saudi Arabia as well as throughout the world. This is especially true for undeveloped countries. It is an issue related to the lack of technology and technical support as well as other problems related to resources. There is also an issue in terms of the lack of school planning or scheduling and financial support, which are mainly the responsibility of school administration. It is repeatedly mentioned in literature as an issue of the lack of teachers' knowledge and skills in terms of developing teacher pedagogically and technologically. Finally, there is the issue of teachers' attitudes and beliefs. Some teachers are afraid to use new technology or do not appreciate its significance as a learning tool in the classroom (Barone & Wright, 2008).

The student becomes the center of the educational operation that leads to the integration of technology into the classroom. Thus, Di Benedetto (2005) has acknowledged that focusing on the needs of the student is most important in introducing new technology. Technology then becomes an essential part of the classroom. It is not a secondary or minor component of learning. It goes beyond being a speed way for delivering information that affects the students' academic progress and ability to think. Di Benedetto (2005) stated that computers have made it possible for students to do more advanced activity and problem-solving by encouraging them to reach a higher level of thinking than they could without the help of technology.

Since today's students are a part of the "digital native," schools need to consider the ways of using technology in their language teaching instruction. Otherwise, schools are not able to prepare students for their futures or make learning interesting. Di Benedetto (2005) has asserted that technology must become an integral part of the general curriculum in order to prepare students for the future. To overcome some of the barriers between switching from conventional classrooms to using technology in language classrooms requires alterations of existing beliefs. Teachers may need to change their attitudes in order to use technology as a language tool and receive effective training.

Technology and education are inter-related in the achievement of learning objectives. They do not oppose each other as some might think. Lamb (2003) mentioned that the relationship should be "control by technology," not "control of technology." The value of technology in education can be looked at in many different ways; for example, its value can be viewed in terms of saving time, providing more activities, or both. Lamb (2003) looked at the value of technology in a way that can provide the learner with opportunities for autonomous and independent learning in addition to being one of the significant aspects of any learning environment.

Nykvist (2009) went over the Malaysian experience with technology and education. When the Malaysian government reforms the education system to incorporate the use of modern technology, training teachers to use the technology is the first priority. Nykvist (2009) stated that

> [E]merging technologies have allowed new practices in teaching and learning, while, conversely, new pedagogies have demanded new technologies or extended

> use of existing media. Consequently, there is an increased expectation for all educators to use Information and Communication Technologies (ICT) to support students' development of knowledge building in all curriculum areas. (p. 2)

In order to promote teachers' use of technology in language classrooms, it is necessary to make sure that teachers are prepared for technology integration into the language classroom. Integration of technology has not yet been fully accepted by teachers and is still in its establishment stages (Herman, 2002). The success of using technology in language classrooms is dependent upon teachers' readiness for technology integration. Changing teachers' attitudes toward technology, developing their abilities and skills by training, and extending their knowledge about technology as an educational tool are the most significant aspects of technology integration into the language classroom. Similarly, Alshamiamari (2008) and Al-Maini (2010) have emphasized the importance of helping teachers develop technological and pedagogical skills in integrating technology into language classrooms.

Since there is no doubting the value of technology in the educational system, the focus should be on the factors that lead to the optimal and most advantageous application of technology into the classroom. Teacher's technological ability is one of these factors. Even though the software and technology were integrated into the United States schools twenty years ago, a large percentage of teachers are unprepared to use technology in the classroom appropriately (McKenzie, 2001). Davis (2002) stated that the efforts of teachers will be reflected in the students' performance. That is, if the teacher cannot

operate the technology proficiently, the students overall performance will suffer. Thus, training them is the cornerstone of the successful technology integration.

Teachers Learn Technology

Training teachers and professional development are not simple issues. Effective training that leads to the desirable result is not ad hoc, random, or even weakly planed. It is not an overnight project that can immediately be implemented. Every single aspect of training teachers must be taken into account, either designing or implementing aspects. Effective training must go beyond teaching technology to how teachers can implement technology into teaching. Training requires good design, careful implementation, and time. May (2000) stated that "technology implementation requires a well designed systematic plan, multi-year funding, and extensive professional development" (p. 3). In general, training as professional development has to meet some criteria (e. g., duration, intensity, ideal environment, appropriate method and content) in order to be effective training.

A number of factors can influence technology training for language teachers and their implementation of training skills into their daily teaching practice. Specifically, the following three considerations are identified in existing literature: *Structural factors of CALL training* as represented by time of training, grouping trainees, and training environment; *delivery method of training* as represented by 1) on-job training: follow–up training, mentoring, and One-on-One training, and 2) off-job training: traditional training and one-shot training; and *training content and skills* as represented by the focus of

content and level of skills on teacher vs. student, generative vs. generic content, and technical support.

Structural factors of CALL training: Time of training. Time of training is an issue frequently mentioned in CALL and integration of technology literature as well as professional development literature. It is discussed within more than one dimension and from different angles. In general, it is discussed in terms of duration and intensity (Ertmer & Ottenbreit-Leftwich, 2010). While the amount (total number of hours) of training refers to training duration, intensity is the overall length of the training time span and frequency of training session (Ertmer & Ottenbreit-Leftwich, 2010), including follow-up support (Lawless & Pellegrino, 2007). Basically, research examines whether training should be short or long and the allotted time for training as well as the benefits and the obstacles of both. It also discusses the impact of training time on the quality of training, teachers' level of confidence, technology use and implementation, and so on.

Lawless and Pellegrino (2007) found that increasing the amount of total technology training (duration) helps teachers receive high-quality training and instruction. Both Brinkerhoff (2006) and Wells (2007) found that developing teachers' knowledge and skills in order to implement them in their practice was a result of longer duration training. Thus, teachers are most likely to integrate technology into their teaching when they have been trained for longer periods of time (Dawson & Rakes, 2003).

Low intensity and shortness of training sessions create major and sequential issues regarding teacher education and the transferring of their training skills into their

teaching. When teachers receive low-intensity training, they face difficulty in focusing on the training goal because they need to review the training goal in every session (Kanaya, Light, & Culp, 2005). This can lead to wasted training time at the expanse of the amount and the quality of learning activities. Kanaya et al. (2005) also asserted that the amount of time teachers are involved in training activities should be parallel with clarifying the training goal for them. Teachers need to be provided with sufficient time for concentrating on the training goal and training activities.

Time is one of the major obstacles of the integration of new technology in the classroom, time for training, time for practicing, and time for talking about what they have learned with other teachers (Davis, 2002). Time and teachers' capacity for learning are keys for successful training. Sa'ari, Luan, and Roslan (2005) examined the effect of teachers' lack of computer and technology skills and the integration of technology into the classroom without sufficient time for technology use. They show that even if teachers have positive attitudes toward technology, insufficient time to implement technology and computers, along with a lack of teachers' training leading to a lack in confidence, can ultimately reduce the use of computers in the classroom.

Many teachers prefer short term training. The majority of American teachers prefer less than five hours related to technology (McKenzie, 2001). Achieving a balance between the amount of technology and the amount of time is necessary for learning (Cooke-Plagwitz, 2000). Rushing learners to learn many skills in a short period of time with insufficient guidance and practice can result in a lack of confidence when using technology and affect their attitudes toward using it. Assigning enough time for training

is the most important characteristic of effective technology teachers' development and training (Casey, Harris & Rakes, 2004; McKenzie, 2001).

Training time should be minimized and reduced as much as possible, taking into account the effectiveness of training. It is a balancing act between what teachers should learn and the amount of time for learning. To reach that end, Zhao and Bryant (2006) assured that teacher preparation time for integrating technology can be reduced if the trainer is familiar with the technology and knowledgeable in the subject matter. He/she can provide the teachers with ideas for integrating technology into specific areas of that subject.

Along with other factors, time of training is described in literature as one of the extrinsic barriers to integrating technology (Ertmer, Ottenbreit-Leftwich & York, 2006), whereas it is discussed as one structural feature of training that receives great attention in professional development programs (Kennedy, 1999; Strudler & Hearrington, 2008). Time is considered to be among the infrastructure factors (along with curriculum, clear goals and software availability), supporting technology integration into schools (Karagiorgi, 2005).

Logically, in terms of training time, training should help to reach the highest level of effectiveness within a very short period of time with as little effort as possible. Whenever the time of training become long, other issues may arise, such as funding and conflicting time between trainer and trainees duties.

Structural factors of CALL training: Grouping trainees. Selecting trainees and arranging them in groups for training purposes received an interest from some studies

in the field of professional development and technology training. This is because of the close relationship between the method of grouping trainees and the goal and method of teaching. Also, some types of training face severe criticism (especially the traditional training and the one-shot session training), focusing directly or indirectly on the methods of selecting the trainees and collecting the training program participants.

Logically, it does not make any sense that we seek, through training, to transfer knowledge to teaching a particular part of the subject matter or link training to curriculum content while trainees represent a diverse group from different classrooms and grade levels. Also, it is not logical to involve teachers from schools with large different kind of technology equipment in a training workshop. It can make it difficult to focus on a group of teachers or particular types of technology devices without ignoring others. This leads to and creates the issue of using generic examples in training and increases the gap between what teachers learn in training and what they practice in the classroom (McKenzie, 2001).

Although each type of training has a different goal, in order to reach the transformational level, grouping trainees should be based on these two variables: Current teaching grade and similar access to technology in school settings. Gathering teachers based on grade can help in providing them with curriculum-based training and ideas for integrating technology into their classrooms. This can be difficult if the training workshop consists of teachers from different grade levels. Grouping teachers based on the availability of technology in their schools can help in applying adult learning principles of training, such as the principle that, in adult learning, most learners need to

immediately see the value of what they are learning. Coupal (2004) asserted that because of the differences of technology infrastructures in schools, teachers have to learn what is available in their schools and classrooms. This method of grouping teachers fits into most new training types, such as one-on-one training and follow-up training received after initial training. In addition, teachers will not attain the benefit of training if the subject of that training (for example, the type of technology) is irrelevant to the circumstances of their particular school setting. Also important to note is the possibility that one participant from each school and target grade in a training workshop might not be enough. Strudler and Hearrington (2008) found that a group of teachers from the same school teaching the same grade is better than individual participation.

Structural factors of CALL training: Training environments. The learning environment is one of the most important elements of training. It must be taken into consideration when designing or evaluating any training program for teacher development because of its close association with other learning factors and its impact on effective learning outcomes.

The learning environment is one major factor that plays a role in learning and teaching operations. The theoretical framework for the design development program for teachers depends on the number of starting points. Among these factors are learning environment and the role of both the teacher and the learner. The setup of the learning environment and its characteristics always differ from one learning theory to another. The learning environment is one of the reasons behind the success or failure of any educational system.

The learning environment was previously studied with regard to technology training and adult education. The environment of adult education must be an encouraging environment in which to learn, and it must be supportive in order for teachers to reach a higher level in the technology skills acquisition and then transfer training knowledge to their teaching.

It is noted that an important factor that must be met in the learning environment is that it must be democratic; it should be free of fear and threat (Cooke-Plagwitz, 2000). It also has to be an active environment that depends on collaborative learning in order to build knowledge rather than passively receive it.

In Witfelt's (2000) discussion of information and communication technology (ICT), he stated that classrooms must also encourage and support group activities that are versatile enough to appeal and motivate multiple "intelligence-constellations" (p. 237). From the constructivist perspective, the main idea about the learning environment is that the environment must help students to construct their knowledge by interacting with each other in order to acquire problem-solving skills and be able to think critically. It is described frequently as an active environment that is full of collaboration. Technology assists in creating this kind of environment that the constructivists are looking for.

The new generation lives in an active learning environment. This requires students to have problem-solving skills and a high level of critical thinking. Among all other models, constructivism helps students to build and develop these skills since the main goal of constructivism is to provide students with critical learning experiences (Cooper & Hirtle, 1999). Swan et al. (2007) indicated that students form a stronger

internal knowledge structure by using computers when focusing on a computing environment with an emphasis on a student-centered environment. From here, the need and the importance of applying a constructivist approach to the integration of technology into classrooms becomes more apparent.

According to Boulton (2002), "Constructivism is not a theory about teaching; it is an epistemological position" (p. 3). Boulton (2002) argued that a constructive learning environment is the ideal environment for web-based and distance learning. Applying this approach means there is a shift from the objectivist learning environment when students are passive to a more collaborative environment.

However, the changes in teaching and learning through the utilization of computers in the classroom "may be related to the supports such environments provide for new representations, conceptualizations, and uses of knowledge that ubiquitous computing environments afford" (Swan et al. 2007, p. 510). Jacobsen, Clifford and Friesen (2002) stated that "inquiry-based learning and knowledge construction have never been more important than they are in digitally rich environments" (p. 380). The constructivist approach is no longer an optional approach in education. It is required in this modern era because of the huge access to information. In addition, student-centered education demands the creation of an environment that helps students to expand their knowledge based on their needs.

Another source of education is society itself. Students' interaction with society is crucial to creating knowledge and developing social skills. Swan et al. (2007) stated that "computing environments can support both individual and social construction of

knowledge, and the role that unique representations of knowledge supported by a variety of ready-at-hand digital devices can play in such support" (p. 481).

Harmon and Jones (2001) stated that "the constructivist nature of the class allows for a greater feeling of ownership by both the individuals and the group" (p. 278). In this sense, the roles of trainer and trainees have changed to cope with this healthy environment for learning. When this environment is imposed on the teacher, the learner, the trainer, and the trainees, new roles are different from previous roles.

Delivery method of training: School-based training. The CALL and educational technology literature mentioned different kinds of training (e.g., traditional training, follow-up training, mentoring training, one-shot training and one-on-one training). Traditional training and one-shot training are the most common. Most other training emerged as a reaction to the limitations of both of them. Traditional training is criticized for concentrating on technology that is unrelated to teachers' actual practices and for focusing on the group rather than individual teachers. Additionally, traditional training does not address the hands on environment (Glover & Miller, 2003). School based training was specifically designed to overcome the disadvantages of traditional training and one-shot training.

Mentoring is a facilitated approach provided by either an advisory staff or a colleague (Cuckle & Clarke, 2003). It was suggested by many researchers because of its benefit for individualizing training and reaching teachers' needs and school-based support (Glazer & Hannafin, 2008; Miller & Glover, 2007). Mentoring and one-on-one follow up training are essential after technology integration training to promote support

and partnership and to insure the effective use of technology in the classroom (Zhao & Bryant, 2006).

Although providing follow-up training is not an easy task for trainers, teachers must have plenty of training with follow-up support, otherwise integration of technology into classrooms becomes an issue. Follow-up training goes beyond teaching software to providing ideas for technology integration and problem solving. It also provides continued and just-in-time training within a school context (Glazer & Hannafin, 2008). Financial incentives in the form of "funds that support follow- up training with additional on the job training could encourage the use of technology in the curriculum" (Di Benedetto, 2005, p.18). Financial issues arise in follow-up training more than any other type of training.

When a teacher works as a mentor to another teacher after receiving technology training, the teacher gains an achievement score three times greater than in that of the traditional method of training. The mentor boosts the teacher's confidence in using technology and increases his or her ability to solve the technical problems they face (May, 2000; Zhao & Bryant, 2006). In addition, Davis (2002) suggested that the transfer of new technologies can be effective in casual connection and conversation between teachers themselves. Kessler (2007) stated that teachers obtain "a majority of their CALL knowledge from informal sources and personal experience rather than through formalized preparation" (p.173). It also establishes life-long technology integration.

Teachers feel that follow-up training extends their technological ability and develops their skills based on their current technology level. It provides them with ideas

for technology integration with the curriculum standards they currently teach (Zhao & Bryant, 2006). Supporting this, Davis (2002) found that the teachers who received one-on-one follow up assistance had a higher level of integration of technology versus those who did not have one-on-one follow up assistance.

Collegial mentorship received a recommendation to be the best practice because it is based on constructivist learning theory and an activity-centered curriculum where teachers construct their own meaning from their own experiences. It is also a learner-focused relationship aimed to provide teachers with appropriate support in three dimensions: emotional support, technical support, and informational support with a respect for teachers' level of challenge (Coupal, 2004). When a teacher trains his colleagues using constructive approaches, it helps teachers to attain the technology competence for both personal and educational use (Charlalmbous & Karagiorgi, 2002).

School-based training and one-on-one training have a great impact on teachers' efforts to integrate technology into classroom practices (Charlalmbous & Karagiorgi, 2002). The benefit of the collegial mentorship model is overcoming the problem resulting from the diversity of school and classroom context and the availability of software and hardware. Technology infrastructures may differ from school to school and from one classroom to another, so teachers need to learn what works in their own teaching context (Coupal, 2004).

For a training program to be effective, it must combine these different delivery methods in order to benefit from them and overcome any limitations. For example, traditional training is usually irrelevant to the practices and needs of teachers, and

mentoring training is not easy to implement. Follow-Up training can catch what we miss in the traditional training in order to guide the teachers in the area of technology integration.

Delivery method of training: One-shot training. One-shot training is one of the most common types of training conducted by educational institutions. This training is based on a one-time training session often lasting between one to eight hours. During this training, instructors aim to provide teachers with as much information as possible about the target topic or particular software (Choy, Chen, & Bugarin, 2006; Wells & Lewis, 2006).

Unfortunately, the method is less effective and does not lead to transfer training skills and knowledge to classroom teaching because one-shot training mostly focuses on the technical use of the program or software (Hughes, 2005; McCannon & Crews, 2000). This type of training is incompatible with all research that emphasizes the importance of the factor of training time in terms of duration and intensity (Brinkerhoff, 2006; Davis, 2002; Dawson & Rakes, 2003; Kanaya et al., 2005; Wells, 2007).

Training content and skills: Types of content and the level skills. One of the most important parts in training teachers is the content of training and the skills that teachers should master for the successful integration of technology into the classroom. In regards to this training, one must consider how training is related to the curriculum, what teachers need to learn in training, and where the starting point should be in training teachers. The content and skills are always questionable in any training. It also discusses

the level of skills and content complexity, methods of organizing training content, and skills that lead to the transfer of the training knowledge into classrooms.

Technology training focusing on basic skills does not guarantee effective technology integration. To successfully infuse technology into the classroom and curriculum, teachers have to receive curriculum-based technology training. This requires them to move beyond fundamental computer skills and incorporate activities that teach teachers ways to integrate technology into the curriculum (Zhao & Bryant, 2006). Referring to Forgione's (1999) ideas, Davis (2002) stated that "professional development activities, such as workshops and conferences, have been criticized for being relatively ineffective because they are usually short term, lack adequacy, follow up and ongoing feedback, and do not connect to the curriculum" (Introduction section, para. 2). Casey et al. (2004) agreed by making the claim that effective technology teachers' development and training requires four characteristics. It requires addressing training as part of a long-term plan for all teachers and focusing on individuals' attitudes and knowledge instead of focusing on the group.

The training model usually involves a sequence of skill lessons with little emphasis on learning styles. Teachers feel that the skill lessons are too far removed from actual classroom practices because the skills are learned outside of an educational context (McKenzie, 2001). Based on a review of the literature, Di Benedetto (2005) concluded that in-services teachers need training on specific technology applications in order to integrate technology into the classroom successfully. In addition, Cooke-Plagwitz, (2000) stated that teachers must have the freedom to use technology based on their personal

need. Training should start from the needs assessment point. Assessment points provide the training instructor with an outline for the training methods, which is the first step of any successful training program.

Familiarity and addressing teachers' needs are considerable factors in designing training content and methods of delivery. Training should focus on the teachers who are afraid of and anxious about new technology in order to make new technology a familiar tool (Davis, 2002). Training should focus on teachers' needs more than students' needs, which are usually overlooked by school administration. Casey et al. (2004) stated that it is common for administrators to put the needs of students before those of the teacher though teachers must be comfortable with the new technology to use it in teaching students.

Training content and skills: Generative vs. generic content. Training content and training skills can be looked at differently when the goal is teaching language by technology. There is a complete shift from the training content to be language-oriented literacy rather than computer literacy. In other words, language is first, and technology is second. Computer literacy is important, but it is not the only goal of providing teacher CALL training.

Training content should be readily transferable to a classroom setting (Egbert et al., 2002). The content of coursework has to be designed in a way that enables teachers to plan technology-related courses that are generative and authentic (Egbert et al., 2002; McKenzie, 2001).

