

FACTORS RELATED TO REPORTED STUDENT
TABLET PC USE BY EFL HIGH SCHOOL TEACHERS

A MASTER'S THESIS

BY

MOAZ MOHAMMED

THE PROGRAM OF TEACHING ENGLISH AS A FOREIGN LANGUAGE

İHSAN DOĞRAMACI BILKENT UNIVERSITY
ANKARA

JUNE 2016

Factors Related to Reported Student
Tablet PC Use by EFL High School Teachers

The Graduate School of Education

of

İhsan Doğramacı Bilkent University

by

Moaz Mohammed

In Partial Fulfilment of the Requirements for the Degree of

Master of Arts

in

Teaching English as a Foreign Language

Ankara

June 2016

İHSAN DOĞRAMACI BILKENT UNIVERSITY
GRADUATE SCHOOL OF EDUCATION

Thesis Title: Factors Related to Reported Student Tablet PC Use by EFL High
School Teachers

Moaz Mohammed
Oral Defence June 2016

I certify that I have read this thesis and have found that it is fully adequate, in scope and in quality, as a thesis for the degree of Master of Arts in Teaching English as a Foreign Language.

Prof. Dr. Kimberly Trimble (Supervisor)

I certify that I have read this thesis and have found that it is fully adequate, in scope and in quality, as a thesis for the degree of Master of Arts in Teaching English as a Foreign Language.

Assoc. Prof. Dr. Erdat Cataloglu (Examining Committee Member)

I certify that I have read this thesis and have found that it is fully adequate, in scope and in quality, as a thesis for the degree of Master of Arts in Teaching English as a Foreign Language.

Assoc. Prof. Dr. Kemal Sinan Ozmen (Examining Committee Member)

Approval of the Graduate School of Education

Prof. Dr. Margaret Sands (Director)

ABSTRACT**FACTORS RELATED TO REPORTED STUDENT TABLET PC USE BY EFL
HIGH SCHOOL TEACHERS**

Moaz Mohammed

M.A., Program of Teaching English as a Foreign Language

Supervisor: Prof. Dr. Kimberly Trimble

June 2016

This study investigated high school students' use of tablet PCs in EFL classrooms as reported by their teachers. In addition, the study also looked into factors that contribute to tablet PC use at these high schools. Forty-four EFL high school teachers from 9 different high schools located in Ankara participated in this study. Data was gathered through a questionnaire that asked teachers to report students' various uses of tablet PCs. In addition to that, the questionnaire also collected data from teachers regarding their attitude towards tablet PCs, their pedagogical beliefs, and facilitating conditions at the schools. The findings of this study showed that the reported use of tablet PCs at the high schools was very limited. From among the possible factors (facilitating conditions at the schools, attitudes towards tablet PCs, and teachers' pedagogical beliefs) that could contribute to tablet PC use, facilitating conditions at the schools was the only factor that showed a significant correlation with tablet PC use.

Keywords: tablet PC, technology use, tablet PC acceptance, computer use, computer acceptance

ÖZET

ÖĞRENCİLERİN LİSE İNGİLİZCE ÖĞRETMENLERİ TARAFINDAN BİLDİRİLEN TABLET BİLGİSAYAR KULLANIMLARINI ETKİLEYEN FAKTÖRLER

Moaz Mohammed

Yüksek Lisans, Yabancı Dil Olarak İngilizce Öğretimi
Tez Yöneticisi: Prof. Dr. Kimberly Trimble

June 2016

Bu çalışmada, öğrencilerin Ankara’da lise düzeyinde görev yapan İngilizce öğretmenleri tarafından bildirilen tablet bilgisayar kullanımları araştırılmıştır. Buna ek olarak çalışmada, bu liselerdeki tablet bilgisayar kullanımını etkileyen faktörler de incelenmiştir. Çalışmaya Ankara’da bulunan 9 farklı liseden toplam 44 İngilizce Öğretmeni katılmıştır. Veriler, öğretmenlerden öğrencilerin tablet bilgisayar kullanım biçimlerini aktarmalarını isteyen bir anket ile toplanmıştır. Anket ayrıca öğretmenlerin tablet bilgisayar kullanma tutumları, öğretim felsefeleri ve okullardaki kolaylaştırıcı konularına ilişkin de bilgiler elde etmeyi amaçlamıştır. Çalışmada elde edilen bulgular, liselerdeki bildirilen tablet bilgisayar kullanımının oldukça sınırlı olduğunu ortaya koymuştur. Tablet bilgisayar kullanımını etkileyebilecek faktörler arasından (okullardaki kolaylaştırıcı faktörler, tablet bilgisayarlara yönelik tutumlar ve öğretmenlerin öğretim felsefeleri), okullardaki kolaylaştırıcı koşulların tablet bilgisayar kullanımı ile anlamlı korelasyon içinde bulunan tek faktör olduğu belirlenmiştir.

Anahtar Kelimeler: tablet bilgisayar, teknoloji kullanımı, tablet bilgisayar kabul, bilgisayar kullanımı, bilgisayar kabul

ACKNOWLEDGEMENTS

It has been an incredible journey and I never thought I would say this, I'm a little sad that it's all over. Along this journey, I worked with so many different people, visited different places and learned so much. This experience taught me not only about my research topic, but also about life in general, about people, and about myself. I can definitely say that I came out of this, a stronger version of myself, and I have many people to thank for that.