One issue that teachers face is the lack of using generative methods and the trainers' use of generic examples in training. That is the lack of authentic and readily transferable content to a classroom setting and the trainer's use of general content that is not focusing on specific skills or specific subject. This negatively affects technology integration efforts. The lack of generative methods and using generic examples make the integration of technology into a curriculum more difficult, if not impossible. According to McKenzie (2001), teachers ensured that most of the past trainings have a lack of generative methods to reach all teachers. He also stated the generative method of training means training teachers in what they can use to improve daily practices as an outcome of professional development experience. Generic strategies assume that each teacher works with any content area rather than a specific one, and they aim to help them do so. McKenzie (2001) found that using generic examples in training creates a wide gap between what teachers learn in training and what they practice in the classroom. The problem of generic examples arises when the schools contract with a software training company that focuses on training teachers to use software with a lack of knowledge about education. One of Kessler's (2006) suggestions for improving teacher training is to "keep use relevant" (p.35). This means that teachers need to be trained in using software in a particular topic for a particular grade.

Harris, Mishra and Koehler (2009) criticized current training strategies as having a lack of consideration for the relationship between content, pedagogy and technology. Their proposal model takes into account the three components as interdependent aspects

of teacher knowledge; each is mutually dependent on the others to assist them to be able to teach by technology.

Training content and skills: Technical support. Receiving training is necessary but not sufficient for technology integration into classrooms. The need for technical support increases with the increase of technology in schools. Technical support was not discussed as part of the training content and skills that teachers need to learn and master. In addition to its importance for transferring training knowledge to the classroom, technical support is often discussed on the basis of the importance of its existence in schools and provided by a qualified professional (Cooke-Plagwitz, 2000; Davis, 2002; Zhao & Bryant, 2006). Technical support is also discussed in terms of the notion that the content of the training must take into account that teachers are less likely to implement technologies they believe are difficult to use or that will create technical problems for teachers to solve (Zhao & Frank, 2003).

Zhao and Bryant (2006) stated that one factor that may affect the degree of technology integration, even if the teachers received training, is the lack of ongoing technical and integration idea support after the training. Successful training needs a resource person who has few other obligations and full-time technology technical support who can work beyond troubleshooting to be a teacher's advisor (Davis, 2002). Cooke-Plagwitz (2000) asserted in his article that training teachers and faculty has to be done in a non-threatening environment with available support when needed and where creativity is respected and appreciated.

Summary

The literature review of this study presents an overview of the theoretical basis of this study. The theoretical framework discusses three dimensions including the development in the curriculum theories, the principles of adult learning theories, and constructivism. There is a great focus on constructivism as the best learning model to be applied in training teachers for integrating technology into their classrooms.

CALL implementation and research in Saudi Arabia are still in the fundamental stages. Most of the research about CALL in Saudi Arabia studies the perceptions and attitudes of teachers toward CALL. They all reached the conclusion that teachers have positive attitudes toward CALL and CALL applications. Similar efforts and instruments were used to conduct these research and studies. Surveys were the most common tool for data collection.

The relationship between technology and language is more than just a subject and a tool. The increased use of technology in our lives increases the demand for computerized student learning. Schools and teachers must take the position of control by technology rather than control of technology. This leads to a change in the teachers' duties in school and hence the need to keep them up to date on pedagogical and technological skills. Developing teachers is the key for developing education. The quality of education does not exceed the quality of teachers.

Different kinds of training emerge in order to reach a transformational practice level of pedagogical adoption of technology in language classroom (e.g., one-on-one training, mentoring training, follow-up training, etc.). A number of factors can influence

technology training for language teachers and their implementation of training skills into their daily teaching practices. These factors include but are not limited to time of training, grouping trainees, and the training environment as well as the types of content and the level of skills.

Chapter 3: Research Design and Methodology

Introduction

Having presented the research background and the issue, and having reviewed the literature, this chapter addresses the research design and methodology adopted to answer the research questions and test their hypotheses. It includes sections describing (a) research questions, (b) research hypotheses, (c) the participants, (d) instrumentation, (e) data collection procedures, and finally, (f) data analysis procedures.

The intent of this study was to learn about the perceived preferences for CALL training among elementary school, male Arabic language teachers in Medina, Saudi Arabia. The following teachers' characteristics were taken into consideration: computer experience, year of graduation, and the type of undergraduate program the teachers received. A quantitative investigation method was used for this research study. A survey instrument, developed in English, was translated into the Arabic language for data collection. Note that each item was compared across languages by a separate translator (survey details are below). Descriptive analysis and multiple regression procedures were used to analyze the data that were applied to determine the differences in these fundamental aspects due to teachers' computer experience, year of graduation, and the type of undergraduate program received. The survey was in closed or restricted form.

Since a questionnaire was used to collect data, this study is considered survey research. Survey research collects data through using measurement tools (e.g., questionnaire and structured interview), and is subject to the stipulations of validity and reliability. In addition, it addresses data statistically to end up with a result that can be

generalized to the original population. It is used when we need to offer statistical validation of the hypothesis or when we need to test concepts and theories across a large population.

The Research Questions

This study was designed to identify the Saudi male teachers' preferences on the fundamental aspects that their CALL training should accommodate. The research questions were:

1. What are the Arabic language teachers' level of computer experience, year of graduation, and undergraduate program, as represented by the sample?
2. What are the teachers' preferences on the fundamental aspects of CALL training provided to Arabic language elementary school teachers? That is, what are their preferences about time of training, grouping trainees, training environment, off the job training, on the job training, training content and skills focus on teacher vs. student, generative vs. generic type content, and technical support content?
3. Does computer experience, year of graduation, and/or type of undergraduate program predict the Arabic language teachers' preferences for the CALL training they receive? If yes, is there any interaction between the predictor variables?

The Research Hypotheses

This research involved two major steps. The first step was represented by the findings of questions one and two (the descriptive questions), whereas the second step was represented by the findings of question three (the regression question). Based on the nature of this research, the research hypotheses were formed based on the result of the

second question. That is, each dependent variable showed some variation was analyzed further to test if computer experience, year of graduation, and/or type of undergraduate program can explain the variation in that particular variable. The exact dependent variable and the hypotheses were reported at the beginning of the finding of the third question.

The Participants and Sample Size

The target population of this study was male Arabic language teachers in Medina, Saudi Arabia. These teachers were selected from teachers in Medina city schools. This city is among the five largest in the country and is widely considered to be one of the most important because of cultural and religious reasons.

Several factors impact the sample size, including the number of predictors, the statistical power, the effect size, and avoiding a Type I errors and Type II errors. Type I error, also known as a "false positive" is Rejecting the null hypothesis when it is actually true. Type II error, also known as a "false negative" is not rejecting the null hypothesis when in fact the alternative hypothesis is true (Tabachnick & Fidell, 2007). Sample size also impacts the validity of the reached results, and the ability to generalize the results to the study population. It is a chain reaction relationship. Increasing the sample size leads to an increase in power and then gives the result more credit to be generalized on the whole population, and vice versa. In general, statistical power means not being wrong and not rejecting the null hypothesis due to sampling error which is basically avoiding Type II error. In regression, it means "the probability of detecting as significant a specific

level of R^2 or a regression coefficient at a specified significance level for a specific sample size" (Hair et al., 2006, p. 195).

A larger sample size is better. The statistical significance can be reached in the case of small effect size when the sample size is large, and hence avoiding Type I error. A larger sample helps to avoid rejecting a true hypothesis. As such, a Type II error might be committed with a small sample size even if the effect size is large, and hence arises the case of hypothesis being false and failing to be rejected (Tabachnick & Fidell, 2007). Different methods suggested the amount of sample size should be between 30 to 119 subjects (Agresti & Finlay, 2009; Hair, Black, Babin, Anderson & Tatham, 2006; Stevens, 1986; Tabachnick & Fidell, 2007), so the sample minimum size required for this study was 119 teachers to meet the following factors: the effect size of .15, alpha .05, and the statistical power of 0.95. Additional details are below.

In order for the finding to be generalized to the population, the sample size must be representative and large enough to attain a required level of accuracy. Sample size is determined by many factors including the statistical power, the effect size, and the types of analysis used in the study. Multiple regression requires a sample size larger than other types of analysis. In multiple regression, scholars suggest different methods for determining the sample size. Stevens (1986) suggested 15 subjects per predictor. Agresti and Finlay (2009) suggested having a sample size of about 10 times the number of predictors. Hair et al. (2006) has preferred 25 subjects per predictor or at least a minimum of five subjects to each independent variable. Assuming the level of $\alpha = 0.05$ with $\beta = 0.20$ and a medium relationship between the variables, a formula to calculate the required

sample size taking into account the number of predictors under the study would be [N > 50 + 8m,] where m is the number of the predictors (Tabachnick & Fidell, 2007). According to this formula, the sample of this study with three predictors should be 74, and N=50 + 8(3) =74. Applying the rule of Hair et al. (2006) offers an almost exact result of 25 *3= 75.

A general power analysis program (GPower 3.1) gave a similar result when it was used to determine the confident sample size needed for this study at the effect size of .15 and alpha .05 (Faul, Erdfelder, Buchner & Lang, 2009). The actual power resulted in 0.95, which is the lowest percentage of not being wrong and not rejecting the null hypothesis due to sampling error. In other words, the lowest power needs to increase the probability of rejecting a false statistical null hypothesis. The sample size given by the GPower software is 119 participants. This sample size was taken as the minimum to be reached. Much effort was put forth to increase the sample size beyond this number (since increasing the sample size leads to an increase of the statistical power), reach statistical significance even with small effect size, acquire an accurate result, and generalize the result to the whole population. In addition, increasing the sample size can reduce the technical difficulty caused by multi-collinearity (Agresti & Finlay, 2009), and increase the regression model stability (Brooks & Barcikowski, 2012).

Instrumentation

A questionnaire was used to gather data from the participants to investigate the male Saudi Arabic language teachers' opinions about the perceived fundamental aspects that CALL training should accommodate for them (See Appendix A). The reason behind

choosing the questionnaire for gathering data was its ability to gather a large amount of information in a well-timed manner (Dornyei, 2003).

Survey error. A questionnaire as a method of survey is basically a list of written statements or questions to which the participants are expected to respond with the researcher not present (e.g., postal questionnaire and online questionnaire) or with the researcher aid (structure interview). It is used to reach a large number of observations for gathering information (Bhattacherjee, 2012; Cohen, Manion, & Morrison, 2007; Stangor , 2007). In order to produce quantitative data, this study used a closed-ended questionnaire. It consists of closed-ended questions with a suitable list of responses (e.g., strongly agree, agree, neutral, disagree, and strongly disagree). Dillman, Smyth, and Christina (2009) and Groves, Fowler, Couper, Lepkowski, Singer and Tourangeau (2009) refer to four sources of survey error: sampling error, coverage error, nonresponse error, and measurement error.

***Sampling error*.** Sampling error is simply a matter of sample size. Sampling error refers to the differences between the sample estimate and the actual value of a characteristic of the population. That is, each member of the population does not have the same probability to be included in the study sample (Dillman et al., 2009).

***Coverage error*.** Coverage error occurs when the sample frame does not adequately represent the underlying population being measured (Dillman et al., 2009) that is, when the target population does not correspond with the population actually sampled (Lavrakas, 2008). It results because of two errors: under coverage (i.e., when the sampling frame excludes members of the target population of interest) and over coverage

(i.e., when members are included incorrectly) (Lavrakas, 2008). Moreover, coverage error is created by the weakness of the sampling frame and/ or the survey implementation (Lavrakas, 2008). Accordingly, the researcher obtained the last updated list of the schools in the city of Medina during the academic year of 2013-2014. The sampling frame include all the state-run boy's elementary schools and exclude the private schools, international schools, special education schools, and Qur'anic schools. The sampling frame included 78 schools as the target population of this study.

Measurement error. In order to attain valuable data, the measurement has to test what the researcher aimed to test. Several aspects were taken into consideration to ensure the accuracy of the measurement. The content validity, reliability, and the quality of the translation were tested before the data collection. Each of them are discussed in separate sections in chapter 3 and evaluated in chapter 4.

Nonresponse error. Response error was evaluated in terms of missing data and the response rate. The non-response error occurs when the researcher was not able to survey the people who would be eligible to take the survey, or when the questionnaire was returned in an incomplete condition; the latter deals with the missing data. However, there were only a few items that are not relevant to the primary research question that came with missing data. Nonresponse details are described in Ch. 4.

Instrument development. The precision of any data collected depends on the accuracy of the questionnaire items to reflect the researcher's actual intention rather than reflect the thought of the participants. So, the questionnaire items were built so as not to be susceptible to more than one interpretation or interpreted differently from what the

researcher meant. Designing and developing the questionnaire took three major and careful steps. First, there was the initial development of the question of inquiry. This was achieved by reviewing the literature to gather information. The second step was piloting and surveying a sufficient number of participants. The third step was revising the scale items based on the results of the pilot study.

Description of the instrument and the scoring procedure. The questionnaire served as a data collection tool to have self-reported data from the participants. It consisted of two sections (Section A and Section B) that correspond to the variables of the study as follows:

Section A covers the issue of participant's preferences of how to best apply CALL during in-service training. To examine the research questions two and three, this section has eight scales, namely "Training time" (2 items), "Grouping the trainee" (2 items), "Training environment" (5items), "On the job training" (9 items), "Off the job training" (3 items), "Content and the skills focus on teachers vs. students" (3 items), "Generative vs. generic content" (5 items), and "Technical support" (2 items).

The scales in this section of the questionnaire, except Training Time Scale, were quantified by the averaged scores of 34 items using a 5-point Likert –type scale, ranging from Strongly agree /SA (5), through Agree / A (4), Neutral/ N (3), Disagree/ D (2), to Strongly disagree/SD (1). Training Time Scale has two items, and each was scored by a 5-point scale. The first item ranges from 10 hours (1), through 15 hours (2), 20 hours (3), 25 hours (4), and to 30 hours (5), whereas, the second item ranges from 1 hour (1), through 2 hours (2), 3 hours (3), 4 hours (4), and to 5 hours (5). Most of the questionnaire

items in this section were positive while two of them had negative wording. When calculating the responses, the negative items were converted to positive values. These items were 19, 20, 21, 28, and 29. Obviously, the researcher revised the reflected values of the numbers for these five negative items.

Section B contained demographic questions concerning the participants' characteristics and some other related demographic information to examine the research question one. It had 8 question items; 4 items represented three independent variables: teachers' "year of graduation" (1 item), "computer experience" (2 items), "type of undergraduate program" (1 item). There were four other items about the technology equipment that was available at the schools and in the classrooms. These four items did not directly serve the main goal of the study. However, they also provided some information about Saudi schools since it was reported that there is a lack of literature about this topic. The eight items in this section were quantified by individual scores and treated separately as descriptive information.

Translation of the instrument. The questionnaire was developed in English and then translated into Arabic (See Appendix B). Since the target participants were Saudi language teachers in Medina, the questionnaire was translated. Due to language and technology terminology used in the survey, the content validity of the Arabic version was tested by two Arab graduate students at Ohio University, who have extensive knowledge of technology in English and Arabic, in order to measure the appropriate comprehensibility, readability, and clarity of the implementation for participants and to ensure the quality of the translation. Note that each item was compared across languages

by a separate translator. The researcher discussed participants' opinion of and experience with the questionnaire items in the debriefing session. The interview focused on the clarity of written items, identification of word confusion and difficulty, and any questions not answered by the interviewee.

Although this cognitive method is less reliable across trials, it detects participant difficulties almost exclusively (Krosnick, 1999). There were no significant changes proposed by the participants; some minor suggestions were mostly about word selection in the items and revising some sentences in the directions at the beginning of each section of the questionnaire.

Content validity of the instrument. Validity of the instrument is the first concern for getting valid and accurate results. Validity evidence indicates the measure assesses that which the researcher thinks it measures (Check & Schutt, 2012), or what it is supposed to measure (Drew, Hardman, & Hosp, 2008).Content validity is a non-statistical type of validity that is established when the instrument "covers the full range of the concept's meaning" (Check & Schutt, 2012, p.82). The full range of meaning can be tested by reviewing the literature and seeking the experts' opinions on the content of the instrument.

In order to ensure that the questionnaire reflects the content to be measured, the content validity of the instrument was checked and tested by feedback of five referees who specialized in teacher education, instructional technology, linguistics, and research and evaluation. They served as advisory committee members for this research. In addition, another professional expert in technology checked the content of the

questionnaire and provided suggestions and comments. Finally, they approved the final version of the questionnaire and the corrections that had been made. The researcher took further step to check the content validity by conducting a pilot study.

Instrument pre-testing of the Arabic version (pilot study). Pilot study is the mini version of the full-scale study. It is also the pre-testing of research instruments such as a questionnaire. The pilot study increases the likelihood of success in the main study but does not guarantee it (Van Teijlingen, Rennie, Hundley & Graham, 2001). However, it has been an essential part of questionnaire design to identify the problematic issues of the content and format of the questionnaire (Dillman, 2000). Conducting a pilot study was important to ensure the effectiveness of the research instrument. It allowed the researcher to make any necessary adjustments by providing him with feedback to re-draft and revise the questionnaire based on the outcome of the pilot study. Accordingly, the researcher decided which items to retain, modify, or remove.

In order to determine the clarity of the questionnaire and to test the hypotheses and internal validity, Johanson and Brooks (2010) recommended a minimum of 30 representative participants for the target population. Because the issue of burning through the main study sample arises when piloting a sample from the target population, a convenience sample of a minimum of 30 Saudi graduate students at Ohio University and Wright State University were initially surveyed.

Therefore, a pilot study was conducted in June 2013, to test the wording, relevancy, length, and the presentation of the questionnaire. The participants were either teachers in Saudi schools or have at least one semester teaching practicum as a part of

their undergraduate program. They were given sufficient time to complete the questionnaire and return it with their comments. The respondents' comments and suggestions led the researcher to delete and modify some items in the questionnaire. As a result, three items were removed and three items were revised in Section A. the items that were removed were item 23, 25, and 27, whereas items revised were item 22, 24, and 34.

Reliability of the instrument. Reliability of the questionnaire is that it gives the same results if the questionnaire was re-applied several times. It demonstrates the consistency of the results. In a sense, if the researcher repeats the measurement and gets the same results, it is a reliable measurement. According to Drew et al. (2008), the measurement "would be very likely to show consistency across different times and observers. It, therefore, would be a very reliable measure with the same performance resulting in the same score on repeated occasions" (p. 111). Reliability informs the researcher as to which item works best in the instrument to serve the research purpose. In that way, the instrument can be revised or deleted accordingly. Reliability analysis was computed by using Cronbach's coefficient alpha in SPSS (Cronbach, 1951)

Table 2 below shows the result for the Cronbach's Alpha coefficient for the eight dependent variables: training time, grouping the trainee, training environment, on the job training, off the job training, content and the skills focus on teacher vs. student, generative vs. generic content, and technical support.

Table 2

Overall Internal Consistency Reliability of the Instrument for the pilot study

No.	Subscale	Cronbach's Alpha	N of Items
1	Training Time	.765	2
2	Grouping the trainee	.788	2
3	Training environment	.862	5
4	On the Job Training	.823	9
5	Off the Job Training	.821	3
6	Content and the Skills Focus on Teacher vs. Student	.780	3
7	Generative vs. Generic Content:	.773	5
8	Technical support	.785	2

The Cronbach's Alpha Coefficient values shown in the table above illustrate the reliability measures for pilot study's questionnaire items after the necessary adjustments for the questionnaire items were conducted. It indicates that the Cronbach's Alpha Coefficient values of the dependent variables are as follow: Training Time with alpha of .756 (n=2 items), Grouping the trainee with alpha of.788 (n=2 items), Training environment with alpha of .862 (n=5 items), On the Job Training with alpha of .823 (n=9 items), Off the Job Training with alpha of .821 (n=3 items), Content and the Skills Focus on Teacher vs. Student with alpha of.780 (n=3 items), Generative vs. Generic Content

with alpha of .773 (n=5 items), and Technical support with alpha of .785 (n=2 items). The Cronbach's Alpha shows a high coefficient among the subscale items**.** The results suggested that, overall; all of the questionnaire subscale items were reliable.

Data Collection Procedures for the Main Study

As a first step, to ensure ethicality in the study, three prior approvals were sought out from Ohio University with which the researcher is affiliated and from the Ministry of Education represented by the General Directorate for Education where the study took place. Prior approval was sought from The Saudi Arabian Cultural Mission (SACM) which is the sponsor of the researcher (See Appendix C). For Ohio University, an application along with sufficient information about the research was sent to Institutional Review Board (IRB) and the agreement was granted (See Appendix E). For the General Directorate for Education, a letter soliciting permission to distribute the questionnaires within its schools along with the questionnaire was sent to the general director of General Directorate for Education in Median, and the permission was received (See Appendix D).