First and foremost, I would like to express my deepest gratitude to my advisor, Prof. Dr. Kimberly Trimble. He has been the best advisor I could have asked for, guiding me through difficult times, encouraging me when I lost all hope, and being patient with me throughout the ups and downs of this long process. Without his support and feedback this work would not have been possible and I'm deeply indebted to him.

Besides my advisor, I would like to thank the rest of my thesis committee: Assoc. Prof. Dr. Erdat Cataloglu and Assoc. Prof. Dr. Kemal Sinan Ozmen, who gave me great insight, asked me really thoughtful questions, and lastly gave me the much needed constructive feedback to finalize my thesis.

I would also like to especially thank my fellow classmate Hazal Gul Ince, who went with me to visit each high school. I couldn't have done it without her help.

Last but not least, I would like to express my gratitude to my parents and siblings who were always there for me, giving me moral support and encouraging me every step of the way.

TABLE OF CONTENTS

ABSTRACT.....	iii
ÖZET	iv
ACKNOWLEDGEMENTS	v
TABLE OF CONTENTS.....	vi
LIST OF TABLES	viii
LIST OF FIGURES	ix
CHAPTER I: INTRODUCTION.....	1
Introduction.....	1
Background of Study	2
Problem	4
Research Questions	5
Significance.....	5
Conclusion	6
CHAPTER II: LITERATURE REVIEW	7
Introduction.....	7
History of Computers in Education	8
PLATO.....	8
TICCIT.....	10
Conceptualizing Computers in Language Learning	11
History of CALL.....	14
Behavioristic CALL.....	14
Communicative CALL.....	15
Integrative CALL.....	17
Tablet PC	19
Factors Contributing to Information Communication Technology (ICT) Use.....	20
School -Level Factors	21
Facilitating conditions.....	21
Administration support.	22
Pressure to use technology.....	23
Physical structure and technology resources.	23
Teacher-level Factors.....	24
Teachers’ attitudes.....	24
Teachers’ pedagogical beliefs (student centered vs. teacher centered).	24
Conclusion	25
CHAPTER III: METHODOLOGY	26
Introduction.....	26

Setting and Participants.....	26
Research Design.....	30
Instruments and Materials.....	30
Data Collection Procedures.....	33
Piloting.....	33
Data Analysis Procedures.....	34
Normality Test Results.....	34
Conclusion.....	35
CHAPTER IV: DATA ANALYSIS.....	36
Introduction.....	36
EFL Teachers' Reported Use of Tablet PCs in the Classroom.....	37
Factors that Contribute towards Tablet PC in the Classroom.....	41
Correlation analysis – demographics factors and uses of tablet PCs.....	41
Descriptive statistics – facilitating conditions, attitude towards tablet PC use, and pedagogical beliefs.....	43
Facilitating Conditions Scale.....	44
Tablet PC Attitude Scale.....	45
Teacher Philosophy Scale.....	46
Correlation analysis – factors vs. use of tablet PCs.....	47
Conclusion.....	48
CHAPTER V: CONCLUSION.....	49
Introduction.....	49
Findings and Discussion.....	49
Summary of Findings.....	49
Tablet PC Use.....	49
Factors Related to Tablet PC Use.....	50
Context of Findings.....	50
Use of Tablet PCs.....	50
Factors Predicting Use of Tablet PCs.....	51
Pedagogical Implications.....	53
Limitations of the Study.....	55
Suggestions for Further Research.....	57
Conclusion.....	57
REFERENCES.....	59
APPENDICES.....	70
Appendix A: Questionnaire (English).....	70
Appendix B: Questionnaire (Turkish).....	73

LIST OF TABLES

Table	Page
1 Gender of the Sample.....	27
2 Teaching School of the Sample	28
3 Education of the Sample	28
4 Education Major of the Sample	29
5 Descriptive Statistics of Age, Teaching Experience and Teaching Hours	30
6 Components of the Questionnaire.....	32
7 Mean Scores of Teacher-Reported Student Use of Tablet PCs in the Classroom	37
8 Individual, Group, Outside, and Presentation Use of Tablet PCs Reported by Teachers	38
9 Internet, Educational Game, Fun Game, and Speak English of Tablet PCs Reported by Teachers.....	39
10 Correlation between Demographics and Uses of Tablet PCs	42
11 Descriptive Statistics of Other Factors related to Tablet PC Use in the Classroom	44
12 Questionnaire Items related to Facilitating Conditions Scale.....	45
13 Questionnaire Items related to Tablet PC Attitude Scale	45
14 Teachers' Agreement with Contrasting Statements of Pedagogical Beliefs	46
15 Relationships among Other Factors and Reported Uses of Tablet PCs.....	47

LIST OF FIGURES

Figure	Page
1. Use of tablet PCs across schools.....	40



CHAPTER I: INTRODUCTION

Introduction

During the last three decades, the world has witnessed various innovations in information and communication technologies (ICT) and their incorporation into the field of education. The personal computer, the internet and various other technologies have rapidly changed the way teaching and learning occurs. Computers have now become conveniently mobile, user-friendly, and more affordable than ever before. Educators, researchers, and policy makers worldwide are debating whether or not to bring the more portable version of the computer, the tablet PC, into the classroom. Research from the past decade seems to be in favor as it shows technology has the ability to enhance literacy development, impact language acquisition, provide greater access to information, support learning, motivate students, and enhance their self-esteem (Boster et al., 2004; CEO Forum, 2001; Mann, Shakeshaft, Becker, & Kottkamp, 1999; Noeth & Volkov, 2004; Tracey & Young, 2006; WestEd, 2002). However according to the International Society for Technology in Education (2000), when aiming to make the most of a technology integrated learning environment, there are also numerous challenges that need to be addressed such as proactive leadership from the education system, ICT skilled educators, curriculum resources, pedagogical beliefs, and technical assistance. Keeping these challenges in check, the advantages of technology and computers in the classroom have the ability to revolutionize the future of learning in today's classrooms.