The researcher requested a waiver of Informed Consent. However, a cover letter with extra information regarding the study was provided to the teachers so that the teachers can decide to participate or not. The cover letter provided information about: a) the purpose of the study, b) how the participant responded to each section of the questionnaire, c) the importance of the study for the teachers and for the society, and d) the estimation time for completing the questionnaire. Also, the letter covered several ethical consideration issues that might influence the teachers' participation: a) the data will be used only for research purposes, b) No risks or discomforts are anticipated, and

lastly c) the participation is completely voluntary so the participant may quit any time (See appendix F).

Administratively, the city of Media consists of two sectors (east and west). With the exclusion of private schools, international schools, special education schools, and Qur'anic schools, the number of state-run boy elementary schools in the east and west sectors of Media is 78. The questionnaire reached 214 teachers in 36 simple randomly selected schools in Medina. The teachers were voluntarily asked to fill out the questionnaire. The number of compete returned questionnaire was 164 out of 214. Using this sampling method, along with an adequate sample size, increases the probability of getting a representative sample with the same relevant characteristics of the population from which they are drawn.

Since the researcher was in the United States of America and his field study and the target population was in Saudi Arabia, the researcher himself could not carry out the administration of the questionnaires. A proxy researcher therefore administered the questionnaire. The proxy researcher visited the schools and met the principles who, in turn, have assisted in the questionnaire distribution and collection. One week after the questionnaire distribution, the proxy researcher revisited the schools to collect the questionnaires.

The participants of this study were asked to respond to the Arabic version of the questionnaire to reflect on their preferences about the perceived fundamental aspects that CALL training should accommodate for Arabic language teachers. The questionnaire had a paper and an electronic version (Google survey forum). Both of them were equivalent

and available for the participants. Selecting the appropriate version was left for the participants or the principles to coordinate with the proxy researcher.

There are benefits for using these electronic tools. Besides its benefit for reaching teachers who were not able to be reached by the paper survey distributors, electronic surveys save time and reduce the cost and social desirability (Umbach, 2004). Electronic surveys are the fastest method for collecting data. Since a participant fills out the questionnaire and submits it, the researcher receives an email with the participants' response and is then able to have it and deal with it automatically without need to enter the data in the (SPSS) manually. This reduces the errors resulting from data entry (Umbach, 2004). Google survey is valuable in data analysis because it helps the researcher to save time by categorizing the participants' responses and offering them on a spreadsheet.

Electronic surveys highly increase the confidence of participants' responses. No one sees the participants' responses except the researcher. In the paper questionnaire, administrators play a role in survey distribution and collection which may impact the teachers' (participants') responses to some of the questionnaire questions. They might answer without honesty on the questionnaire when they think that their school principals would see their responses. In addition, using electronic surveys helps in decreasing the response rating needed for the study because the electronic survey is highly trusted.

Data Analysis Procedures

The type of statistical analysis is determined by three factors: the purpose of the statistics analysis, the number of variables, and the level of measurement (whether

nominal, ordinal, interval or ratio). The quantitative analysis may depend on the purpose of the statistical analysis; that is, whether it is descriptive or inferential (Field, 2009). The data were analyzed to answer the question of the differences among teachers' computer experience, undergraduate program and year of graduation. All of these influence teachers' preferences of the fundamental aspects of CALL training provided to Arabic language elementary school teachers in order to learn technology and then transfer it to their language classroom.

The data from the questionnaire were compiled and analyzed using the software, Statistical Package for the Social Science (SPSS) version 18.0 for Windows. This study consisted of eight dependent variables: "time of training," "grouping trainees," "training environment," "off job training," "on job training," "the focus of content on teacher vs. student," "generative vs. generic type content," and "technical support content." The study consisted of three independent variables: "computer experience," the "year of graduation," and the "type of undergraduate program." The following table shows the research questions and the appropriate statistical procedure.

Table 3

The research questions and the appropriate statistical procedure

No.	Research Question	Analysis Procedure
1.	What are the Arabic language teachers' level of computer experience, year of graduation, and undergraduate program, as represented by the sample?	Descriptive analysis
2.	What are the teachers' preferences on the fundamental aspects of CALL training provided to Arabic language elementary school teachers? That is, what are their preferences about time of training, grouping trainees, training environment, off the job training, on the job training, training content and skills focus on teacher vs. student, generative vs. generic type content, and technical support content?	Descriptive analysis
3.	Does computer experience, year of graduation, and/or type of undergraduate program predict the Arabic language teachers' preferences for the CALL training they receive? If yes, is there any interaction between the predictor variables?	Multiple regression

Descriptive analysis was used to answer the first and second questions. Mean, standard deviation, frequency table, and/or frequency histogram were used to construct

indicators from the data about teachers' level of computer experience, year of graduation, type of undergraduate program, and the fundamental aspects of CALL training, including time of training, grouping of trainees, training environment, off job training, on job training, the focus of training content on teacher vs. student and skills, generative vs. generic content, and technical support content.

Based on the result of the second question, multiple regression was used for testing if computer experience, year of graduation, and/or type of undergraduate program can explain the variation in the teachers' preferences about fundamental aspects of CALL training. That is, if the result showed some variation in any of the fundamental aspect of CALL training, multiple regression was used to predict and explain the variation. There was no need for this step if the variation was small.

Analysis plan. All variables were described. Some variables were included in a regression model on the basis of observed variance. This is a bit unusual, but the researcher was only interested in applying predictive modeling to explore relationships among those variables for which there was considerable variation. The reason for this was because of the nature of the research questions. Recall that the overriding purpose of this work was to describe and understand CALL training preferences of male teachers of Arabic in Medina. In cases where the sample reported a strong preference for which there was limited variation, the purpose of the work had been met. That is, should the sample overwhelmingly endorse a preference for a specific training environment, then there would be limited utility in prediction. For those variables that are characterized by

relatively high variation and a range of preferences, it was useful to understand what demographic variables, if any, could predict training preferences.

Variation was judged by examining histograms of data and standard deviations. Because of strategy, not all variables were subjected to regression analyses, but all were described. The decision to include those variables was made plain in Chapter 4 by providing frequency tables, histograms, and descriptive statistics. When regression was employed, all necessary assumptions were assessed and appropriate models were applied. A general default that forced entry method of multiple linear regression was adequate.

The predictors in the regression model should not be selected randomly but rather based on a reason (e.g., a theory or previous research) (Field, 2009). Type of undergraduate program and year of graduation were totally new predictor variables to study in the Saudi educational context. There was criticism for teacher preparation programs in terms of the lack of sufficient technology training courses as well as suspicions about the quality of the existing courses in terms of updating and modernizing content.

Computer experience was selected as one of the predictor variables because several studies in Saudi Arabia touched upon the lack of teachers' technical expertise. Indeed, much of the research concluded with recommendations for the need for more teachers' training and an increase in their technology skills and knowledge (Albalawi & Hirzallah, 2010; Alhawiti, 2011; Alshumaim & Alhassan, 2010; Alturki, 2009; Al-Zahrani, 2012). Although the variable was not new in the field of CALL or the

technology field in the Saudi educational context, it is new to be used as a predictor for teachers' training preferences.

The order in which predictor variables are entered into the model has little effect on the parameter calculated if all the predictors are not related to each other; however, this is unlikely to be the case. It is very unusual to have uncorrelated predictors (Field, 2009). Therefore, the method of entry predictors in the model is important for insuring accurate results. This study used the primary regression model using the forced entry method. This is the default approach in which all the independent variables entered in the regression model simultaneously. The forced entry method was used because there were theoretical reasons for including the variables in the model at once as they are new variables to be study in Saudi educational context. Another reason was that there was not enough theory to go with a hierarchical approach and use a fully exploratory (i.e., stepwise) procedure (Field, 2009).

Multiple Regression is the process of predicting the criterion based on the relationship between the criterion variable and two or more predictor variables (Aron, Aron, & Coups, 2005). The regression models are the most important models. Regression models are built based on the logic that the variable under the study depends on explanatory variables explaining its behavior. Depending on the specific theory to explain the phenomenon, it can formulate the relationship in a measurable form of a mathematical model. In this research, explaining the fundamental aspects of CALL training is based on the relationship with each of the independent variables.

The aim of measuring the correlation coefficient is to know the degree of the relationship between variables and the degree of coupling one variable with another variable. This association does not mean that one variable causes the other variables as correlation does not guarantee causation (Sprinthall & Sprinthall, 1994). However, if a strong relationship between two variables can be found, we may need to estimate one variable in terms of the other variable. This is what it called prediction. Regression is one of the methods that allow researchers to make a prediction. The variable you want to study, its behavior and how it affects other variables is called the dependent variable, whereas the entire variable influencing the behavior of the dependent variable is the independent variable or predictor.

In this research, the researcher aimed to estimate the fundamental aspects of CALL training by knowing the teachers' computer experience, year of graduation, and the type of undergraduate program received.

Assumptions of statistical analysis. Statistical tests depend on meeting assumptions made about the variables used in the analysis. The results might not be trustworthy and truthful if these assumptions are not met. Thus, for attaining accurate results and for generalization purposes, every statistical test requires specific assumptions to be met in the data (Field, 2009). Otherwise, the credibility of the result and the reached conclusion is suspicious. Basically, violating assumptions leads to a Type I or Type II error (Osborne & Waters, 2002) and leads to serious biases (Pedhazur, 1997). Therefore, there was a need for screening the data to ensure none of the assumptions were violated and to reach a valid and reliable conclusion. The assumptions of multiple regression that

were tested in this study are homoscedasticity, normality, linearity, outliers, multi-collinearity, and finally, the independence.

Homoscedasticity. Homoscedasticity, or homogeneity of variance, is the somewhat constant variation in errors across values of the given variable. The variance of a score should be homogeneous across the level of the predictors (Field, 2009). In other words, the dependent variable shows similar amounts of variance across the level value of the predictors. Osborne and Waters (2002) pointed out that violating this assumption weakens the analysis. As detailed in Chapter 4, homoscedasticity was evaluated graphically as a part of the residual analysis (Howell, 2007).

Normality. Normality refers to the degree to which variables follow a normal distribution. Osborne and Waters (2002) reported that violating the normality assumption, when variables are highly skewed or kurtotic, misrepresents relationships between variables and deforms the significance of tests. Normality assumption can be evaluated graphically by frequency histograms or statistically by skewness and kurtosis scores (Hair et al., 2006). In this study, the assumption was evaluated graphically by frequency histograms and statistically by skewness and kurtosis scores.

Skewness, which is a measure of symmetry, shows whether the data set looks the same to the left and right of the center point. Kurtosis is a measure of whether the data are peaked or flat relative to a normal distribution. Basically, if the data are normally distributed, skewness and kurtosis indicate a normal distribution of the data set when their values are close to zero. Statistically, skewness and kurtosis values should be within the range of ±2. West, Finch, and Curran (1995) have considered the value greater than or

below the range of ±3 to be highly skewed or kurtotic. However, Brown (1997) suggested that the value of kurtosis that is not in the range of ±2 is assumed to be highly kurtotic. Graphically, both skewness and kurtosis are examined by screening data using a scatter plot of residuals against predicted dependent variable scores. Assessing the normality graphically by looking at the shape of the distribution instead of only relying on the statistical value of skewness and kurtosis is highly recommended by some scholars (Tabachnick & Fidell, 2007).

Linearity. Linearity refers to the degree to which a straight-line relationship between all pairs of variables (X1,X2), (X2,X3), (X1X3), (X1,Y), (X2,Y), and (X3,Y) is present. In multiple regression, it is assumed that the relationship between variables is linear. Although multiple regression analysis is not seriously affected by slight deviations from this assumption, it is a very important assumption not to be greatly violated. The accuracy of finding results is based on the assumption of linearity (Osborne & Waters, 2002). It can always be assessed by testing the linearity using a bivariate scatterplot of residuals against the predicted scores of the dependent variables. When the relationship between pair variables is not linear, curvature in the relationships is present. Thus, there is a need for further solutions such as performing nonlinear components or transforming the variables.

Outliers. An outlier refers to the extreme value or extreme standard scores. It needs to be identified and treated because multiple regression is sensitive to the presence of outliers (Pallant, 2007). Hair et al. (2006) differentiated between two types of outliers based on the number of variables represented by the scores. An outlier occurs either

within a single variable (univariate outlier) or with two or more variables (multivariate outlier). Including the outlier in the regression analysis can distort the analysis because it pulls the regression line towards itself, which leads to an inaccurate result for all other cases in the data set.

Outliers might be correctly sampled and belong to the under- study population. In this case, it must be included in the analysis unless it distorts the regression analysis. However, they can occur because of errors in data entry or if the cases do not belong to the target population when they are incorrectly sampled. This would be the case if they do not show in the real distribution of the variable. Thus, the best solution is to not include the outlier in the analysis (Tabachnick & Fidell, 2007).

Examining the outliers is based on whether they are univariate outliers or multivariate outliers. They both can be examined graphically and statistically. Univariate outliers can be checked graphically by using the box plots method, scatterplots, and/or normal probability plots. Statistically, the score is considered to be an outlier if its value exceeds ±2.5 (Tabachnick & Fidell, 2007) or ±3 to 4 if the sample size is greater than 80 (Hair et al., 2006). Examining the multivariate outliers is necessary and can be done by using Mahalanobis D^2 measure (Tabachnick & Fidell, 2007). Graphically, the chi^2 probability plot can be used for multivariate normality.

Multi-collinearity. Multi-collinearity refers to the degree of relationship (i.e., correlations) among the independent variables. These correlations should not be too strong (<.85) (Tabachnick & Fidell, 2007). According to Agresti and Finlay (2009), "when there are many explanatory variables but the correlations among them are strong,

once you have included a few of them in the model, R^2 usually does not increase much more when you add additional ones" (p. 451).

There are many ways to detect multi-collinearity. First, it can be done by examining the correlation between the independent variables and making sure they are less than .80 or .90. The desired situation is when each independent variable has a low correlation with other independent variables and a high correlation with the dependent variable. The second way is checking the tolerance and the Variance Inflation Factor (VIF) values. The tolerance values should be greater than zero and the VIF values are less than 10. Otherwise, multi-collinearity is violated and it is likely to be a problem.

The independence. This assumption means that the measurement is not influenced by any other measurement. That is, residuals are uncorrelated (Pallant, 2007). Durbin-Watson was used to test for correlated residuals. This test ranges from 0 to 4; where a value close to 2 indicates uncorrelated residuals or no serial correction, a value close to 0 indicates positive correction, and a value close to 4 indicates negative correlation (Field, 2009).

Summary

The purpose of this study was to determine the Saudi language teachers' preferences on the perceived fundamental aspects that CALL training should accommodate. Data collection involved survey procedures. Two versions of a questionnaire (paper and electronic), translated into Arabic and using a five-point Likert scale, were designed to measure teachers' preferences on the perceived fundamental aspects that CALL training should accommodate in order to learn technology and then to

transfer the gained knowledge into their language classrooms. The software Statistical Package for the Social Science (SPSS) version 18.0 was used for Data analysis. Descriptive analysis and multiple regression procedures were used for analyzing data. The data then were used to identify the perceived fundamental aspects that CALL training should accommodate for Arabic language teachers. These fundamental aspects fall into one of three categories: structural factors of CALL training, delivery method of training, and training content and skills. Each category has more than one dependent variable.

Chapter 4: Research Findings and Analysis

This study was conducted to investigate the Saudi male teachers' preferences on the fundamental aspects of CALL training. The findings of this study were based on data obtained from Arabic language teachers in state-run boys' elementary schools in Medina, Saudi Arabia. The data were collected through a two section questionnaire: Section A queried respondents about the fundamental aspects of CALL training. The questions in this section were categorized into eight subscales; the eight subscales correspond to the dependent variables of the study. Section B was about the demographic information about Saudi teachers and schools. Closed-ended questionnaire items were conducted with 164 teachers from 36 simple randomly selected elementary schools in Medina.

The study aimed to answer the following research questions:

Q1) What are the Arabic language teachers' level of computer experience, year of graduation, and undergraduate program, as represented by the sample?

Q2) What are the teachers' preferences on the fundamental aspects of CALL training provided to Arabic language elementary school teachers? That is, what are their preferences about time of training, grouping trainees, training environment, off the job training, on the job training, training content and skills focus on teacher vs. student, generative vs. generic type content, and technical support content?

Q3) Does computer experience, year of graduation, and/or type of undergraduate program predict the Arabic language teachers' preferences for the CALL training they receive? If yes, is there any interaction between the predictor variables?

Missing Data

Data were missing from two items (item 34 and item 40) and these were not related to the primary research questions. They are not sufficiently important as they do not serve the main goal of this study. They were among the items that were included in the questionnaire to provide a broader view about the Saudi school context as there was a lack in literature about it. The missing data are three cases in item 34 (1.8%) and five cases (3%) in item 40. The statistical imputation for the missing data was avoided as the statistical imputation for less than 5% missing data will in general yield the same basic result as listwise deletion (Enders, 2010). Additional details are provided when addressing the result of the demographic information in this chapter.

Response Rate

The population from the sample drawn is unknown in terms of the variables of interest in this study. That is, no statistical information was available about from where and when the teachers graduated, as well as their level of computer experience. Among the 78 state-run boy's elementary school, the questionnaire reached 214 teachers in 36 simple randomly selected schools in Medina. The number of compete returned questionnaires was 164 out of 214, yielding a 76.63% response rate.

Although there might be a limitation, evidence of the non-responders did not appear to be systematically different from what is known about the population. As a result, there is no evidence of non-response bias, and the sample is representative. Additional details about how the sample captured the population when addressing the result of demographic information is found in this chapter.

Reliability

The data analysis revealed that the questionnaire subscale items were reasonably reliable. Cronbach's alpha coefficient ranges from 0 to 1.0. Hinton, Brownlow, and McMurray (2004) suggested four cut-off points for explaining reliability scores: 0.90 and above implies excellent reliabilities, .70–.90 implies high reliability, .50–.70 implies reasonable and moderate reliability, and .50 and below is low reliability. Nunnally (2010) and Cohen (1988) recommended that the instrument used have reliability of .70 or better. Although several scales included three or fewer items, reliability was found to be in an acceptable range. This suggests that the measurement is efficient as the formula for estimating alpha is driven by the number of items (i.e., more items yield better alpha, and vice versa).

Table 4 shows that coefficients among the subscale items are all above .75. The Cronbach's Alpha Coefficient value of the dependent variables are as follow: Training Time with alpha of .765 (n=2 items), Grouping the trainee with alpha of.766 (n=2 items), Training environment with alpha of .797 (n=5 items), On the Job Training with alpha of .880 (n=9 items), Off the Job Training with alpha of .760 (n=3 items), The Focus of Content on Teacher vs. Student with alpha of.760 (n=3 items), Generative vs. Generic Content with alpha of .761 (n=5 items), and Technical support with alpha of .799 (n=2 items).

Table 4

Overall Internal Consistency Reliability of the Instrument

No.	Subscale	Cronbach's Alpha	N of Items
1	Training Time	.765	2
2	Grouping the trainees	.766	2
3	Training environment	.797	5
4	On the Job Training	.880	9
5	Off the Job Training	.760	3
6	Content and the Skills Focus on Teacher vs. Student	.760	3
7	Generative vs. Generic Content:	.761	5
8	Technical support	.799	2

Analysis of the Research Question One

Research Question 1: What are the teachers' level of computer experience, year of graduation, and undergraduate program, as represented by the sample?

Types of the undergraduate program. One hundred sixty four (164) teachers participated in the study, yielding a 76.63 percent response rate. Among the participants, 62 (37.8%) graduated from teachers' college, 49 (29.9%) from college of education, 39 (23.8%) from Arabic language college, and 14 (8.5%) from library arts program college (Table 5). One hundred eleven (67.7%) teachers graduated from educational programs;

see Table 6. These programs refer to the programs that were provided by teachers' colleges and college of education, whereas 53 (32.3%) teachers graduated from non-educational programs-the programs were offered by Arabic Language College and library arts colleges.