Countries around the world are realizing the value of ICT in education and looking to include ICT in their classrooms. Looking at East Asia alone, Macao

Special Administrative Region of China, Hong Kong Special Administrative Region of China, Japan, Malaysia, New Zealand, the Philippines, the Republic of Korea, and Singapore have a concrete plan to include ICT in education (UNESCO Institute for Statistics, 2014). Turkey is no different in this regard. In November 2010, Turkey's Ministry of National Education (MoNE) announced a project called: Movement of Enhancing Opportunities and Improving Technology, also known as the FATİH project. This project was aimed at increasing the quality of education in Turkey and providing equal opportunities to all students. In fall of 2011, 52 pilot schools (4 elementary and 48 high schools) were selected and equipped with interactive whiteboards (IWB) in each classroom and tablet PCs for each student. Researchers have conducted some preliminary studies on the FATİH project and they include one study evaluating the early stage of the project by looking at how IWBs and tablet PCs were used in the classrooms (Pamuk et al., 2013), a study focusing on student attitudes towards tablet PCs (Dündar & Akçayır, 2014), and a qualitative study looking at the views of teachers, students and parents regarding the project (Şahin, Aktürk & Çelik, 2013). One aspect that has not been covered in the research so far is how the tablet PCs are being used in an EFL classroom context and what factors contribute to the use of tablet PCs in an EFL classroom. Therefore this study aims to fill this void by exploring tablet PC use and factors that contribute to their use.

Background of Study

Computer Assisted Language Learning (CALL) is defined in previous literature as "the search for and study of applications on the computer in language teaching and learning" (Levy, 1997, p. 1). More recently, Beatty (2013) defines CALL as "any process in which a learner uses a computer and, as a result, improves his or her language" (p. 7). In this case 'computer' not only refers to a desktop or

laptop but also includes various other devices such as PDAs (personal digital assistants), mp3 players, mobile phones, electronic whiteboards and even DVD players, anything which has computer chips embedded inside (Levy & Hubbard, 2005). It is debated whether mobile devices such as smartphones, PDAs, and tablet PCs fall into the CALL category or if they fall under Mobile Assisted Language Learning (MALL). For the purpose of this research paper, the term 'CALL' will be used in its broader sense as an umbrella term, due to its dominant use in previous literature (Thorne & Smith, 2011).

The history of CALL shares a similar path to that of language teaching itself. According to researchers, its history is divided into three phases: behavioral, communicative, and integrative CALL (Warschauer, 2000). Behavioral CALL emerged during the age of grammar-translation and audio-lingual English teaching methods. This stage consisted of mainly drill and practice type software that was informed by the behaviorist learning model. The next era was that of Communicative Language Teaching (CLT) during which communicative CALL developed. Communicative CALL emphasized on implicit grammar activities with a focus on using forms, rather than on the forms themselves (Warschauer, 2000). In the final phase of the history of CALL, known as integrative CALL, teachers moved towards the integration of various language skills (e.g. listening, speaking, reading, and writing) within an authentic social context using task-based, project-based, or content-based approaches (Warschauer & Healey, 1998). It was during this phase the internet became more widely available and effective search strategies became more important than memorization as knowledge became more easily accessible.

In this age of technology and information, schools worldwide are starting to bring a more mobile version of the personal computer, the tablet PC, to learners in

the classroom. tablet PCs are considered as a way to increase access to and improve the quality of education for students coming from various socio-economic backgrounds. tablet PCs have many distinct advantages when compared to other technologies such as desktop computers, laptops, or smartphones. The screen size varies from 7 inches to 10 inches which is smaller than average laptop screens but bigger than smartphone screens, thus making it more mobile compared to a laptop or desktop. In addition the touch screen is quite interactive and intuitively easy to use. Functionality is also superior compared to desktops or laptops featuring a faster boot up and almost instant load times for applications without any technical problems as compared to its predecessor the laptop computer. Since tablet PCs are a relatively new phenomenon, little academic research exists on the use of tablet PCs in education. Some exceptions include research done by Burden (2012) in Scotland, Clark and Svanaes (2012), and Heinrick (2012) in the UK. In addition, there are also some studies with observational and anecdotal evidence on the impact of tablet technologies on engagement, concentration, motivation, behavior, self-directed learning and collaborative behavior (Bjerede & Bondi, 2012; Freedman & Dalton, 2012).

Problem

Several studies have been conducted on factors contributing to teachers' and students' use or adoption of computers in various fields including EFL. When it comes to tablet PCs however, research literature is quite limited in all fields and almost non-existent specifically in the field of EFL. Among the studies available on tablet PCs, most of them focus are either very broad general studies or they are focused on fields other than EFL such as mathematics, science, and engineering.

Therefore a strong need exists for a study of this nature in the field of EFL exploring the use of tablet PCs in an EFL classroom to fill the gap in literature.

From a local point of view, the government of Turkey plans to spend 1.5 billion TL (approx. 750 million dollars) on equipping all K-12 schools with interactive whiteboards and tablet PCs (MoNE, 2012). In fall of 2011, 52 schools from different provinces across Turkey were selected to pilot this project (MoNE, 2012). Currently there are 528 high schools in Ankara, out of which 170 of them have been equipped with interactive whiteboards and tablet PCs. The future success of this project relies on closely observing these schools and applying lessons learned to avoid problems at full-scale implementation. At this time, it is not clear to what extent and how high school students in the EFL classroom are using these new technologies. A major goal of this study is to address this void and in addition explore the underlying reasons for the variance in use of tablet PCs. Specifically, this study will examine the attitudes of the teachers towards the technology, as well as other factors such as conditions in schools that facilitate use, teacher's pedagogical beliefs, and teachers' personal characteristics.

Research Questions

1. To what extent do high school students use tablet PCs in the EFL classroom?
2. Which factors contribute to students' use of tablet PCs in the EFL classroom?

Significance

This study will be among the first few to explore students' use of tablet PCs in the EFL classroom and factors contributing to their use. It is expected that the results of this study will be useful to policy makers, educational administrators, teachers, and also parents in identifying and adopting better practices for introducing

new technology into EFL classrooms in the future. In addition, being among the first studies in the field, this study may prove helpful to the Republic of Turkey, as well as other countries that are considering the implementation of tablet PCs in their classrooms.

At the local level, this study may assist the FATİH project in Turkey by pointing out potential technology integration barriers related to teachers' use of tablet PCs. This is important because the future success of this project depends on the learning outcomes of this pilot program. The FATİH project has the potential to close the digital divide in Turkey by offering students coming from various socio-economic backgrounds in different regions, the chance to use a tablet PC in the classroom and at home for educational purposes. Lessons learned from this study's examination of this current phase will hopefully be useful when implementing this project in all high schools across Turkey.

Conclusion

In this chapter, an overview of the literature on computers in the classroom has been provided. In addition, the background of study, the statement of the problem, the research questions, and the significance of the study have been presented. In the next chapter, a review of literature on the use of technology in classrooms will be discussed in more detail.

CHAPTER II: LITERATURE REVIEW

Introduction

The world has seen several universal technological revolutions, starting from the financial-agricultural revolution in 1600s, the industrial revolution in the 1700s-1800s, the technical revolution in the 1800-1900s, and the scientific-technical revolution in the 1900s. In the present day we are deeply immersed in the information and telecommunications revolution, a revolution that started with the inception of the computer in the 1940s and the internet in the mid-1990s. In such a short time, these technologies have transformed the fields of business, science, communication, warfare, entertainment, transportation, and education. Computers are now accessible by almost all members of developed nations and they are able to utilize them to open various doors that were close to them before. Information that was locked up in archives and libraries, for which scholars had to travel thousands of miles, are now readily available for anyone with a computer and internet connection.

With computers becoming prevalent in every field, the field of education is no different. Educators face the dilemma of how these computers will fit into the existing education system and how they should react to these changes. Just as the field of education is experiencing changes, with technology being integrated into its institutions around the world with varying degrees of success, the area of language learning is no exception as well.

History of Computers in Education

PLATO

Computers first became operational in the 1940s, with the MARK 1 in 1944 at Harvard and ENIAC in 1946 at the University of Pennsylvania. The computers' early use in education was mainly as a mathematical problem solving tool in the fields of mathematics, science and engineering (Roger, 1972). However in 1959, the first large-scale project involving the use of computers for education was introduced. The project initiated by Donald Bitzer at the University of Illinois, was named PLATO (Programmed Logic for Automatic Teaching Operation). Initially it was simply a terminal connected to a mainframe, similar to a typewriter that would occasionally answer a few questions asked. However with Bitzer's vision, dedication, and technical expertise, it inspired experts from other disciplines such as Paul Tenczar, a biologist, and Bruce Sherwood, a physics professor, both of whom played a major role in the success of the project, to join his cause and collaborate in developing PLATO III, a fully functional education computing system (Hart, 1995).

By 1969, the PLATO group felt the need to take it a step further and submitted a grant proposal to the National Science Foundation (NSF) to build PLATO IV, a larger-scale and much improved version of PLATO III. NSF agreed to fund not only PLATO IV, but also Brigham Young University's TICCIT (Time-shared, Interactive, Computer-Controlled Information Television) project. They both received \$60 million in funding and were formally evaluated by the Educational Testing Service (ETS) (Chambers, 1983). The TICCIT project was seen as a competing project, but in actuality the philosophy of both projects differed considerably. PLATO was a more centralized system, where all the technical requests was handled by the mainframe, whereas TICCIT was based more on a

minicomputer design that gave more importance to the software and authoring capabilities of the system that could be used to guide materials development (Hart, 1995).