Table 5

Demographic information/ participants by colleges

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	teachers' college	62	37.8	37.8	37.8
	college of education	49	29.9	29.9	67.7
	Arabic language college	39	23.8	23.8	91.5
	library arts program college	14	8.5	8.5	100.0
	Total	164	100.0	100.0	

Table 6

Demographic information/ participants by type of undergraduate program

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	educational program	111	67.7	67.7	67.7
	None educational program	53	32.3	32.3	100.0
	Total	164	100.0	100.0	

Year of graduation. The years of graduation for the participants distributed on 30 years and ranged from 1982 to 2012 (Table 7). The most frequency was 2003 followed by 2008, whereas the lowest frequency was 1982 (Figure 1).

Table 7

Demographic information/ participants by year of graduation

Descriptive Statistics		
N	Valid	164
	Missing	0
Mode		2003
Range		30
Minimum		1982
Maximum		2012

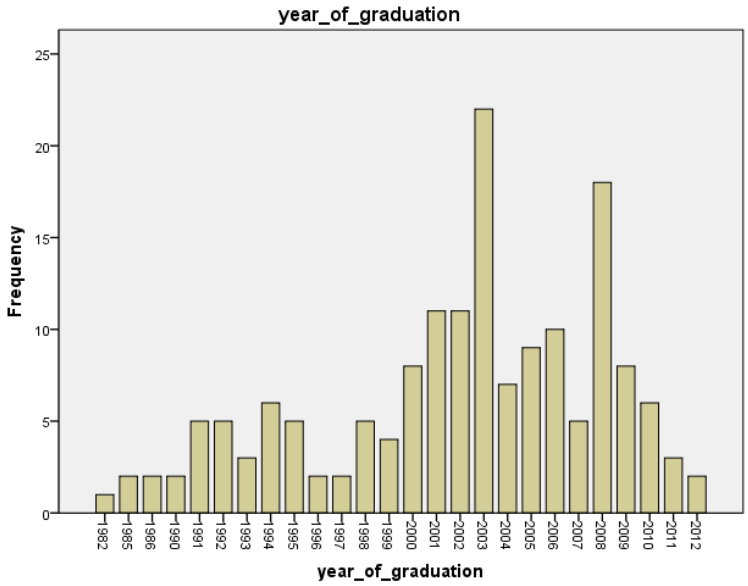

Figure 1. The frequency of the numbers of years since graduation

Computer experience. Computer experience was examined in three ways: years of computer use, computers used daily to support classroom instruction, and teachers' evaluations of their computer experience. More obviously, the participants were asked about how many years they have been using computers in their life, about their typical use of a computer to support classroom instruction (whether they use a computer daily or almost daily, one or a few times per week, one or a few times per month, or never), and finally, about best describing their computer skills and knowledge (whether they are beginner, intermediate, advanced, or expert).

Table 8 shows that the amount of teachers' computer experience ranged from one to 20 years with the mean of 9.24 and SD= 4.094. The table also indicates that daily computer use to support classroom instruction takes place at a point between "One or a few times per week" and "Daily or almost daily" but is closer to "One or a few times per

week" with the mean of 3.10 and SD = .988. Finally, teachers' evaluations of their computer experience take place at a point between "Intermediate" and "Advanced" but are closer to "Intermediate" with the mean of 2.30 and SD = .743.

Table 8

Demographic information/ participants' level of computer experience

	N	Minimum	Maximum	Mean	Std. Deviation
Years of using computer	164	1	21	9.24	4.094
Computer daily use	164	1	4	3.10	.988
Skills and knowledge	164	1	4	2.30	.754
Valid N (listwise)	164				

Other demographic information. Due to the lack of literature reported about Arabic language teachers in Saudi Arabia and the type of technology equipment available at the Saudi elementary schools, other demographic information was reported from the participants. Although this demographic information does not serve the main goal of this study, it is valuable to report here to show a broadened picture about the context in Saudi schools.

To answer the question of owning a computer, laptop, or iPad, the vast majority of the teachers (96.3%; n=158) have a computer, laptop, or iPad. Only three teachers

(1.9%) among 164 do not own a computer, laptop, or iPad. Three cases (1.8%) were reported as missing data (Table 9).

Table 9

Demographic information/ the number of teachers who own a computer, laptop, or iPad

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	3	1.8	1.9	1.9
	yes	158	96.3	98.1	100.0
	Total	161	98.2	100.0	
Missing	0	3	1.8		
Total		164	100.0		

Over three-fourths of teachers (77.4%; n=127) reported that their schools have a computer lab, whereas the rest of them (19.5; n=32) reported that their schools do not have a computer lab. Five cases (3%) were reported as missing data (Table 10).

Table 10

Demographic information/ the number of teachers whose schools have a computer lab

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	32	19.5	20.1	20.1
	Yes	127	77.4	79.9	100.0
	Total	159	97.0	100.0	
Missing	0	5	3.0		
Total		164	100.0		

Table 11 shows the technology equipment that is available at the schools. The decrease in the order of the equipment availability is as follows: computer reported by 134 teachers, data show projector reported by 97 teachers, smart board reported by 38 teachers, and finally, digital camera reported by 19 teachers.

Table 11

Demographic information/ type of technology equipment at the schools

	Sum
Computer	134.00
Data show projector	97.00
Smart board	38.00
Digital camera	19.00

Table 12 shows the technology equipment that is available in the classroom. The decrease in the order of the equipment availability is as follows: computer reported by 87 teachers, data show projector reported by 58 teachers, smart board reported by 16 teachers, and finally, digital camera reported by four teachers.

Table 12

Demographic information/ type of technology equipment in the classroom

	Sum
Computer	87.00
Data show projector	58.00
Smart board	16.00
Digital camera	4

Analysis of the Research Question Two

Research Question 2: What are the teachers' preferences about the fundamental aspects of CALL training provided to Arabic language elementary school teachers? That is, what are their preferences about time of training, grouping trainees, training environment, off the job training, on the job training, the focus of content on teacher vs. student, generative vs. generic type content, and technical support content?

This question aims to construct indicators about the teachers' preferences on the fundamental aspects of training. The analyzed data were presented statistically by mean, standard deviation, minimum and maximum scores, and frequency table, and graphically

by frequency histogram. The participants were asked to respond to five-Likert scale items where each item was given a numerical value ranging from 1= "strongly disagree," 2 = "disagree," 3= "neutral," 4 = "agree," and 5 = "strongly agree." Time of training was scored differently as the first item was given a numerical value ranging from 1= "10 hours," 2 = "15 hours," 3= "20 hours," 4 = "25 hours," and 5 = "30 hours," and the second item was given a numerical value ranging from 1= "one hour," 2 = "two hours," 3= "three hours," 4 = "four hours," and 5 = "five hours."

The questionnaire items to answer this question covered three areas of training (i.e., the structural factors of training, delivery methods, and training content and skills) to test eight fundamental aspects of CALL training: time of training, grouping trainees, training environment, off the job training, on the job training, the focus of content on teacher vs. student, generative vs. generic type content, and technical support content.

The structural factors of training. The teachers were asked to test their preference on three dependent variables: time of training, grouping trainees, and training environment. These three variables represent the structural factors of training that had been tested in this study. For the time of the training, the teachers were asked about their preferences on the duration and the intensity of the training. For grouping trainees, teachers were asked to identify their preferences on the homogenous grouping in terms of the same grade level of teaching and the similar technology equipment available in their schools. For training environment, teachers were asked about their preferences to be trained in a constructive environment.

Time of training. According to the analysis of data gathered, the mean of the teachers on *the time of training* is 3.03 with SD= 1.03613 (Table 13). The frequency table (Table 14) and frequency histogram (Figure 2) demonstrate that the teachers' responses on the time of training spread all over the scale. The data ranged from 1 to 5, but the sample did not report a strong preference on specific time. About one-fourth (23.8%) of the teachers prefer a relatively short time of training with the frequency means ranging from 1 to 2 (i.e., they prefer the duration of their time of training to range from 10 to 15 hours and each session to range from 1 to 2 hours); about one-fourth (26.2%) of the teachers prefer a relatively long time of training with the frequency means ranging from 4 to 5 (i.e., they prefer the duration of their time of training to range from 25 to 30 hours and each session to range from 4 to 5 hours); and lastly, half (50%) of the teachers prefer a relatively medium time of training with the frequency means ranging from 2.5 to 3.5 (i.e., they prefer the duration of their time of training to range between the short and the long range; from more than 15 to fewer than 25 hours and each session to range from 2.5 to 3.5 hours). This indicated that the variable was characterized by relatively high variation and a range of preferences. There is, therefore, a need for even further analysis using multiple regression to see what demographic variable, if any, can predict training preferences. Details are in the analysis of question three.

Table 13

Descriptive statistics for the data set of time of training

Statistics		
N	Valid	164
	Missing	0
Mean		3.0396
Std. Deviation		1.03613
Minimum		1.00
Maximum		5.00

Table 14

Frequency table for the data set distribution for the time of training

Time of training

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	7	4.3	4.3	4.3
	1.50	14	8.5	8.5	12.8
	2.00	18	11.0	11.0	23.8
	2.50	25	15.2	15.2	39.0
	3.00	29	17.7	17.7	56.7
	3.50	28	17.1	17.1	73.8
	4.00	21	12.8	12.8	86.6
	4.50	14	8.5	8.5	95.1
	5.00	8	4.9	4.9	100.0
	Total	164	100.0	100.0	

Figure 2. The frequency histogram for the time of training

Grouping trainees. Teachers' mean on the grouping trainees variable is 4.14 with SD= .79488 (Table 15). The frequency table (Table 16) and frequency histogram (figure 3) demonstrate that the teachers' responses on *the grouping trainees* spread all over the scale. The data ranged from 1 to 5, but the sample reported a strong preference for which there is limited variation. The majority (88.4%) of the teachers' frequency means ranged from 3.9 to 5, which is the agree range. So, the teachers prefer to be grouped in training with other teachers who teach the same grade level and have similar technology equipment in their schools. As a result, there is limited utility in prediction.

Table 15

Descriptive statistics for the data set of grouping trainees

Statistics		
N	Valid	164
	Missing	0
Mean		4.1463
Std. Deviation		.79488
Minimum		1.00
Maximum		5.00

Table 16

Frequency table for the data set distribution for grouping trainees

Grouping trainees

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	1	.6	.6	.6
	2.00	4	2.4	2.4	3.0
	2.50	4	2.4	2.4	5.5
	3.00	10	6.1	6.1	11.6
	3.50	25	15.2	15.2	26.8
	4.00	42	25.6	25.6	52.4
	4.50	29	17.7	17.7	70.1
	5.00	49	29.9	29.9	100.0
	Total	164	100.0	100.0	

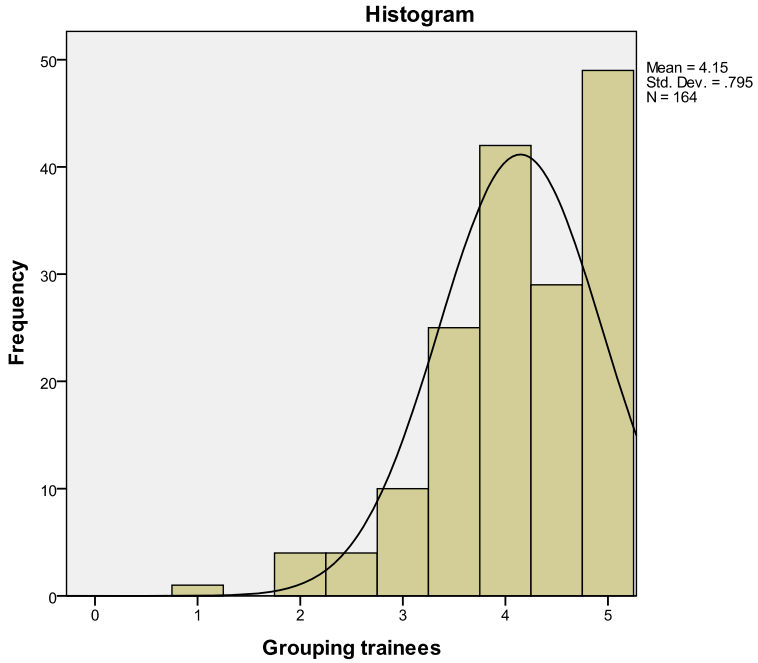

Figure 3. The frequency histogram for grouping trainees

Training environment. As demonstrated in table 17, *training environment* received the highest registered mean compare to all the dependent variables in the structural factors of training, and even the other dependent variables in the area of delivery methods and the training content and skills. The mean is 4.45 with SD= .57637. The frequency table (Table 18) and frequency histogram (Figure 4) demonstrate that the teachers' responses on *training environment* spread all over the scale. The data ranged from 1 to 5, but the sample reported a strong preference for which there is limited variation. The majority (90.9%) of the teachers' frequency means ranged from 3.5 to 5, which is the agree range. So, the teachers in the sample prefer to be trained in a constructive environment. As a result, there is limited utility in prediction.

Table 17

Descriptive statistics for the data set of training environment

Statistics		
N	Valid	164
	Missing	0
Mean		4.4524
Std. Deviation		.57637
Minimum		1.00
Maximum		5.00

Table 18

Frequency table for the data set distribution for training environment

Training environment

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	1	.6	.6	.6
	2.60	1	.6	.6	1.2
	3.00	1	.6	.6	1.8
	3.20	3	1.8	1.8	3.7
	3.40	5	3.0	3.0	6.7
	3.60	4	2.4	2.4	9.1
	3.80	5	3.0	3.0	12.2
	4.00	16	9.8	9.8	22.0
	4.20	20	12.2	12.2	34.1
	4.40	20	12.2	12.2	46.3
	4.60	19	11.6	11.6	57.9
	4.80	24	14.6	14.6	72.6
	5.00	45	27.4	27.4	100.0
	Total	164	100.0	100.0	

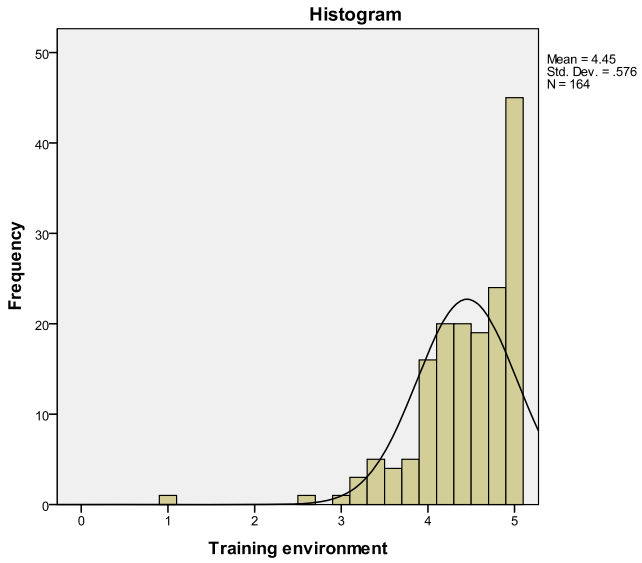

Figure 4.The frequency histogram for training environment

Delivery methods. To investigate their preferences for the delivery methods, teachers were asked about their preferences on two types of training in terms of the delivery methods. The two types of training that were tested in this study are under two dependent variables: on the job training and off the job training. *On the job training* is the school-based training, which refers to the training that is provided for teachers inside their school contexts such as one-on-one training and follow-up training. Conversely, *off the job training* refers to the traditional training and one-shot training no matter where the training takes place.

On the job training. The data analysis revealed that the teachers' mean on the *on the job training* variable is 4.1287 with SD= .61686 (Table 19). The frequency table (table 20) and frequency histogram (figure 5) demonstrate that the teachers' responses on the *on the job training* did not spread all over the scale. The data ranged from 2 to 5, but

the sample reported a strong preference for which there is limited variation. The majority (87.2%) of the teachers' frequency means ranged from 3.56 to 5, so the teachers prefer to receive *on the job training*. As a result, there is limited utility in prediction.

Table 19

Descriptive statistics for the data set of on the job training

Statistics		
N	Valid	164
	Missing	0
Mean		4.1287
Std. Deviation		.61686
Minimum		2.00
Maximum		5.00

Table 20

Frequency table for the data set distribution for on the job training

On job training

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2.00	2	1.2	1.2	1.2
	2.22	2	1.2	1.2	2.4
	2.44	1	.6	.6	3.0
	2.67	2	1.2	1.2	4.3
	2.89	3	1.8	1.8	6.1
	3.00	1	.6	.6	6.7
	3.11	3	1.8	1.8	8.5
	3.22	1	.6	.6	9.1
	3.33	4	2.4	2.4	11.6
	3.44	2	1.2	1.2	12.8
	3.56	2	1.2	1.2	14.0
	3.67	2	1.2	1.2	15.2
	3.78	8	4.9	4.9	20.1

Table 20 (continued)

Frequency table for the data set distribution for on the job training

On job training

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	3.89	7	4.3	4.3	24.4
	4.00	35	21.3	21.3	45.7
	4.11	5	3.0	3.0	48.8
	4.22	14	8.5	8.5	57.3
	4.33	16	9.8	9.8	67.1
	4.44	6	3.7	3.7	70.7
	4.56	9	5.5	5.5	76.2
	4.67	13	7.9	7.9	84.1
	4.78	10	6.1	6.1	90.2
	4.89	5	3.0	3.0	93.3
	5.00	11	6.7	6.7	100.0
	Total	164	100.0	100.0	

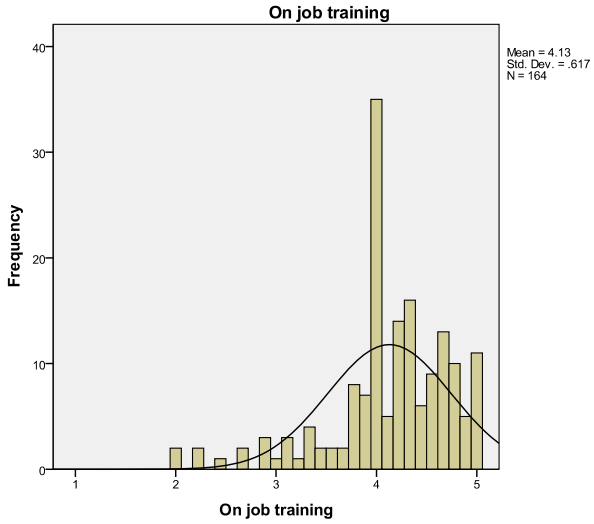

Figure 5. The frequency histogram for on the job training

Off the job training. The data analysis revealed that the teachers' mean on the *off the job training* variable is 2.1646 and SD= .68033 (Table 21). The frequency table (Table 22) and frequency histogram (figure 6) demonstrate that the teachers' responses on *off the job training* did not spread all over the scale. The data ranged from 1 to 4, but the sample reported no preference for which there is limited variation. The majority (83.5%) of the teachers' frequency means ranged from 1 to 2.67, which indicated that the teachers did not prefer *off the job training*. As a result, there is limited utility in prediction.

Table 21

Descriptive statistics for the data set of off the job training

Statistics		
N	Valid	164
	Missing	0
Mean		2.1646
Std. Deviation		.68033
Minimum		1.00
Maximum		4.00

Table 22

Frequency table for the data set distribution for off the job training

Off job training

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	12	7.3	7.3	7.3
	1.33	13	7.9	7.9	15.2
	1.67	17	10.4	10.4	25.6
	2.00	54	32.9	32.9	58.5
	2.33	30	18.3	18.3	76.8
	2.67	11	6.7	6.7	83.5
	3.00	12	7.3	7.3	90.9
	3.33	9	5.5	5.5	96.3
	4.00	6	3.7	3.7	100.0
	Total	164	100.0	100.0	

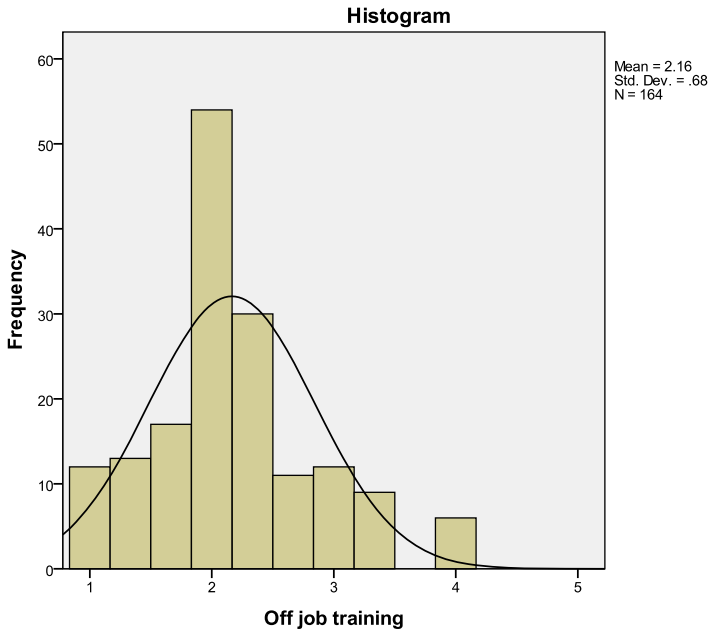

Figure 6. The frequency histogram for off the job training

Training content and skills. The teachers were asked about their preferences on the training content and skills in terms of three aspects: the focus of training content on teacher vs. student, generative vs. generic content, and involving the technical support content in training.