By 1975, the PLATO IV mainframes were connected to over 900 terminals at 146 different locations across the United States and Canada. The PLATO IV terminals consisted of a transparent plasma display panel (512 x 512 dot matrix) that was touch enabled. This display was able to generate basic dot matrix graphics on photographic slides and show movies projected through rear. The system offered over 8000 hours of instructional material, prepared by about 3000 authors. The material dealt with various subjects including electrical engineering, computer science, classical mechanics, accounting, astronomy, geometry, biology, chemistry, algebra, foreign languages, law, medical sciences, library science, agronomy, and elementary reading (Hagler & Marcy, 2000).

PLATO proposed a network of 1,000,000 terminals for the PLATO V system by 1980-81, mostly to be placed in elementary and secondary schools. In order for the system to be economically feasible, it was to include email, online library catalogues, graphics and games, and of course access to online computing and an interactive learning environment. The system was supposed to resemble a somewhat early version of the World Wide Web (WWW), although smaller in size and with a more star-like network topology. This project was never realized due to high communication costs for the connections between the mainframe and the terminals, as well as the decline in price of the minicomputers first, and then the personal computers. The Control Data Corporation invested more than \$900 million in the PLATO project; despite this PLATO never became profitable (Saettler, 2004).

Nonetheless, PLATO's ideas and initial concepts were central to future developments in the field of computer-aided instruction (CAI).

TICCIT

Initiated by the Mitre Corporation and funded by the NSF in the early 1970s, TICCIT employed the newer and cheaper minicomputers, instead of the costly mainframes used by the PLATO project, to realize their vision of computer-aided instruction. They placed these minicomputers at various learner communities instead of using telephone lines to provide access to a distant mainframe. TICCIT's approach to materials development was also quite different from that of PLATOs. TICCIT used a structured production team to develop learning materials, in comparison to PLATO which involved free individual efforts by various experts. TICCIT's production teams included a subject matter expert, a psychologist, an instructional designer, an evaluator, and a packaging specialist. The team worked together to design materials and also control learner activities (Saettler, 2004). For product efficiency purposes, the project chose a rules-example-practice pattern as a template for developing materials. Hence, it became quite easy to just fill the template with the material or subject matter, without having to worry about the design and structure of the lesson.

For its initial development, the approach to lesson development in TICCIT which came to be known as "instructional design" relied quite heavily on the psychology concept known as "behaviorism" (Merrill, 1994). Behaviorists believed that learning, as well as all other human behavior was the result of conditioning. The classical concept of conditioning, known as "Pavlovian conditioning", applied a stimulus to achieve a desired response. For example in the case of a dog salivating when presented with food. This further led to adding a neutral-stimulus, for instance

the ringing of a bell. After continuous repetition of the ringing of a bell followed by giving the food a meal, the dog started to associate the ringing of a bell with food and thus started to salivate just by hearing the bell.

B.F. Skinner presented an alternative view that came to dominate psychology in the United States for almost a decade, known as “operant conditioning”. In this approach, the “operant”, that is the frequency of a desired result is increased by positive reinforcement or instead negative reinforcements cause adverse results. According to the Skinnerian perspective, traditional instruction focused more on providing stimuli in the form of content to the learner. On the other hand, “operant behaviorism”, also known as simply “behaviorism”, stressed on reinforcing positive behavior of the learner.

Skinner’s approach became evident mostly in TICCIT, and not so much in PLATO. TICCIT used his approach to design an inflexible learning path for learners where they would be asked questions, and given immediate feedback for their answers. This sort of drill and practice model, although quite easy to develop, became quite boring for learners and failed to incorporate a more interactive learning environment that was initially envisioned.

Conceptualizing Computers in Language Learning

The term Computer Assisted Language Learning (CALL) seems to have come into existence during the early 1980s. Its first occurrence is found in Davies & Steel’s (1981) paper presented at the CAL 81 Symposium at the University of Leeds (Davies, Walker, Rendall, & Hewer, 2012). According to Davies et al. (2012), the term CALI (Computer Assisted Language Instruction) was initially used by one of the oldest associations dedicated to the use of computers in language learning and

teaching, CALICO (founded in 1982). TESOL on the other hand, preferred CALL and set up its CALL Interest Section (CALL-IS) in 1983 (Kenner, 1996). The term CALL eventually fell out of use due to its association with teacher centered instruction, rather than a learner centered approach. Another term used in the 1980s was Technology Enhanced Language Learning (TELL), adopted by the TELL Consortium, University of Hull in the 1990s and the journal CALL-Austria, *TELL&CALL*, both are now non-operational (Davies et al., 2012).

As you can see, there were various terms and acronyms used to describe this field through its history. Some other widely accepted terms in the literature are: Intelligent Computer-Assisted Language Learning (ICALL) and Computer-Enhanced Language Learning (CELL) (Levy, 1997). Each of these terms had an important role to play and brought a unique perspective to the field of computer assisted language learning. Nevertheless, due to the wider popularity of the term ‘CALL’ and it being the dominant choice by most professional journals and organizations such as the CALL Journal, Eurocall and its journal ReCALL, the CALL Interest Section of TESOL, CALICO (Computer-Assisted Language Learning Consortium) and the CALICO Journal (which substitutes “instruction” for “learning” only to make the acronym more memorable), I plan to use this term for the purposes of this paper (Levy & Hubbard, 2005).

The most often used definition for CALL is the one proposed by Levy (1997): “the search for and study of applications of the computer in language teaching and learning” (p.1). A more recent definition by Beatty (2003), that appears to be more relevant in today’s age, is “any process in which a learner uses a computer and, as a result, improves his or her language” (p. 7). Levy and Hubbard (2005) expand on Beatty’s definition by clarifying that in this case ‘computer’

includes not only the traditional desktop or laptop computer, but also any other electronic device with a computer chip embedded inside. For example these electronic devices may include tape players, mp3 players, mobile phones, smartphones, tablet PCs, iPods, iPads, PDAs (personal digital assistant), televisions, DVD players, and electronic whiteboards. In addition to the hardware, this definition also encompasses the various software that are used on these devices. These may include language learning software as well as non-language learning software, the Internet, video conferencing, chatting, social media, and computer games.

The field of CALL is also multidisciplinary, in the sense that it draws from various other fields such as second language acquisition, sociology, artificial intelligence, cultural studies, many branches of psychology, applied linguistics, cognitive science, natural language processing, second language pedagogy, cultural studies and, of course, the computer sciences and media studies (Levy 1997; Joint Policy Statements of CALICO, EUROCALL and IALLT, 1999). Due to the limited scope of this paper, it does not permit a more detailed discussion of how other fields interact with CALL. However, to learn more on this topic see Levy (1997), Chapter 3: CALL in Context: an interdisciplinary perspective, p.47-75.

The definition of CALL has been and will be constantly changing and improving with the advances in technology and other fields that impact CALL. For example, earlier CALL was accessible to only a limited amount of students due to hardware limitations; however with the advent of the personal computer it became quite easily accessible to a wider range of users. In addition earlier CALL was limited to simpler types of activities such as drill and practice type software that were more in line with older educational approaches such as the behaviorism approach. As technology improved, more interactive software began to be introduced and used by

language learners. Thus the definition of CALL also evolved with technological advances in hardware and software.

History of CALL

CALL began in the early 1960s and since then has gone through various transformations. The changes in CALL mirror the dominant education theories and the computer technology of the time. Warschauer and Healey (1998) divided the History of CALL into three phases: behavioristic CALL, communicative CALL and integrative CALL. These phases correspond to the levels of technology and the pedagogical approaches that were prominent at those stages.

Behavioristic CALL. Behavioristic CALL was based upon behavioristic theories of learning that were dominant in the 1960s (Warschauer & Healey, 1998). In his book *Verbal Behavior*, B.F. Skinner (1957) defined the essential elements of behaviorism as stimulus, response and reinforcement (Levy, 1997). His view was that students learn by responding to repeated drill and practice and by positive reinforcement of correct responses. The audiolingual approach was a direct result of the behavioristic approach, and was one of the main factors behind the development of language labs in the 1960s (Levy, 1997; Warschauer and Healy, 1998). CALL programs being developed during this time were following the behavioristic approach, consisting of mainly repetitive language activities, also known as drill and practice (Levy, 1997; Warschauer and Healy, 1998). The PLATO project was one of the first large scale computer systems to include language learning activities (Levy, 1997). Although this approach fell out of favor by the 1970s, Warschauer (1996) points out the ongoing benefits of behavioristic CALL by outlining that: 1) repeated exposure is helpful to learning; 2) a computer is best for repeated drills because it provides the same information without getting bored and immediate non-judgmental

feedback; 3) a computer can free up class time for other activities by providing material on an individualized basis which allows students to work at their pace.

Communicative CALL. Communicative CALL began to gain prominence by the 1970s and 1980s as the proponents of behavioristic CALL began to be challenged. The behavioristic approach was being rejected mainly on its theoretical and pedagogical grounds. It was being criticized for not being able to provide enough authentic communication, thus the communicative language teaching (CLT) approach, and consequently communicative CALL started become more prominent in language learning and teaching. In 1984, John Underwood, one of the main promoters of this approach, proposed a series of "Premises for 'Communicative' CALL". According to Underwood (1984), Communicative CALL:

- focuses more on using forms rather than on the forms themselves;
- teaches grammar implicitly rather than explicitly;
- allows and encourages students to generate original utterances rather than just manipulate prefabricated language;
- does not judge and evaluate everything the students nor reward them with congratulatory messages, lights, or bells;
- avoids telling students they are wrong and is flexible to a variety of student responses;
- uses the target language exclusively and creates an environment in which using the target language feels natural, both on and off the screen; and
- will never try to do anything that a book can do just as well.

(Underwood, 1984, p. 52)

The communicative approach was based on making language learning more meaningful and authentic for learners (Richards & Rodgers, 2001). Vance Stevens, a critic of behavioristic CALL, emphasized that all course materials and activities should focus on building intrinsic motivation in learners and fostering interactivity between both the learner-computer, as well as between learner-learner (Stevens, 1989).