The focus of content on teacher vs. student. The variable of *the focus of content on teacher vs. student* is to test teacher preferences on the training content in terms of focusing on attitudes and knowledge of teachers or students, starting from the assessment point of teachers or students, and finally, focusing on the teachers' or students' needs. According to the analysis of data gathered, the mean of the teachers on the focus of content on teacher vs. student is 3.3252 with SD= .88381 (Table 23). The frequency table (Table 24) and the frequency histogram (figure 7) demonstrate that the teachers'

responses on *the focus of content on teacher vs. student* spread all over the scale. The data ranged from 1.33 to 5, but the sample reported a weak preference (or no preference), which indicated that the variable was characterized by relatively high variation and a range of preferences. There is, therefore, a need for even further analysis using multiple regression to see what demographic variable, if any, can predict training preferences. Details are found in the analysis of question three.

Table 23

Descriptive statistics for the data set of the focus of content on teacher vs. student

Statistics		
N	Valid	164
	Missing	0
Mean		3.3252
Std. Deviation		.88381
Minimum		1.33
Maximum		5.00

Table 24

Frequency table for the data set distribution for the focus of content on teacher vs. student

The focus of content on teacher vs. student

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.33	5	3.0	3.0	3.0
	1.67	8	4.9	4.9	7.9
	2.00	5	3.0	3.0	11.0
	2.33	12	7.3	7.3	18.3
	2.67	16	9.8	9.8	28.0
	3.00	16	9.8	9.8	37.8
	3.33	28	17.1	17.1	54.9
	3.67	25	15.2	15.2	70.1
	4.00	19	11.6	11.6	81.7
	4.33	17	10.4	10.4	92.1
	4.67	9	5.5	5.5	97.6
	5.00	4	2.4	2.4	100.0
	Total	164	100.0	100.0	

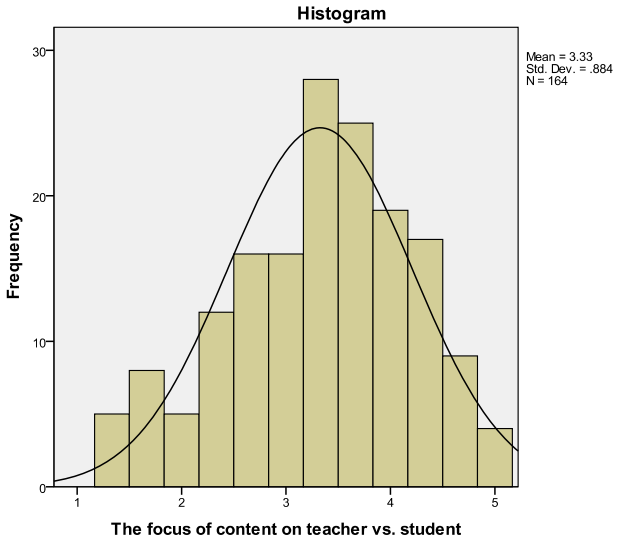

Figure 7. The frequency histogram for the focus of content on teacher vs. student

Generative vs. generic content. The data analysis revealed that the teachers' mean on *generative vs. generic content* variable is 4.2220 with SD= .56177 (Table 25). The frequency table (Table 26) and frequency histogram (figure 8) demonstrate that the teachers' responses on *generative vs. generic content* did not spread all over the scale. The data ranged from 1 to 4, but the sample reported a preference for which there is limited variation. The majority (88.4%) of the teachers' frequency means ranged from 3.60 to 5, which indicated that the teachers prefer generative content rather than generic content. As a result, there is limited utility in attempting to develop a predictive model with this variable.

Table 25

Descriptive statistics for the data set of generative vs. generic content

Statistics		
N	Valid	164
	Missing	0
Mean		4.2220
Std. Deviation		.56177
Minimum		2.60
Maximum		5.00

Table 26

Frequency table for the data set distribution for generative vs. generic content

Generative vs. generic content

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2.60	2	1.2	1.2	1.2
	3.00	3	1.8	1.8	3.0
	3.20	5	3.0	3.0	6.1
	3.40	9	5.5	5.5	11.6
	3.60	13	7.9	7.9	19.5
	3.80	9	5.5	5.5	25.0
	4.00	24	14.6	14.6	39.6
	4.20	21	12.8	12.8	52.4
	4.40	26	15.9	15.9	68.3
	4.60	14	8.5	8.5	76.8
	4.80	12	7.3	7.3	84.1
	5.00	26	15.9	15.9	100.0
	Total	164	100.0	100.0	

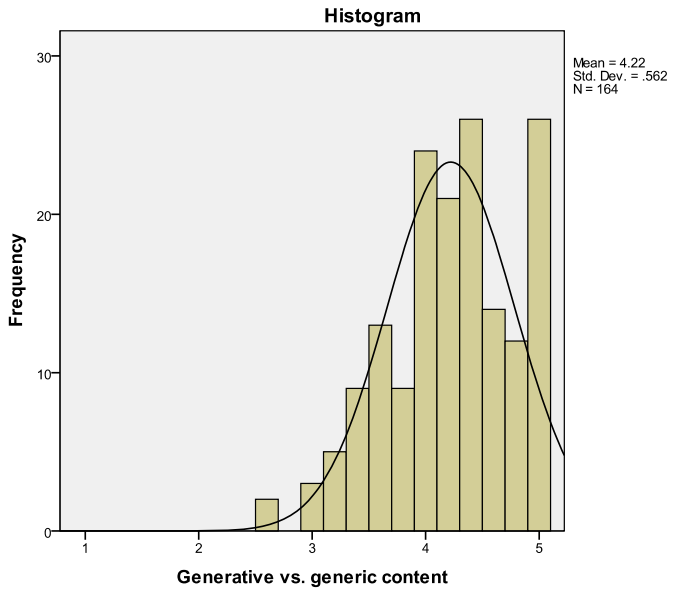

Figure 8.The frequency histogram for the focus of generative vs. generic content

Technical support content. The data analysis revealed that the teachers' mean on the *technical support content* variable is 4.1220 with SD= .76367 (Table 27). The frequency table (Table 28) and frequency histogram (figure 9) demonstrate that the teachers' responses on *technical support content* did not spread all over the scale. The data ranged from 2 to 5, but the sample reported a strong preference for which there is limited variation. The majority (85.3%) of the teachers' frequency means ranged from 3.50 to 5. Therefore, the teachers prefer the technical support to be a part of their training content; that is, they prefer the training that helps them to solve technical issue they face during their teaching practice. As a result, there is limited utility in prediction.

Table 27

Descriptive statistics for the data set of technical support content

Statistics		
N	Valid	164
	Missing	0
Mean		4.1220
Std. Deviation		.76367
Minimum		2.00
Maximum		5.00

Table 28

Frequency table for the data set distribution for technical support content

Technical support content

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2.00	7	4.3	4.3	4.3
	3.00	17	10.4	10.4	14.6
	3.50	13	7.9	7.9	22.6
	4.00	53	32.3	32.3	54.9
	4.50	33	20.1	20.1	75.0
	5.00	41	25.0	25.0	100.0
	Total	164	100.0	100.0	

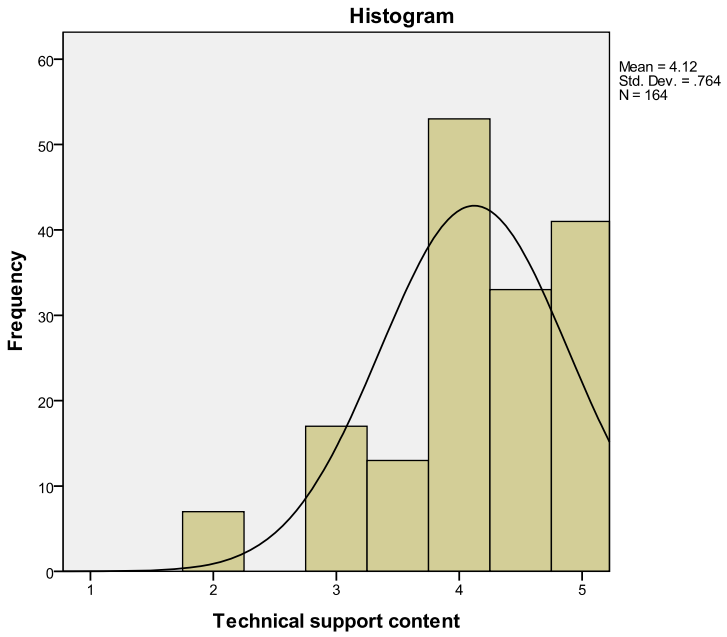

Figure 9. The frequency histogram for the focus of technical support content

Analysis of the Research Question Three

Research Question 3: Does computer experience, year of graduation, and/or type of undergraduate program predict the teachers' preferences about the perceived fundamental aspects of CALL training? If yes, is there any interaction between the predictor variables?

The data analyses conducted to address question two revealed that *time of training* and *the focus of content on teacher vs. student* were characterized by relatively high variation and a range of preferences. That is, the data ranged from 1 to 5 and from 1.33 to 5 respectively; but the sample reported a weak preference (or no preference), which indicated that the variables were characterized by relatively high variation and a range of preferences. Therefore, regression was used to understand what demographic variables, if

any, can predict training preferences. That is, it was used to examine if computer experience, year of graduation, and/or type of undergraduate program can predict the variation. Also, any interaction between the independent variables was tested in case any of these predictors explain the variation significantly.

In other words, the primary regression using the forced entry method (Field, 2009) was used to check if the teachers' level of computer experience, year of graduation, and/or type of undergraduate program can predict the training preferences on *the time of training* and *the focus of content on teacher vs. student*. The regression analysis aimed to test these two models:

- $y = a$ + IDV1 + IDV2 + IDV3+e, where y = time of training
- $y = a$ + IDV1 + IDV2 + IDV3+e, where y = the focus of content of teacher vs. student.

The assumptions of multiple regression. The statistical analysis was preceded with testing relevant assumptions in order to reach a trustworthy result. Model bias was investigating by assessing homoscedasticity, normality, linearity, outliers, multi-collinearity and finally, the independence.

Homoscedasticity. Homoscedasticity refers to the homogeneity of variance—the constant of error variance across values of the predictors. It was checked to examine if the variance of the dependent variables, i.e. *time of training* and *the focus of content on teachers vs. students*, was homogeneous across the level of the predictors of computer experience, year of graduation, and type of undergraduate program. It was evaluated

graphically as a part of the residual analysis using scatterplots of the standardized residuals against the standardized predicted values.

The output for the *time of training* scatterplots can be seen in Figure 10. It shows that the errors of variance were constant with varying value in the predicted variables, which indicates that the assumption of homoscedasticity was met.

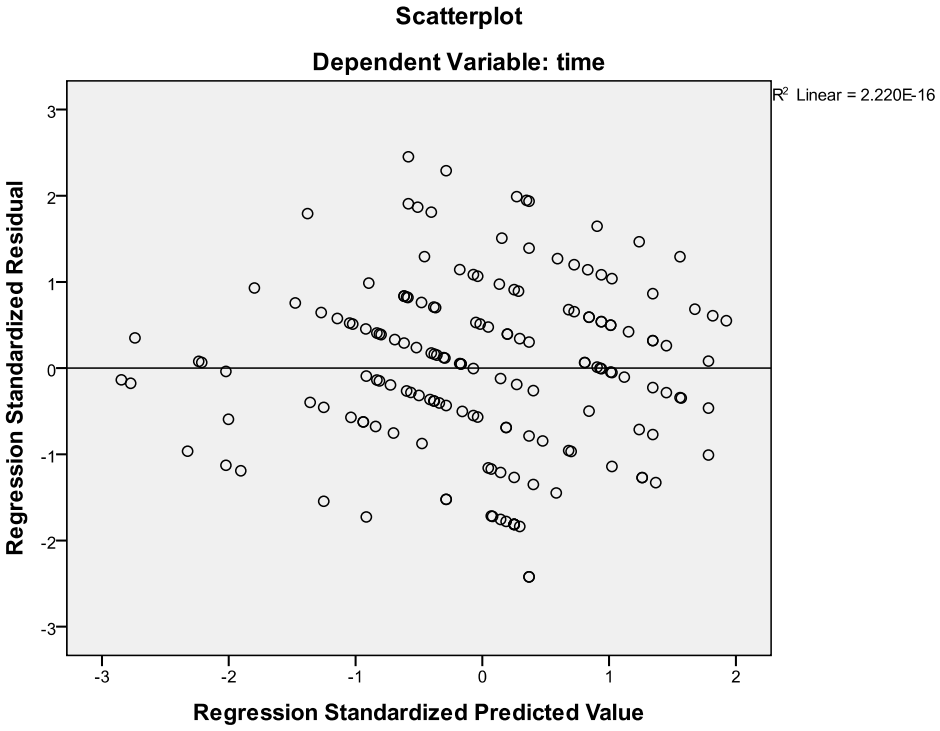

Figure 10. Scatter plot for testing the homoscedasticity of the time of training

The output for *the focus of training content on teacher vs. student* scatterplots can be seen in Figure 11. It shows that the errors of variance were constant with varying value in the predicted variables, which indicates that the assumption of homoscedasticity was met and heteroskedasticity did not exist.

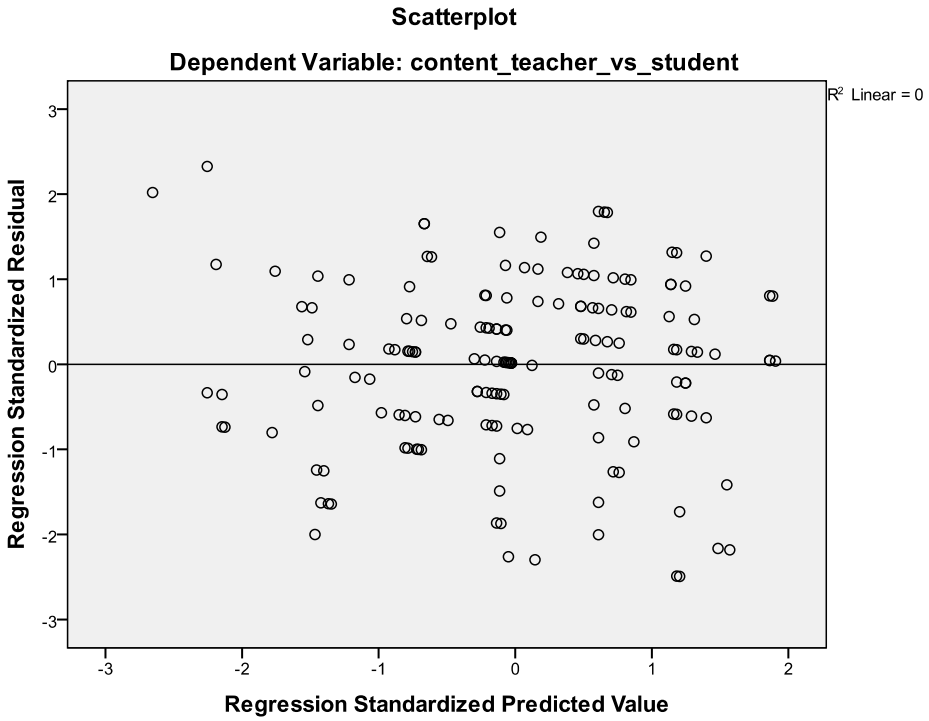

Figure 11. Scatter plot for testing the homoscedasticity of the focus of content on teacher vs. student

Normality. Normality refers to the normal distribution of scores on the dependent variables. It was tested by using the skewness and kurtosis. The skewness and kurtosis measure should be as close to zero as possible to consider the data to be normally distributed. In reality, however, data are often skewed and kurtotic. A small departure from zero does not affect the normality as long as the measure is not too large compared to standard errors. Accordingly, the measurement of skewness and kurtosis were divided by their standard error. The z-value should be somewhere between -1.96 and +1.96.

For *the time of training* variable, the z-value of skewness is -.053/.190= -.27, whereas the z-value of kurtosis is -.715/.377= -1.89. Both skewness and kurtosis z-values

were within -1.96 and +1.96. Similarly for *the focus of content on teacher vs. student* variable, the z-value of skewness is -.357/.190= -1.87, whereas the z-value of kurtosis is -.428/.377= -1.13. Both skewness and kurtosis z-values were within -1.96 and +1.96, which indicates that the data for the two variables are a little skewed and kurtotic but do not differ significantly from normality. It can be assumed that the data are approximately normally distributed in terms of skewness and kurtosis.

Table 29

Distractive statistics for the time of training

		Time	The focus of content teacher vs. student
N	Valid	164	164
	Missing	0	0
Mean		3.0396	3.3252
Std. Error of Mean		.08091	.06901
Skewness		-.053	-.357
Std. Error of Skewness		.190	.190
Kurtosis		-.715	-.428
Std. Error of Kurtosis		.377	.377

The histogram for the *time of training* shows that the data are approximately normally distributed although there is a slight negative skewness (Figure 12).

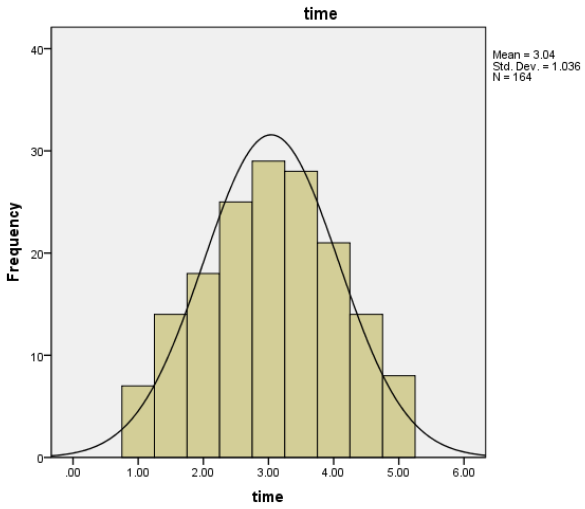

Figure 12. The frequency histogram for the time of training

The histogram for *the focus of training on teacher vs. student* shows that the data are approximately normally distributed although there is a slight negative skewness (Figure 13).

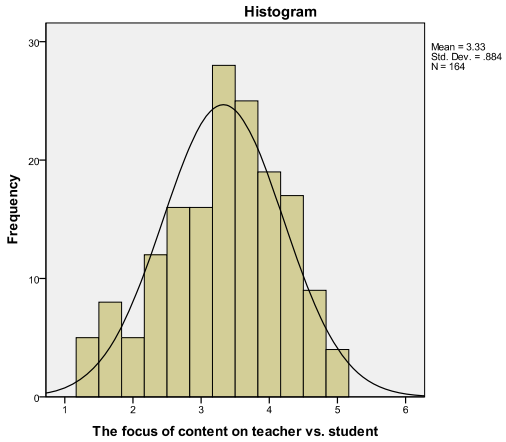

Figure 13. The frequency histogram for the focus of content on teacher vs. student

Linearity. Linearity refers to the straight-line relationship between all variables. It was assessed by testing the linearity using a bivariate scatterplot of residuals against the predicted scores of the dependent variable scores. Figure 14 shows that the relationships between *the time of training* and the other predictors are linear. Therefore, the linearity assumption was met.

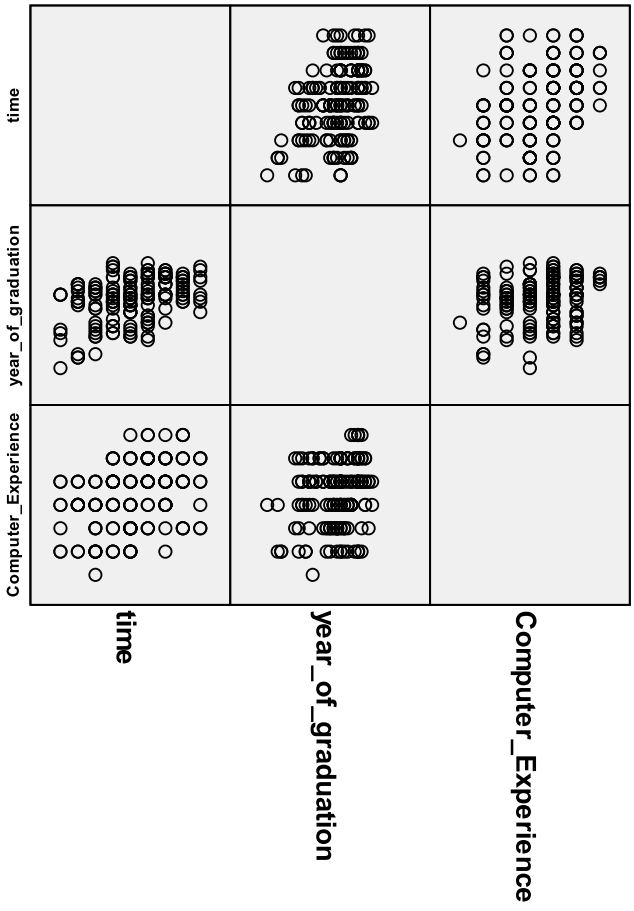

Figure 14. Scatterplot for the time of training with the predictors

The bivariate scatterplot in figure 15 shows that relationships between *the focus of content on teacher vs. student* and the other predictors are fairly linear. Multiple regression analysis is not seriously affected by slight deviations from this assumption. The bivariate scatterplot does not show that this assumption was greatly violated. It can be assumed that the assumption of linearity was met for all the paired variables.

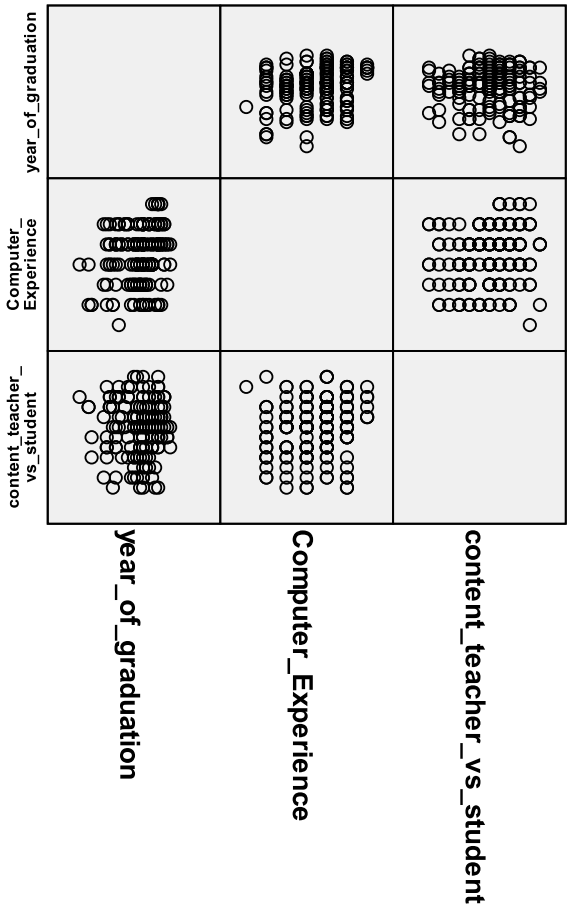

Figure 15. Scatterplot for the focus of content on teacher vs. student with the predictors

Univariate outliers. As seen in table 30 for *the time of training* and table 31for *the focus of content on teachers vs. students*, the univariate outliers for both dependent

variables was tested statistically by converting the scores into z-scores. There were no cases that exceeded the standardized score of ±2.5. They were also examined graphically using the box plots as seen in figure 16.

Table 30

The highest and lowest standardized scores for the time of training

			Case Number	Value
Z score (The time of training)	Highest	1	41	1.89200
		2	42	1.89200
		3	79	1.89200
		4	125	1.89200
		5	126	1.89200[a]
	Lowest	1	81	-1.96850
		2	80	-1.96850
		3	44	-1.96850
		4	43	-1.96850
		5	19	-1.96850[b]

a. Only a partial list of cases with the value 1.89200 is shown in the table of upper extremes.

b. Only a partial list of cases with the value -1.96850 is shown in the table of lower extremes.

Table 31

The highest and lowest standardized scores for the focus of content of teacher vs. student

			Case Number	Value
Z score (The focus of content of teacher vs. student)	Highest	1	13	1.89497
		2	85	1.89497
		3	123	1.89497
		4	124	1.89497
		5	1	1.51782[a]
	Lowest	1	145	-2.25373
		2	133	-2.25373
		3	67	-2.25373
		4	65	-2.25373
		5	22	-2.25373

a. Only a partial list of cases with the value 1.51782 is shown in the table of upper extremes.

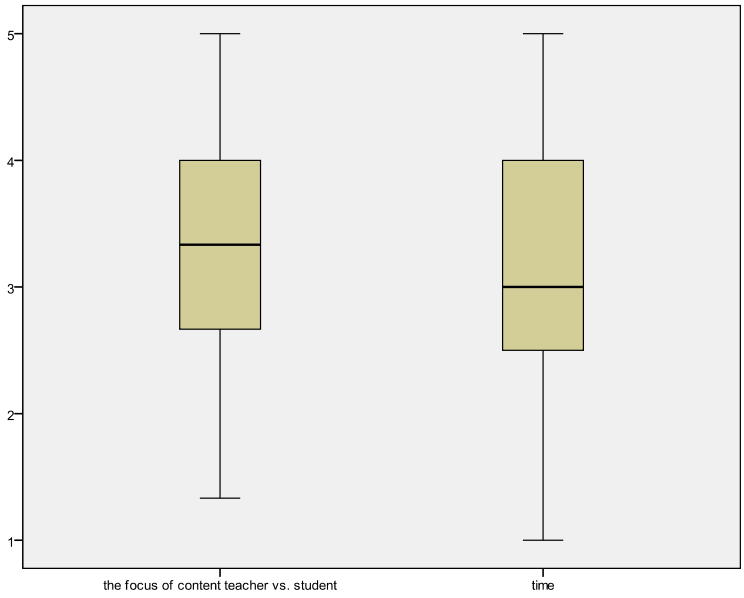

Figure 16. The box plots of the time of training and the focus of content on teacher vs. student

The box plot was used to create visual depiction of the data. It basically split the data into quartiles (four percentiles). The bottom whisker indicates the lowest score in the data that is not an outlier, whereas; the up whisker indicates the highest score in the data that is not an outlier. Outlier is the value greater than 1.5 interquartile ranges away from the 25th and 75th percentiles. Accordingly, none of the scores in the data higher than the above whisker or below the bottom whisker. So, there is not outlier in the data.

Multivariate outlier. In order to examine the multivariate outliers, Mahalanobis' distance was used to measure the distance of cases from a common point. Mahalanobis' distance test shows that the maximum score in the *time of training* variable is 11.207. The cut-off point to consider a case as an outlier was determined based on Barnett and Lewis's table of critical values (Field, 2009). According to the table, with three degrees

of freedom and a probability of $p < 0.001$, the maximum score does not exceed the critical values (i.e., 16.27) for determining the multivariate outliers when the study involves three independent variables (Field, 2009). Therefore, no multivariate outlier was identified (Table 32). Similarly, there was no potential multivariate outlier identified in *the focus of content on teacher vs. student* (Table 33). The values of both variables are within general cut-offs. The models were run without dropping any cases.

Table 32

Residuals statistics for the time of training

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	1.6252	3.9958	3.0396	.49675	164
Std. Predicted Value	-2.847	1.925	.000	1.000	164
Standard Error of Predicted Value	.090	.251	.139	.034	164
Adjusted Predicted Value	1.6354	3.9723	3.0392	.49599	164
Residual	-2.22278	2.25023	.00000	.90929	164
Std. Residual	-2.422	2.452	.000	.991	164
Stud. Residual	-2.434	2.482	.000	1.001	164
Deleted Residual	-2.24543	2.30655	.00047	.92816	164
Stud. Deleted Residual	-2.473	2.524	.000	1.006	164
Mahal. Distance	.585	11.207	2.982	2.008	164

a. Dependent Variable: time

Table 32 shows that the standardized residual and studentized residual are within the range of 3 and -3, which indicates there is not any outlier identified. The adjusted predicted value is similar to the predicted value. So, the regression model was stable. Cook's distance is a measure of general influence of cases in the model (Field, 2009). Cook and

Weisberg (1982) suggested that the value greater than 1 is to be an influential case. The maximum value is .039, which indicates that there is no outlier. In centered leverage, Steven (2002) recommended a value greater than three times the average of leverage value (3 (*k*+1)/n) as a cut-off point to determine if a case has influence over prediction. The maximum value of centered leverage is .069; hence, according to this formula of (3 (3+1)/164) = .073, the maximum value of centered leverage is has no influence over prediction.

Table 33

Residuals statistics for the focus of content of teacher vs. student

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	2.8955	3.6337	3.3252	.16185	164
Std. Predicted Value	-2.655	1.906	.000	1.000	164
Standard Error of Predicted Value	.086	.240	.133	.032	164
Adjusted Predicted Value	2.7887	3.6712	3.3239	.16558	164
Residual	-2.18668	2.03980	.00000	.86886	164
Std. Residual	-2.493	2.326	.000	.991	164
Stud. Residual	-2.518	2.382	.001	1.003	164
Deleted Residual	-2.22937	2.13849	.00126	.89088	164
Stud. Deleted Residual	-2.561	2.417	.000	1.009	164
Mahal. Distance	.585	11.207	2.982	2.008	164

a. Dependent Variable: the focus of content on teacher vs. student

Table 33 shows that the standardized residual and studentized residual are within the range of 3 and -3, which indicate there is not any outlier was identified. The adjusted predicted value is similar to the predicted value. So, the regression model was stable. The

maximum value of Cock's distance is less than .069 (less than 1). So; there are no influential cases (Cook & Weisberg, 1982). Steven's (2002) suggested that a value formula for centered leverage greater than three times the average of leverage value (3 (k+1)/n) is considered to be an influential case. The maximum value of centered leverage is .069; hence, according to this formula of (3 (3+1)/164) = .073, the maximum value of centered leverage is has no influence over prediction.

Multi-collinearity. Multi-collinearity refers to the correlations among the independent variables (predictors) that are not too strong. It was checked using Pearson correlation and the tolerance and the Variance Inflation Factor (VIF). Pearson correlation between each pair of predictors shows that the correlations are less than .85 (Table 34). The tolerance values are greater than zero and the VIF values are less than 10 (Table 35). Therefore, it can be assumed that multi-collinearity assumption was not violated.

Table 34

Pearson Product-Moment correlation between predictors.

Correlations

		Year of graduation	Experience	Type of undergraduate program
Year of graduation	Pearson Correlation	1	.226**	.080
	Sig. (2-tailed)		.004	.308
	N	164	164	164
Computer experience	Pearson Correlation	.226**	1	-.053
	Sig. (2-tailed)	.004		.497
	N	164	164	164
Type of undergraduate program	Pearson Correlation	.080	-.053	1
	Sig. (2-tailed)	.308	.497	
	N	164	164	164

**. Correlation is significant at the 0.01 level (2-tailed).

Table 35

Multi-collinearity Statistics for the predictors

Model		Collinearity Statistics	
		Tolerance	VIF
1	(Constant)		
	Computer experience	.944	1.060
	Type of undergraduate program	.988	1.012
	Year of graduation	.940	1.064

The independence. As mentioned in chapter three, Durbin-Watson test ranges from 0 to 4; where a value close to 2 indicates uncorrelated residuals, a value close to 0 indicates positive correction, and a value close to 4 indicates negative correlation. The value of Durbin-Watson for the time of training is closer to 2 (1.644), indicating no serial correction (Table 36). Also the value of Durbin-Watson for the focus of content of teacher vs. student is approximately equal to 2 (1.821,), indicating no serial correction. (Table 37)

Table 36

Durbin-Watson Statistics for the independence of residual (time of training)

Model	Durbin-Watson
1	1.644

a. Predictors: (Constant), year of graduation, type of undergraduate program, computer experience, interaction

b. Dependent Variable: the time of training

Table 37

Durbin-Watson Statistics for the independence of residual (the focus of content on teacher vs. student)

Model	Durbin-Watson
1	1.821

a. Predictors: (Constant), year of graduation, type of undergraduate program, computer experience, interaction

b. Dependent Variable: the focus of content on teacher vs. student

Primary regression: Time of training. The primary analysis using force entry method produced a model with an R^2 of .261 [F (4, 159) =14.038, p <.05] for the explanation of the variation in the time of training. This means 26.1% of the variation in

the time of training was explained by the model. Yet, at the same time, this means that 73.9% of the variation originates from other unexplored variables (Table 38 and Table 39).

Table 38

Summary of regression analysis for variables explaining the time of training

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.511[a]	.261	.242	.90189

a. Predictors: (Constant), year of graduation, type of undergraduate program, computer experience, interaction

Table 39

Results of ANOVA for the time of training

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	45.661	4	11.415	14.034	.000[a]
	Residual	129.331	159	.813		
	Total	174.992	163			

a. Predictors: (Constant), year of graduation, type of undergraduate program, computer experience, interaction

b. Dependent Variable: time

The beta weights were checked to determine which predictor has significant contribution to the explanation of the time of training. Looking at individual determinants of time of training, Table 40 shows that year of graduation had the strongest significant influence on the time of training (β=.328). Computer experience also had a significant effect on the time of training (β=.284). However, the type of undergraduate program (β=-.165) had a marginally significant influence on the time of training. Also, the interaction was not significant as seen in Table 40.

Table 40

Coefficients table for variables explaining the time of training

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	-107.046	23.308		-4.593	.000
	Year of graduation	.055	.012	.328	4.682	.000
	Experience	.426	.105	.284	4.035	.000
	Type of undergraduate program	-.364	.153	-.165	-2.383	.018
	Interaction	-.041	.031	-.092	-1.329	.186

a. Dependent Variable: time

As seen in Table 41, the positive correlation between year of graduation and time of training indicated that the more recently graduated teachers are more likely to prefer more training time than those who graduated a long time ago. Also, the negative correlation between the type of undergraduate program and time of training indicated that the teachers who graduated from educational programs (i. e., teachers' college and college of education) are more likely to prefer more training time than those who graduated from non-educational colleges (i.e., Arabic language colleges and library art colleges). Lastly, the positive correlation between the level of computer experience and time of training indicated that teachers who have a higher level of computer experience are more likely to prefer more time for training than those who have a low level of computer experience.

Table 41

Pearson Product-Moment correlation between the time of training and predictors.

		Time of training	Year of graduation	Type of undergraduate program	Computer Experience
Time of training	Pearson Correlation	1	.387**	-.178*	.363**
	Sig. (2-tailed)		.000	.023	.000
	N	164	164	164	164
Year of graduation	Pearson Correlation	.387**	1	-.010	.226**
	Sig. (2-tailed)	.000		.897	.004
	N	164	164	164	164
Type of undergraduate program	Pearson Correlation	-.178*	-.010	1	-.082
	Sig. (2-tailed)	.023	.897		.298
	N	164	164	164	164
Experience	Pearson Correlation	.363**	.226**	-.082	1
	Sig. (2-tailed)	.000	.004	.298	
	N	164	164	164	164

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Primary regression: The focus of content on teacher vs. student. The primary analysis using force entry method produced a model with an R^2 of .041 [F (4, 159) =1.721, p <.05] for the explanation of the variation in the focus of content on teacher vs. student. This means that 4.1% of the variation in the content focus on teacher vs. student was explained by the model. Yet, at the same time, this means that 95.9% of the variation originates from other unexplored variables (Table 42 and Table 43). As an interpretive point, this means prediction is quite poor. Even if computer experience was statistically significant, there was very limited capacity to predict the focus of content on teacher vs. student.

Table 42

Summary of regression analysis for variables explaining the focus of training on teacher vs. student

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.204[a]	.041	.017	.87609

a. Predictors: (Constant), year of graduation, type of undergraduate program, computer experience, interaction.

Table 43

Results of ANOVA for the focus of training on teacher vs. student

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	5.284	4	1.321	1.721	.148[a]
	Residual	122.039	159	.768		
	Total	127.322	163			

a. Predictors: (Constant), year of graduation, type of undergraduate program, computer experience, interaction.

b. Dependent Variable: the focus of training on teacher vs. student

The beta weights were checked to determine which predictor has significant contribution to the explanation of the focus of content on teacher vs. student. Looking at individual determinants of the focus of content on teacher vs. student in table 44, it shows that computer experience was the only predictor that showed significant influence on the dependent variable (β=.168). The rest of the predictors and the interaction had no significant contribution.

Table 44

Coefficients table for variables explaining the focus of training on teacher vs. student

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	11.393	22.641		.503	.616
	Year of graduation	-.004	.011	-.029	-.369	.713
	Computer Experience	.215	.102	.168	2.097	.038
	Type of undergraduate Program	-.205	.148	-.109	-1.383	.169
	Interaction	-.001	.030	-.003	-.033	.974

a. Dependent Variable: the focus of training on teacher vs. student

Since the computer experience was the only predictor that showed a significant contribution to the focus of content on teacher vs. student, the analysis was done for a second time including only the computer experience predictor on the model. This produced a model with an R^2 of .029 [F (1, 162) = 4.826, p <.05] for the explanation of the variation in the focus of content on teacher vs. student. This means 2.9% of the variation in the focus of content on teacher vs. student was explained by the computer

experience. Yet, at the same time, this means that 97.1% of the variation originates from other unexplored variables (Table 45 and Table 46).

Table 45

Summary of regression analysis for computer experience explaining the focus of training on teacher vs. student

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.170[a]	.029	.023	.87362

a. Predictors: (Constant), experience

Table 46

Results of ANOVA for the focus of training on teacher vs. student

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3.683	1	3.683	4.826	.029[a]
	Residual	123.640	162	.763		
	Total	127.322	163			

a. Predictors: (Constant), experience

b. Dependent Variable: the focus of training on teacher vs. student

As seen in Table 47, the positive correlation between the level of computer experience and the focus of content on teacher vs. students indicated that the teachers

with higher levels of experience are more likely to prefer the training that focuses on teacher rather than on student.

Table 47

Pearson Product-Moment correlation between the focus of training on teacher vs. student and predictors.

		the focus of training on teacher vs. student	Experience	Year of graduation	Type of undergraduate program
the focus of training on teacher vs. student	Pearson Correlation	1	.170*	.009	-.122
	Sig. (2-tailed)		.029	.904	.120
	N	164	164	164	164
Computer Experience	Pearson Correlation	.170*	1	.226**	-.082
	Sig. (2-tailed)	.029		.004	.298
	N	164	164	164	164
Year of graduation	Pearson Correlation	.009	.226**	1	-.010
	Sig. (2-tailed)	.904	.004		.897
	N	164	164	164	164
Type of undergraduate Program	Pearson Correlation	-.122	-.082	-.010	1
	Sig. (2-tailed)	.120	.298	.897	
	N	164	164	164	164

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

Summary

The main purpose of this chapter was to examine the Arabic language, male teachers' preferences on CALL training in Medina, Saudi Arabia. The questionnaire was the main source of data collection. The content validity and reliability were presented to check the appropriateness of the instrument. The reliabilities of the questionnaire subscales were all above 0.75. The assumptions of multiple regression were evaluated to ensure a valid analysis was conducted. As a result, the data met all the assumptions of multiple regression; hence, none of the following assumptions was violated: homoscedasticity, normality, linearity, outliers, multi-collinearity, and finally, the independence.

The findings concentrate primarily on three questions: two descriptive questions and one inferential question. The first question was about the teachers' level of computer experience, year of graduation, and type of undergraduate program. The second question regarded the teachers' preferences on the fundamental aspects of CALL training provided to Arabic language elementary school teachers. These fundamental aspects covered three areas of training. Eight survey topics (dependent variables) represent the training areas under the study as follow: *Structural factors of CALL training* were represented by time of training, grouping trainees, and training environment; *delivery method of training* was represented by on the job training and off the job training; and lastly, *training content and skills* were represented by the focus of content on teacher vs. student, generative vs. generic content, and technical support content. Among all the survey topics, the time of training and the focus of content on teacher vs. student are the only variables that are

characterized by relatively high variation and a range of preferences. Thus, they were subjected for further analysis using multiple regression, which was the focus of the third question.