Various types of programs were being developed and used during the communicative CALL phase. Warschauer (1996) put forward three models of computer use in communicative CALL: computer as tutor, computer as stimulus and computer as tool. In the computer as a tutor model, the computer always knew the correct answer, although unlike drill and practice software, the process of finding the answer involved student choice, control, and interaction (Warschauer, 1996). Some examples of these programs include courseware for paced reading, text reconstruction, and language games (Warschauer, 1996; Warschauer & Healey, 1998). These types of programs promoted both individual as well as group learning, allowing students to discover patterns of language and meaning as well as engage in stimulated discussions (Warschauer, 1996). In the second model of computers as a stimulus, the purpose of the software was not for students to find the right answer; rather it was to stimulate discussions, writing, or critical thinking (Warschauer, 1996). Examples of software used for these purposes include *SimCity*, *Sleuth*, or *Where in the World is San Diego* (Healey & Johnson, 1995). In the third model, computer as a tool, programs do not necessarily offer any language materials at all, rather they facilitate the learner's understanding of the language. Examples of this type of software include word processors, spelling and grammar checkers, desktop publishing programs, and concordancers (Warschauer, 1996).

Warschauer (1996) states that the division between these models may not be absolute, as a skill practice program can also be used as a stimulus for discussion, and so can a paragraph written on a word processor. In the same way other drill and practice type programs can be used in a communicative way by assigning students to work in pairs or small groups to compare and discuss their answers. Thus, the point is not the type of computer application, rather how this application is used (Jones, 1986; Levy, 1997; Moeller, 1997; Warschauer, 1996; Warschauer & Healey, 1998). An activity that traditionally falls under a certain CALL approach (e.g. Behavioristics CALL), can also fit under another CALL approach (e.g. Communicative CALL) with different teacher instructions. For example a simple drill and practice activity that would fall under the behavioristic CALL approach can be altered with a discussion activity, and thus fall under the communicative CALL approach.

Integrative CALL. Although communicative CALL was seen as advancement over behavioristic CALL, by the late 1980s and early 1990s critics asserted that “the computer was being used in an ad hoc and disconnected fashion” and thus was making contributions only to marginal rather than central elements of the language learning process (Warschauer & Healey, 1998). This led to a broader re-examination of communicative language teaching theory and practice. Educational approaches began to move away from cognitive view of communicative teaching to Vygotskyan socio-cultural model of language learning that placed greater importance on learning within an authentic social context (Warschauer & Healey, 1998). Other approaches such as task-based, project-based, and content-based approaches were also looking at placing learners in a more authentic learning environment (Warschauer & Healey, 1998). Integrative CALL emerged as a result,

by integrating various skills (e.g. listening, speaking, reading, and writing) and at the same time also integrating the use of technology into the language learning process (Warschauer & Healey, 1998).

“If the mainframe was the technology of behavioristic CALL, and the PC the technology of communicative CALL, the multimedia networked computer is the technology of integrative CALL” (Warschauer & Healey, 1998, p. 5). Multimedia includes a range of various elements, such as text, sound, graphics, pictures, photographs, animation and moving video (Brett, 1997). As Warschauer (1996) stated in mid 1990s, multimedia technology today is demonstrated by the CD-ROM. The interactive nature of multimedia technology along with its ability to combine various modes of input (i.e. text, graphics, video, subtitles, audio) and supplementary learning features (for e.g. meaning-focused tasks with feedback, glossaries, etc.), may mimic the negotiation process found in face-to-face interaction while trying to comprehend something, also thought to be beneficial for language learning (Brett, 1998). In addition Brett (1998) states that the multimedia environment is able to utilize hypertext to make certain a word or phrase more noticeable or salient and provide further information or explanations, definitions, or examples for that specific word or phrase. Warschauer (1996) suggests that even though multimedia technology integrates different skills (i.e. listening with reading); it rarely integrates a more important type of integration that is integrating meaningful and authentic communication into all facets of language learning. With the advent of one of the biggest technological inventions, the Internet, this goal may become more realizable.

The Internet also had an enormous impact on integrative CALL. Warschauer (1996) claims that Computer-mediated communication (CMC), a technology that existed in a primitive form since the 1960s, however became widespread in the

1990s, is to date probably the most impacting technology on language learning. “For the first time, language learners can communicate directly, inexpensively, and conveniently with other learners or speakers of the target language 24 hours a day, from school, work, or home” (Warschauer, 1996, p. 7). Students are able to access authentic materials (e.g., newspaper and magazine articles, radio broadcasts, short videos, movie reviews, book excerpts) by searching through millions of files around the world within minutes on the World Wide Web, according to their personal interests (Warschauer, 1996).

It can be understood from the history of CALL, the computer can play a number of different roles in assisting with the learning and teaching of language. “It can be a tutor which offers language drills or skill practice; a stimulus for discussion and interaction; or a tool for writing and research. With the advent of the Internet, the computer can also be a medium of global communication and a source of limitless authentic materials” (Warschauer, 1996, p.8).

Tablet PC

A tablet PC is an electronic device that has information processing and Internet browsing capabilities slightly inferior to that of a laptop. Its main characteristic is that it doesn't have a keyboard and consists of simply a screen (up to 10”) with touch screen functionality. However a keyboard attachment maybe added if required. tablet PCs are very light weight (around 500 grams or less) and have a long battery life (around 8 hours). They also have specific operating systems in line with platforms used by smartphones such as Android and IOS.