The primary regression using force entry method was used to check if the teachers' level of computer experience, year of graduation, and/or type of undergraduate program could predict the training preferences on the time of training and the focus of content on teacher vs. student. The predictors of computer experience, year of graduation, and type of undergraduate program were significantly predictive for the time of training. The focus of content on teacher vs. student can be predicted only by the level of teachers' computer experience.

Chapter 5: Discussion and Recommendations

Introduction

This study endeavored to investigate the preferences that male, Saudi Arabian teachers of Arabic have on how to best apply in-service training on Computer Assisted Language Learning. It focuses on Arabic language, male teachers in Medina city in Saudi Arabia, which makes it less generalizable to the entire Saudi context or female teachers in the same city; however, those teachers share other characteristics with the rest of the teachers in the kingdom. Some context about teacher education programs of the country can offer some useful details about generalizing findings from a single city to the entire country. The Ministry of Education in Saudi Arabia has developed a highly standardized, universal teacher preparation program in teachers' college. Also, there is a similarity between the programs provided at the college of education in Saudi universities as these programs are developed by the Ministry of Higher Education. Because of these reasons, logical generalization (i.e., not probabilistic) may be possible. That is, although the sample was reflective of all male teachers in the country, whatever is learned from it may nevertheless be somewhat reflective of teacher preferences about CALL training. There is of course, limited capacity to empirically justify this conjecture; hence the reason for considering this as possibility of a limitation to generalize the findings of this study to the entire Saudi context.

The participants of the study were 164 from 36 simple randomly selected schools in Medina, Saudi Arabia, yielding a 76.63% response rate. A close-ended questionnaire was designed for collecting data for this study. Three areas of training were addressed,

represented by eight dependent variables as follow: first, the structural factors of training represented by time of training, grouping trainees and training environment. Second is the delivery method of training represented by on the job training (school-based training) and off the job training, and lastly, content and skills represented by the focus of the training content on teacher vs. student, generative vs. generic content, and technical support content. Three independent variables were studied: the year of graduation, computer experience, and the type of undergraduate program.

The following research questions were addressed:

Q1) What are the Arabic language teachers' level of computer experience, year of graduation, and undergraduate program, as represented by the sample?

Q2) What are the teachers' preferences on the fundamental aspects of CALL training provided to Arabic language elementary school teachers? That is, what are their preferences about time of training, grouping trainees, training environment, off the job training, on the job training, training content and skills focus on teacher vs. student, generative vs. generic type content, and technical support content?

Q3) Does computer experience, year of graduation, and/or type of undergraduate program predict the Arabic language teachers' preferences for the CALL training they receive? If yes, is there any interaction between the predictor variables?

The Findings of Question One

Type of undergraduate program. Among one hundred sixty four (164) teachers who participated in the study, 67.7% of teachers graduated from an educational program. Those teachers received an undergraduate program designed mainly for teaching

purposes (i.e., teachers' colleges and college of education), which means that they received curriculum and methodology teaching courses and one semester teaching practicum in general education schools. However, Alhawiti, (2011) criticized these programs because of the lack of technology preparation and the out of date content. Additionally, the technology preparation course was limited to one course. Moreover, Hirzallah (2010) proposed establishing teaching labs to improve the technology and the teaching skills of pre-service teachers in these programs.

In contrast, the study revealed that about one-third (n=53) of the teachers graduated from none-educational programs and received programs that were not designed for teaching purposes (i.e., Arabic language colleges and library art college), which indicated that the teachers have a lack of curriculum and methodology courses. In addition, these programs did not provide teaching practicum.

Year of graduation. The study reveled that the teachers' years of graduation ranged from 1982-2012. The trend of the ministry of education toward Saudizing education has allowed the increased demand for teachers to be met. However, Al-Hazmi (2002) mentioned that this was coupled with decreasing the quality of teacher preparation. The study noted that the number was clearly decreasing since 2009, which is reasonable since The Ministry of Education closed the gap and met the demand for Arabic language teachers. Hiring new teachers is restricted to opening new schools or replacing old teachers with new teachers in case of retirement, death, or firing. This is what is called the systematic vacancies.

Computer experience. The level of teachers' computer experience was evaluated in three different ways: years of computer use, computers used daily to support classroom instruction, and teachers' evaluations of their computer experience. The study revealed that teachers' average mean of their computer experience is 9.24 years. In general, teachers evaluated their computer knowledge and skills as being at the intermediate level. The study also revealed that they use a computer "one or a few times per week" to support classroom instruction with the mean of 3.10 and SD = .988. The study revealed that the vast majority of the teachers (96.3%; n=158) own computers, laptops, or iPads.

This level of computer experience partially confirmed the data of Communications and Information Technology Commission (CITC) published in 2010 that Internet users increased from 200,000 in 2000 to 4.8 million in 2006 (Alkhalaf, et al., 2011).This also corresponds to the study conducted by Nawafleh et al. (2012) that Saudi citizens were able to electronically access most of the needed services.

The study revealed that a large number of the participants in the study recently graduated from the school (within the last 10 years). According to Sahab (2005), the popularity of technology is increasing by the day, especially among young Saudi people. Supporting this, Albalawi and Badawi (2008) concluded that newer faculty members (less than five years) show more positive attitudes and readiness for adopting technology, and Arabic language major faculty members are among those who have positive attitudes toward adopting technology in their teaching.

Technology equipment available at the schools and the classrooms. The study revealed that there is a difference between the results in this study and what was

published before about the technology equipment in Saudi schools. This difference might be due to the different study context in Saudi Arabia or to the increasing growth in technology. Lai et al. (2006) reported that less than 40% of schools have fewer than seven computers. Years after, a study conducted by Albalawi and Hirzallah (2010) showed that the lack of technology equipment still existed. However, this study noted that over three-fourths of teachers (77.4%; n=127) reported that their schools have a computer lab.

Simultaneously, there were some studies (e.g., Nawafleh et al., 2012) that addressed the official efforts to improve the infrastructure of technology in the schools of the Kingdom of Saudi Arabia. The development of the telecommunication sector helped in this development as well. However, this study revealed a part of whole picture about Saudi context. It partially showed the consequence of the official efforts and the development of other aspects of life (e.g., the growth of telecommunication companies) on the infrastructure of schools in terms of the technology equipment that is available in the schools. This is contrary to the findings of some of the previous studies (e.g., Albalawi and Hirzallah, 2010; Lai et al., 2006;), and indicated that the decrease in the order of the equipment availability in schools is as follows: computer (81.71%; n=134), data show projector (59.15%; n=97), smart board (23.17%; n=38), and Digital camera (11.59%; n=19), whereas equipment availability in the classroom is as follows: computer (53.04%; n=87), data show projector (35.37%; n=58), smart board (9.8%; n=16), and Digital camera (2.43%; n= 4). Therefore, this study noted that technology available in the

schools and the classrooms increased more than before compared to the recent studies (e.g., Lai, Sanchez, Chang & Huang, 2006).

The Findings of Question Two

Structural factors of training: Time of training. The training time includes two main aspects: the training duration; which is the number of total training, and the training intensity, which is the overall length of training time span and frequency session (Ertmer & Ottenbreit-Leftwich, 2010). The teachers' preferences varied from 10 to 30 hours in the total of training and from 1 to 5 in the length of each training session. In the total time of training, about one-fourth (23.8%) of the teachers prefer 10 to 15 hours, over one-fourth (26.2%) prefer 25 to 30 hours, and half (50%) of the teachers prefer total time of training in between. In regard to the length of each session, about one-fourth (23.8%) of the teachers prefer 1 to 2 hours, over one-fourth (26.2%) prefer 4 to 5 hours, and half (50%) of the teachers prefer total time of training in between. There was no consensus among the majority of teachers' preferences on specific duration or the intensity of the time of training. Additional details are in the discussion of question three.

Structural factors of training: Grouping trainees. As any training aims to transfer the gained knowledge and skills into the classroom, grouping trainees is one of the aspects that lead to this transformation. Teachers need to learn skills and knowledge that help improve their teaching practice, so the training skills and content have to help them achieve this desired goal. Otherwise, the training will be meaningless and will not serve the integration of technology into language classrooms.

This study revealed that teachers prefer their training to be with homogenous groups in terms of teaching the same grade level and have similar equipments at their schools. The study reported a preference for which there is limited variation. With the registered mean of 4.14 and SD= .79988, the majority (88.4%) of the teachers' frequency means ranged from 3.5 to 5. This confirmed what Coupal (2004) reported in which teachers need to learn what is available in their school and classroom because of the differences in the technology infrastructures. Supporting this grouping technique, Strudler and Hearrington (2008) went behind this and highly recommended the need for more than one participant for the same school training and the same grade level.

Among the previous mentioned adult learning theories, Characteristics of Adults as Learners is the only theory that directly emphasizes the personal characteristics and situational characteristics that must be considered in adult learning (Cross, 1981). Although grouping trainees was not discussed in the other theories, grouping trainees based on their teaching grade level and/or the equipment available at their schools helps to design content that is self-contained and meaningful from the outset and show them the immediate value of training. This basically is the focal point of adult learning theories including Minimalism, Andragogy, and Experiential Learning. Conversely, these principles of how adults learn are not easily implemented with diverse and heterogeneous groups because the trainer will find it hard to focus on one group without ignoring the other.

Structural factors of training: Training environment. Environment plays a role in shaping training and its unique characteristics. A suitable training environment is

one of the factors behind the success of any training. The study revealed that teachers strongly prefer a constructive environment, an environment that is encouraging, is full of collaboration, and helps teachers to expand their knowledge based on their needs as well as their problem solving skills. The study reported a strong preference for which there is limited variation. With the registered mean of 4.45 and SD=.57637, the majority (90.9%) of the teachers' frequency means ranged from 3.8 to 5, which is the agree range. Moreover, this study confirmed two types of studies: studies that recommended constructive environment as the most effective and powerful technology learning environment and studies that study constructive environment as the best learning environment for adults (Alturki & Alfadda, 2007; Boulton, 2002; Clifford and Friesen, 2002; Harmon and Jones, 2001; Swan et al., 2007; Witfelt, 2000).

This is similar to the findings of the studies that recommended that the training environment should be democratic (Cooke-Plagwitz, 2000), be motivating (Witfelt, 2000), help in developing problem-solving skills, and be an inquiry-based learning environment (Cooper & Hirtle, 1999). Moreover, a constructive environment as preferred by Arabic language teachers is effective from another perspective; it the ideal learning atmosphere, especially for today's digitally rich environment (Clifford & Friesen, 2002).

Delivery method of training: On the job and off the job training. The study revealed that teachers took different positions about the two types of delivery methods of training; on the job training represented by follow-up, mentoring, and one-on-one training, and off the job training represented by traditional and one-shot training. The study reported a strong preference for on the job training for which there is limited

variation. With the registered mean of 4.12 and SD=.61686, the majority (87.2%) of the teachers' frequency means ranged from 3.56 to 5. In contrast, they were on the other side of the scale on off the job training. The study reported a strong lack of preference for which there was limited variation. With the mean of 2.1646 and SD= .68033, the majority (83.5%) of the teachers' frequency means ranged from 1 to 2.67.

The teachers' positions on both types of training confirmed the findings of several studies. On the job training individualizes training, reaches teachers' needs (Glazer & Hannafin, 2008; Miller & Glover, 2007), and respects the teachers' level of challenge (Coupal, 2004). It also provides ideas for technology integration and problem solving, provides just-in-time support within a school context (Glazer & Hannafin, 2008), and helps teachers to attain the technology competence for both personal and educational use (Charlalmbous & Karagiorgi, 2002). Moreover, it helps teachers learn effectively in casual connection and conversation between teachers themselves (Davis, 2002; Kessler, 2007).

The study coupled with other research and studies confirmed some of the criticism of off the job training. It is less effective in transferring skills and knowledge to the classroom. McCannon and Crews (2000) and Hughes (2005) found that off the job training focuses less on integration of technology into classroom and more on the technical use of programs or software. In addition, one-shot training is incompatible with the finding of studies that found one-shot training does not provide teachers with sufficient time in terms of duration and intensity to reach the desired level of training that

guarantees the success of technology integration into classrooms (e.g., Brinkerhoff, 2006; Davis, 2002; Dawson & Rakes, 2003; Kanaya et al., 2005; Wells, 2007).

Training content and skills: The focus of content on teacher vs. student. The content and the skills were studied in terms of their focus on teacher vs. student. That is, the content should focus on teacher rather than student, student rather than teacher, or both. Three main aspects are addressed: the focus on teacher attitudes and knowledge rather than student attitudes and knowledge, the start of content from the needs assessment point of the teacher rather than from the needs assessment point of the student, and the content's focus on the teachers' needs rather than on the students' needs.

The study revealed that there was no consensus among the majority of teachers on the preferences on the focus of content on teacher vs. student. With the mean of 3.3252 and SD=.88381, the data ranged from 1.33 to 5, but the sample did not report a strong preference (or no preference), which indicated that the variable is characterized by relatively high variation and a range of preferences. Further discussion, therefore, will address the findings of the inferential question to see what demographic variable, if any, can predict training preferences.

Training content and skills: Generic vs. generative content. The study revealed that teachers prefer generative over generic content. With the registered mean of 4.2220 and SD= .56177, the majority (88.4%) of the teachers' frequency means ranged from 3.60 to 5. This finding confirmed the finding of Egbert et al. (2002) who found that training content should be readily transferable to a classroom setting. Also, it is compatible with Egbert et al. (2002) and McKenzie (2001), who asserted that the training

should enable teachers to plan technology-related courses that are generative and authentic. Moreover, other studies suggested the content should be relevant for teachers' teaching (Kessler, 2006) and take into consideration the relationship between content, pedagogy, and technology (Harris et al., 2009). Moreover, the findings support one of the main principles Minimalism, Andragogy, and Experiential Learning theories in which the teachers need to see the immediate value of their training, and the training content must be meaningful from the outset and include self-contained activities (Kearsley, 2003).

Training content and skills: Technical support content. The study revealed that teachers prefer to receive training that helps them to solve the technical issues they face in classrooms on a regular basis. With the registered mean of 4.1220 and SD= .76367, the majority (85.3%) of the teachers' frequency means ranged from 3.50 to 5. This partially confirmed the finding of Zhao and Frank (2003), who asserted that teachers are less likely to implement technology that creates technical problems for teachers to solve, and the finding of Zhao and Bryant (2006), who found that the technical issue is one of the aspects that highly influence the integration of technology into classrooms. Moreover, in order to implement CALL in language teaching classrooms, TESOL goals and Standards required language teachers to acquire the fundamentally needed skills in technology to solve basic troubleshooting issues (Healey et al., 2011).

The Findings of Question Three

Time of training. The study revealed that year of graduation, level of computer experience, and the type of undergraduate program influence the teachers' preferences on the time of training. The model with an R^2 of .261 [F (3, 164) =14.038, p <.05] indicated

that the three predictors significantly explained 26.1% of the variation in the time of training. Moreover, year of graduation has the largest contribution (β=.328), followed by Computer experience (β=.284), and then type of undergraduate program (β=-.165).

Therefore, the study revealed that the more recently graduated teachers are more likely to prefer more training time than the teachers who graduated a long time ago. Also, the teachers who graduated from educational programs are more likely to prefer more training time than those who graduated from non-educational programs. Lastly, the study revealed that the teachers who have a higher level of experience are more likely to prefer more time of training than those with a low level of computer experience.

Specifying the training preference based on the teachers' characteristics (e.g., level of computer experience, year of graduation and type of undergraduate program) is corresponding with Cross (1981) model of Characteristics of Adults as Learners, which was built on the focus of personal and situational characteristics of adult learners. Moreover, although the long and the short training were not specified in exact number of hours in terms of duration and intensity, several studies reported the benefits of the long training. Long duration of training increases the quality of training and instruction (Lawless & Pellegrino, 2007; Sa'ari et al., 2005), leads to develop teachers' knowledge and skills (Brinkerhoff, 2006; Wells, 2007), and increases the chance for effectively integrating technology into classrooms (Dawson & Rakes, 2003). The teachers' preference of long training indicated that they chose the training that leads to an increase in their confidence (Casey et al., 2004; McKenzie, 2001; Sa'ari et al., 2005). Moreover, their preference on the training intensity indicated that they chose the training that leads

to focus on the goal of training. This is supported by the finding of Kanaya et al. (2005), who found that low intensity of training leads to less focus on the goals of training since trainers need to review the goal of training in every session.

The focus of training on teacher vs. student. The study revealed that the computer experience is the only significant predictor for the content focus on teacher vs. student. With an R^2 of .029 [F (1, 163) = 4.826, $p < .05$], computer experience explained 2.9 % of the variation in the focus of content on teacher vs. student. Moreover, the study revealed that the teachers with a higher level of experience are more likely to prefer the training that focuses on teachers rather than on students, whereas, those who have a low level of computer experience are more likely to prefer the training that focuses on student rather than on teacher.

However, although computer experience showed statistical significance, predicting the focus of content of teacher vs. student, the strength of the predictor is small (not strong). Computer experience explained only 2.9% of the variation in the dependent variable; 97.1% remain unexplained, which means the size of effect is too small. As an interpretive point, this means prediction is quite poor and there was very limited capacity to predict the focus of content on teacher vs. student.

There was no consensus among the majority of teachers on the focus of content on teacher or on student. However, the focus of content on student rather than teacher was criticized by many studies (Casey et al., 2004; Cooke-Plagwitz, 2000; Davis, 2002). Conversely, the focus of content on teacher rather than student was supported. Cooke-Plagwitz (2000) reported that teachers need to be given the independence to use

technology based on their personal needs. Supporting this, Davis (2002) and Casey et al. (2004) asserted that training should focus on the teachers' needs more than the students' needs. Moreover, the focus of content on teacher rather than on student fits well with Roger's Experiential Learning Model as the model stressed self-initiated learning (Kearsley, 2003).

General Recommendations

The following are general recommendations of this study:

1. The study noted that the preferences on time of training in terms of duration and intensity changes due to the level of computer experience, year of graduation, and the type of undergraduate program. Therefore, it is recommended that these teachers' characteristics be taken into account when specifying the length of the training.
2. The study noted that teachers prefer the homogenous grouping approach in terms of the same level of teaching and the similarity of technology equipment available in their schools. It is recommended, therefore, to group teachers based on these two criteria or based on one of them if applying both is impossible for any reason.
3. CALL training should be in constructive environments since it is greatly recommended by adult learning and technology learning studies.
4. The study noted the advantages and disadvantages of both types of delivery methods of training: on the job training and off the job training. It is recommended that teachers receive one-on-one and follow-up training after initial training.

5. The study noted that learning skills outside of an educational context creates a wide gap between what teachers learn in training and what they practice in the classroom. There is, therefore, a need for the generative rather than generic content. That is, the content needs to be authentic, relevant, and easy to transfer to the language classroom. The content also must be self-contained and meaningful from the outset.
6. The study noted that the focus of content should be on teacher rather than on student. It is recommended that the teachers' characteristics (e.g., level of computer experience) be taken into account when selecting content for CALL training. In general, training content should focus on teachers' attitudes and knowledge rather than students' attitudes and knowledge, start from the assessment point of teachers rather than students, and finally, focus on teachers' needs rather than students' needs.
7. As derived from TESOL goals and standards, it is recommended that the goals and the content of CALL training be built free of dependent sequence, be self-contained, and improve the teachers technological along with pedagogical knowledge.
8. The study noted that teachers prefer the training content that helps them to solve technical issues they usually face during their teaching practice. Although the technical issues should be left to specialists who provide support when needed, the training should develop teacher skills to solve the common basic issues.

Although this is not the main goal for CALL training, it increases the probability for the integration of technology into language classrooms.

Recommendations for Future Research

The following are recommended for future research:

1. As this study focuses on Arabic language, male teachers in Medina city in Saudi Arabia, which makes it less generalizable to the entire Saudi context or female teachers in the same city, it is recommended that the study be extended to other cities and conducted to investigate the female teachers' preferences in the same city as well. This will help provide an extensive overview about the teachers' preferences on CALL training in the entire Saudi context.
2. As the study was limited to three independent variables (i.e., computer experience, type of undergraduate program, and year of graduation), future research is recommended to study other variables that might impact the teacher preferences on the fundamental aspects of CALL training such as gender, age, teaching experience, and teachers' satisfaction with teaching jobs.
3. As this study investigated a new area in a Saudi context, it is worth future research to study each of the dependent variables in-depth.
4. The questionnaire showed an evidence for content validity. The reliabilities of the subscales on the questionnaire were found to be in an acceptable range even with the scales that included three or fewer items. However, there is a need for construct validity evidence, so it is recommended to check the construct validity before using the questionnaire in future research.

5. Future research is recommended to include the trainers and advisors of the General Directorate for Education in Medina, Saudi Arabia.
6. The study showed that three predictors (i.e., computer experience, type of undergraduate program, and year of graduation) explained significant variation in the training time, whereas one predictor (i.e., computer experience) explained significant variation in the focus of content on teacher vs. student. Since the study did not examine the reasons for that variation in depth, further research is needed to investigate what reasons led to this variation.

Conclusion

This study has contributed to an understanding of teachers' preferences for CALL training among elementary school, male Arabic language teachers in Medina, Saudi Arabia. The areas of training covered the structural factors of training (i.e., time of training, training environment, and grouping trainees), the delivery method of training (i.e., on the job training and off the job training), and the content and the skills of the training (i.e., generative vs. generic content, the focus of content on teacher vs. student, and technical support content). According to the data analysis, the majority of teachers prefer to be trained in a constructive environment and grouped in training with others who teach the same grade and whose schools have similar technology equipment. In terms of the content, the majority of teachers prefer the authentic and generative content rather than generic content to close the gap between what teachers learn in training and what they practice in the classroom. Also, they prefer to have basic technical support

content. There was no consensus among the majority of teachers' preferences on the time of training and the focus on content of teacher vs. student.

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Appendix A: Questionnaire (English)

Professional Development of Computer Assisted Language Learning (CALL): Saudi Arabia Language Teachers

General instructions: The purpose of this study is to examine elementary school teachers' preferences of how to best apply Computer Assisted Language Learning (CALL) during in-service training. This questionnaire consists of two parts. Each section begins with directions pertaining to that part only. As you begin each section, please read the directions carefully and provide your response in the format requested.

Section (A): Participant's preferences of how to best apply Computer Assisted Language Learning (CALL) during in-service training

Instructions*:* Please indicate your level of agreement or disagreement with each of the following statements by choosing the appropriate response.

Training time: I prefer		***Time in Hours***				
1	the duration of training courses to be at least	☐ 10	☐ 15	☐ 20	☐ 25	☐ 30
2	the length of the training time span to be at least	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
Grouping the trainee: In training, I prefer to group with teachers		***Strongly agree***	***Agree***	***Neutral***	***Disagree***	***Strongly disagree***
3	who teach the same grade level.	SA	A	N	D	SD
4	who have similar technology equipment in school.	SA	A	N	D	SD
Training environment: I prefer to learn in an environment that						
5	is encouraging, supportive, and democratic.	SA	A	N	D	SD
6	is active and full of collaboration.	SA	A	N	D	SD
7	is constructive to an inquiry-based approach	SA	A	N	D	SD
8	is based on problem solving skills.	SA	A	N	D	SD
9	helps trainees to expand their knowledge based on their needs.	SA	A	N	D	SD
On the job training: I prefer on the job training because						
10	it overcomes problems caused by the diversity of software and hardware and availability in the classroom.	SA	A	N	D	SD
11	it individualizes training.	SA	A	N	D	SD

12	it respects my level of challenge.	SA	A	N	D	SD
13	I learn effectively from casual connections and conversation with other teachers.	SA	A	N	D	SD
14	it goes beyond software training to provide ideas for technology integration and problem solving.	SA	A	N	D	SD
15	it provides just-in-time support within a school context.	SA	A	N	D	SD
16	it increases my ability to solve the technical problems I face.	SA	A	N	D	SD
17	it helps me to attain the technology competence for both personal and educational use.	SA	A	N	D	SD
18	it helps me to integrate technology into classroom practices.	SA	A	N	D	SD
Off the job training: I do not prefer traditional training and one-shot training because they						
19	are less effective in transferring skills and knowledge to the classroom.	SA	A	N	D	SD
20	mostly focus on the technical use of the program or software rather than they focus on integration of technology into classroom.	SA	A	N	D	SD
21	Do not provide me with sufficient time (in terms of duration and intensity) to grasp new concepts.	SA	A	N	D	SD
Content and the skills focus on teacher vs. student: I prefer to receive training that						
22	focuses on the teachers' attitudes and knowledge rather than it focuses on the students' attitudes and knowledge.	SA	A	N	D	SD
23	starts from the needs assessment point of the teacher rather than it starts from the needs assessment point of the students.	SA	A	N	D	SD
24	focuses on teachers' needs more than it focuses on students' needs.	SA	A	N	D	SD
Generative vs. generic content: I prefer training content that						
25	is readily transferable to a classroom setting.	SA	A	N	D	SD
26	enables me to create generative and authentic activities.	SA	A	N	D	SD
27	does not create a wide gap between what I learn in training and what I can practice in the classroom.	SA	A	N	D	SD

28	is general content without focusing on a specific subject.	SA	A	N	D	SD
29	is general content without focusing on specific skills.	SA	A	N	D	SD
Technical support: I prefer						
30	training content that focuses on solving technical support problems.	SA	A	N	D	SD
31	training content that helps me to solve the technical issue I usually face in classrooms.	SA	A	N	D	SD

Section (B):
Demographic Information

Instruction: This section seeks demographic information about your background. Please take a few more minutes to choose the answer that applies.

32) When did you graduate from college? (e.g., 2004)

33) From where did you graduate?

☐ Teachers' college

☐ College of education

☐ Library arts programs colleges. (e.g. Islamic University, Faculty of Arts & Humanities)

☐ Others please specify……

34) Do you own a computer, laptop, or iPad? ☐ Yes ☐ No

35) How many years have you been using computers in your life? (e.g., 6 years) …….

36) How often do you typically use a computer to support classroom instruction?

☐ Daily or almost daily

☐ One or a few times per week

☐ One or a few times per month

☐ Never

37) Which one best describes your computer skills and knowledge?

☐ Beginner

☐ Intermediate

☐ Advanced

☐ Expert

38) What technology equipment is available at your school?

☐ Computer

☐ Data show projector

☐ Smart board

☐ Other, specify……

39) What technology equipment is available in your classroom?

☐ Computer

☐ Data show projector

☐ Smart board

☐ Other, specify……

40) Does your school have a computer lab? ☐ Yes ☐ No

Appendix B: Questionnaire (Arabic)

التطوير المهني على الكمبيوتر كوسيلة مساعدة في تعليم اللغة: معلمي اللغة في المملكة العربية السعودية

تعلميات عامة:
الغرض من البحث هو دراسة أولويات معلمي المدارس الابتدائية حول الطريقة الأفضل لتدريبهم أثناء الخدمة على استخدام الكمبيوتر كوسية مساعدة في تعلم اللغة. تتكون هذه الاستبانة من جزئين. يبدأ كلا القسمين بتعلمات تتعلق بذلك الجزء فقط. عندما تبدأ كل جزء، يرجى قراءة التعليمات بعناية واختيار الإجابة المناسبة.

الجزء (أ): أولويات المعلمين حول الطريقة الأفضل لتدريبهم أثناء الخدمة على استخدام الكمبيوتر كوسية مساعدة في تعلم اللغة

التعليمات (1): يرجى تحديد درجة موافقتك على كل من البنود التالية وذلك باختيار الاجابة التي تعبر عن رأيك:

وقت التدريب:					
أفضل	**الوقت بالساعات**				
1 أن تكون مدة الدورة التدريبية على الأقل	☐ 10	☐ 15	☐ 20	☐ 25	☐ 30
2 طول الفترة الزمنية في كل لقاء تدريبي تمتد لتكون على الاقل.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5

مجموعة المتدربين:					
أفضل التدريب مع مجموعة من المعلمين	**موافق بشدة**	**موافق**	**محايد**	**غير موافق**	**غير موافق بشدة**
3 الذين يدرسون في مدراسهم نفس الصف الدراسي الذي أقوم بتدريسه					
4 الذين لديهم في مدارسهم أدوات تكنولوجيا مماثلة للموجود في مدرستي					

بيئة التدريب:					
أنا أفضل أن أتعلم في بيئة	**موافق بشدة**	**موافق**	**محايد**	**غير موافق**	**غير موافق بشدة**
5 مشجعة ،وداعمة، وديمقراطية.					
6 نشطة ومليئة بالتعاون.					

7 مبنية على طرح الأسئلة والاستفسارات.					
8 تعتمد على مهارات حل المشكلات.					
9 تساعد المتدربين على توسيع معلوماتهم بناءً على حاجاتهم.					

التدريب على رأس العمل:					
أنا أفضل التدريب على رأس العمل	موافق بشدة	موافق	محايد	غير موافق	غير موافق بشدة
10 لأنه يتغلب على الصعوبات الناتجة عن اختلاف البرامج والأدوات التقنية، وتوفرها في قاعة الفصل الدراسي.					
11 لأنه يقوم بتفريد التعلم.					
12 لأنه يراعي مستوى الصعوبة لدي.					
13 لأني أتعلم بشكل فعال من خلال التواصل والمحادثة غير الرسمية مع المعلمين الآخرين.					
14 لأنه يتجاوز التدريب على استخدام البرامج إلى تزويدي بأفكار لدمج التكنولوجيا في التعليم، ولحل المشكلات.					
15 لأنه يوفر دعماً مباشراً داخل بيئة المدرسة.					
16 لأنه يزيد من قدرتي على حل المشكلات التقنية التي أواجهها.					
17 لأنه يساعدني على الحصول على الكفاءة التقنية للاستخدام الشخصي والتعليمي.					
18 لأنه يساعدني على دمج التكنولوجيا في الممارسات الفصيلة.					

التدريب خارج العمل:					
لا أفضل التدريب التقليدي والتدريب لمرة واحدة لأنها	موافق بشدة	موافق	محايد	غير موافق	غير موافق بشدة
19 أقل فاعلية في نقل المهارات والمعلومات إلى الفصل الدراسي.					
20 تركز في معظمها على الاستخدام التقني للبرامج (software).					
21 لا تمنحني الوقت الكافي لتعلم المفاهيم الجديدة.					

تركيز كل من المحتوى والمهارات:					
أفضل التدريب الذي	موافق بشدة	موافق	محايد	غير موافق	غير موافق بشدة
22 يركز على معارف واتجاهات المعلمين، وليس على معارف واتجاهات الطلاب.					
23 يبدأ من نقطة تقييم حاجات المعلمين، وليس من نقطة تقييم حاجات الطلاب.					
24 يركز على حاجات المعلمين أكثر من التركيز على حاجات الطلاب.					

المحتوى العام والمحتوى القابل للنقل:					
أفضل محتوى التدريب الذي	موافق بشدة	موافق	محايد	غير موافق	غير موافق بشدة
25 يكون قابلاً للنقل بسهولة إلى الفصل الدراسي.					
26 يمكنني من تصميم نشاطات تعلمية أصيلة وقابلة للنقل إلى الفصل الدراسي.					
27 لا يخلق فجوةً بين ما أتعلمه في التدريب وما يمكن أن أمارسه داخل الفصل الدراسي.					
28 يكون عاماً بحيث لا يركز على مادة معينة.					
29 يكون عاماً بحيث لا يركز على مهارة لغوية معينة					

الدعم الفني:					
أفضل	موافق بشدة	موافق	محايد	غير موافق	غير موافق بشدة
30 محتوى التدريب الذي يركز على حل مشاكل الدعم الفني.					
31 محتوى التدريب الذي يساعدني على حل المشكلات التقنية التي غالباً ما أواجهها.					

الجزء (ب): المعلومات الشخصية

تعليمات: تم تصميم هذا الجزء لجمع بعض المعلومات عن المشاركين. يرجى قراءة الاسئلة وتحديد الاجابات المناسبة.

35) متى تخرجت من الكلية؟ {مثال: 1424هـ} .....

36) من أي كلية تخرجت؟

☐ كلية المعلمين.

☐ كلية التربية .

☐ كلية اللغة العربية.

☐ كلية الآداب والعلوم الإنسانية.

☐ أخرى، حدد .....

37) هل لديك جهاز حاسب، محمول، أو آباد؟ ☐ نعم

☐ لا

38) لمدة كم سنة وأنت تستخدم الحاسب؟ {مثال:6 سنوات}.....

39) كم مرةً تستخدم الكميوتر لدعم أساليب التدريس في قاعة فصلك الدراسي؟

☐ يومياً أو بشكل شبه يومي.

☐ مرة واحدة أو مرات قليلة في الأسبوع.

☐ مرة واحدة أو مرات قليلة في الشهر.

☐ لا أستخدمه أبداً.

40) أي من هذه الخيارات يصف بشكل أفضل مهارتك ومعرفتك بالكمبيوتر؟

☐ مبتدئ

☐ متوسط

☐ متقدم

☐ خبير.

41) ما الأدوات والأجهزة التقنية المتوفرة في مدرستك؟

☐ كمبيوتر.

☐ عارض البيانات { داتا شو}.

☐ السبورة الذكية.

☐ أخرى، حدد.....

42) ما الأدوات والأجهزة التقنية المتوفرة في فصلك الدراسي؟

☐ كمبيوتر.

☐ عارض البيانات { داتا شو}.

☐ السبورة الذكية.

☐ أخرى، حدد.....

43) هل لدى مدرستك معمل حاسب آلي؟ ☐ نعم

☐ لا

Appendix C: Approval from the Saudi Arabian Cultural Mission (SACM)

بسم الله الرحمن الرحيم

Kingdom of Saudi Arabia
Ministry of Higher Education
Cultural Mission To The U.S.A.

المملكة العربية السعودية
وزارة التعليم العالي
الملحقية الثقافية بالولايات المتحدة الأمريكية

وزارة التعليم العالي
Ministry of Higher Education

الرقم: _____ التاريخ: _____ المرفقات: _____

الشؤون الدراسية

إفـــــــــــــــادة

تفيد الملحقية الثقافية السعودية في الولايات المتحدة الأمريكية بأن / ابراهيم بن عوض الله بن رجاء العوفي **(67029)** - سجل مدني **(1013990971)** طالب مبتعث للدراسة في أمريكا على حساب جامعة طيبة للحصول على درجة دكتوراه منذ **1431/05/01** هـ الموافق **2010/04/15**م، ولا يزال يواصل دراسته حتى تاريخه علما بأن مدة بعثته المقررة تنتهي في **1435/11/11** هـ الموافق **2014/09/06**م.

لقد أعطيت له هذه الإفادة - بناءاً على طلبه وبدون أدنى مسؤولية - لتقديمها إلى الإدارة العامة للتعليم بالمدينة المنورة - لإستخدامها حسب الأنظمة المتبعة في المملكة.

والله الموفـــق ،،،

مساعد الملحق الثقافي السعودي بأمريكا
للشـــــــؤون الـــــدراسيـــة

د. محمد بن عبد الرحمـــن العمـــر

8500 Hilltop Road • Fairfax, Virginia 22031 • (703) 573-7226 • (703) 573-2244 • Fax: (703) 573-2595
Web Site: www.sacm.org • E-Mail: sacmusa@sacm.org

Appendix D: The General Directorate for Education in Madina, Saudi Arabia

بسم الله الرحمن الرحيم

المملكة العربية السعودية
وزارة التربية والتعليم
الإدارة العامة للتربية والتعليم بمنطقة المدينة المنورة
إدارة التخطيط والتطوير

الرقم: ٤٩٠٧٩٦٧٤
التاريخ: ١٤٣٤/١٠/١٩هـ
المشفوعات:

الموضوع: الموافقة على تسهيل مهمة الطالب /ابراهيم بن عوض الله العوفي

سعادة المحلق الثقافي السعودي بالولايات المتحدة الأمريكية وفقه الله

السلام عليكم ورحمة الله وبركاته.

إشارة إلى إفادة سعادتكم رقم بدون وتاريخ بدون المتضمن النظر في إمكانية تسهيل مهمة الطالب / ابراهيم بن عوض الله بن رجاء العوفي سجل مدني (١٠١٣٩٩٠٩٧١)، الملتحق بجامعة أوهايو بالولايات المتحدة الأمريكية في تخصص المناهج وطرق التدريس لمرحلة الدكتوراه، في إجراء بحث ميداني وجمع معلومات تتعلق ببحثه لرسالة الدكتوراه، التي بعنوان (أولويات معلمي المدارس الابتدائية حول الطريقة الأفضل لتدريبهم أثناء الخدمة على استخدام الكمبيوتر كوسيلة مساعدة في تعليم اللغة).

عليه نفيد سعادتكم بموافقتنا المبدئية على إجراء البحث الميداني المذكور أعلاه في المنطقة، حسب التعليمات المعنية، والتقاليد البحثية المتعارف عليها.

وتقبلوا وافر التحية والتقدير.

المدير العام للتربية والتعليم بمنطقة المدينة المنورة

ناصر بن عبدالله العبدالكريم

Appendix E: Institutional Review Boards (IRB) Approval

OHIO UNIVERSITY
Office of the Vice President for Research

13E166

Office of Research Compliance
RTEC 117
Athens, OH 45701-2979

T: 740.593.0664
F: 740.593.9838
www.research.ohiou.edu

A determination has been made that the following research study is exempt from IRB review because it involves:

Category 1 - research conducted in established or commonly accepted educational settings, involving normal educational practices

Project Title: Professional Development on Computer Assisted Language Learning (CALL): Saudi Arabia Language Teachers

Primary Investigator: Ibrahim Awadhallah Alofi

Co-Investigator(s):

Advisor: Guofang Wan
(if applicable)

Department: Teacher Education

Jo Ellen Sherow 5-20-13

Jo Ellen Sherow, MPA
Office of Research Compliance

Date

The approval remains in effect provided the study is conducted exactly as described in your application for review. Any additions or modifications to the project must be approved (as an amendment) prior to implementation.

Appendix F: A Letter Cover of the Questionnaire

Title of the research is "**Professional Development on Computer Assisted Language Learning (CALL): Saudi Arabia Language Teachers**".

The researcher: Ibrahim Awadhallah Alofi
Email : ia291706@ohio.edu

The purpose of this study is to examine elementary school teachers' perception of how to best apply Computer Assisted Language Learning (CALL) during in-service training. The questionnaire consists of two parts. Both sections begin with some directions pertaining to that part only. As you begin each section, please read the directions carefully and provide your response candidly in the format requested.

This study is important to society because it aims to improve the quality of teachers training. Individually, you may benefit designing an appropriate training for you as a language teacher. If you have further questions about this study, do not hesitate to contact the researcher. The data is being collected for research purposes through Ohio University. The completion and return of the questionnaire will be used only for research purposes. No risks or discomforts are anticipated. Your participation is completely voluntary, there is no obligation to complete the questionnaire and you may quit any time. Your Participation in the study typically takes less than 20 minutes. You must be Arabic language teacher and 18 years of age or older to participate in the study

If you understand the statements above, and freely consent to participate in the study, please fill out the questionnaire.

Appendix G: Correlation between the all variables

		Time of training	Grouping trainees	Training environment	On the job	Off the job	Generative generic	Technical support	teacher vs. student
Time of training	Pearson Correlation	1	.107	.142	.153	.114	.317**	.176*	.063
	Sig. (2-tailed)		.175	.069	.050	.147	.000	.024	.424
Grouping trainees	Pearson Correlation	.107	1	.195*	.411**	.068	.089	.354**	-.144
	Sig. (2-tailed)	.175		.012	.000	.390	.257	.000	.066
Training environment	Pearson Correlation	.142	.195*	1	.474**	.113	.356**	.427**	-.075
	Sig. (2-tailed)	.069	.012		.000	.150	.000	.000	.337
On the job	Pearson Correlation	.153	.411**	.474**	1	.089	.329**	.500**	.012
	Sig. (2-tailed)	.050	.000	.000		.256	.000	.000	.879
Off the job	Pearson Correlation	.114	.068	.113	.089	1	.167*	.080	-.145
	Sig. (2-tailed)	.147	.390	.150	.256		.033	.307	.064
Generative generic	Pearson Correlation	.317**	.089	.356**	.329**	.167*	1	.298**	-.004
	Sig. (2-tailed)	.000	.257	.000	.000	.033		.000	.962
Technical support	Pearson Correlation	.176*	.354**	.427**	.500**	.080	.298**	1	-.059
	Sig. (2-tailed)	.024	.000	.000	.000	.307	.000		.452
The focus of content on teacher vs. student	Pearson Correlation	.063	-.144	-.075	.012	-.145	-.004	-.059	1
	Sig. (2-tailed)	.424	.066	.337	.879	.064	.962	.452	

Thesis and Dissertation Services