Factors Contributing to Information Communication Technology (ICT) Use

In order to study the use or adoption of technology, various models have been developed by researchers over time. Venkatesh, Morris, Davis, and Davis (2003) have conducted a research of the eight most prominent models in research pertaining to technology acceptance, motivation, and use, and then came up with an integrated model, called the Unified Theory of Acceptance and Use of Technology (UTAUT). The eight models discussed in research by Venkatesh et al. (2003) are the theory of reasoned action (TRA), the technology acceptance model (TAM), the motivational model (MM), the theory of planned behavior (TPB), a model combining TAM and TPB (C-TAM-TPB), the model of PC utilization (MPCU), the innovation diffusion theory (IDT), and the social cognitive theory (SCT). These models explained between 17 percent and 53 percent of the variance in user intentions to use technology (Venkatesh et al., 2003). The newer UTAUT model developed by Venkatesh et al. (2003) outperformed the eight older models by explaining 70 percent of the variation in usage intention of technology.

In their study of the eight different models, authors of UTAUT found 7 out of the 32 total constructs to be significant direct determinants of technology use in one or more the individual models (Venkatesh et al., 2003). However they found that three of these constructs (self efficacy, anxiety, and attitude), did not have a direct impact on intention to use the technology, thus these three constructs were dropped from the UTAUT while the other four (performance expectancy, effort expectancy, social influence, and facilitating conditions) remained.

In other research studies, technology use factors have been divided into categories in order to classify factors related to teachers' use of technology in the classroom. Groff & Mouza (2008) uncover six critical categories, although they refer

to these as factors: “(a) legislative factors, (b) district/school-level factors, (c) factors associated with the teacher, (d) factors associated with the technology-enhanced project, (e) factors associated with the students, and (f) factors inherent to technology itself” (p. 23). Balanskat, Blamire and Kefalla (2006) categorized the factors as teacher-level, school-level and system-level. Similarly, Becta (2004) divided them into factors related to individuals (i.e. teacher related) such as lack of time, confidence, and resistance to change; or to the institution (i.e. school related) such as training, access to resources. Sherry & Gibson (2002) suggest that technological, individual, organizational, and institutional factors should be taken into account when examining ICT adoption and integration. After reviewing the research, there are two main categories that are consistently found in the literature: (a) School-level, (b) Teacher-level. Teachers and administrators have the ability to directly manipulate factors under these two categories (i.e. school-level and teacher-level); therefore only factors under these categories will be addressed.

School -Level Factors

Facilitating conditions. Facilitating conditions as mentioned earlier are one of the constructs of the UTAUT and will be looked at here in more detail. Facilitating conditions are the degree to which a user believes that an organizational and technical infrastructure exists to support his or her use of the technological innovation. This definition covers concepts exemplified by three different constructs: perceived behavioral control (TPB, C-TAM-TPB), facilitating conditions (MPCU), and compatibility (IDT) (Venkatesh et al., 2003).

Perceived behavioral control construct as discussed in theories TPB and C-TAM-TPB, is the “perceived ease or difficulty of performing the behavior” (Ajzen, 1991, p. 188). According to Azjen (1991), it involves internal factors such as self-

efficacy, as well as external conditions such as facilitating conditions. Facilitating conditions as discussed in the MPCU, are objective factors in the environment that observers agree make an act easy to accomplish (Venkatesh et al., 2003). For example, “provision of support for users of PCs may be one type of facilitating condition that can influence system utilization” (Thompson, Higgins, & Howell, 1991, p. 129). IDT defines compatibility as “the degree to which use of the innovation is perceived as being voluntary, or of free will” (Moore and Benbasat, 1991, p. 195).

Administration support. School administration plays an important role in any instructional project and teachers can testify to that. The support of administrators or their lack of support can either make or break teachers’ efforts to integrate technology into the classroom (Groff & Mouza, 2008).

In an ideal environment, apart from condoning the use of technology, school administrators should also provide professional development, adequate time for planning and collaboration, and required resources (Earle, 2002; Groves, Jarnigan, & Eller, 1998). These required resources include sufficient access to hardware and software, both technical and pedagogical support, professional development plans that assign time and resources for follow up, and social support from colleagues which includes mentoring and time to explore new technologies (Morris, 2002; Zhao et al., 2002). In order for technology projects to be implemented successfully, access to required resources is not the only pre-requisite. In addition to resources, curricular goals need to be redefined and teachers must be provided with an adequate support network of technology support personnel, community members, to share in this vision and change the school culture (Groff & Mouza, 2008; LeBaron, 2001; Perry & Areglado, 2001).

Pressure to use technology. Another factor that is present in the diffusion of innovations, argued by Frank, Zhao, and Borman (2004), is the pressure to use technology. Frank, Zhao, and Borman (2004) state that an actor exerting pressure draws on social capital by using the threat of detachment or ostracization. In the educational context, the ministry or the school administration may be the ones exerting pressure on the teachers to utilize technology. The pressure could be both direct pressure (i.e. expectation), and indirect pressure (i.e. encouragement). In addition, Frank, Zhao, and Borman (2004) claim that teachers respond to social pressure and are inclined to help their peers since they are members of the same organization. However, social pressure must not be overly used without paying attention to other factors when leveraging change (Frank, Zhao & Borman, 2004).

Physical structure and technology resources. Traditionally schools placed computers in a centralized computer lab, a room where most of the schools technology is located. However as Loveless (1996) points out, the problem with this setup is that teachers are left with a limited timeframe in which they can get their students to the computer lab and then focused on getting started on their tasks.

In addition to the location of the technology, the type of technology may not always be compatible with the current curriculum as the people in charge of purchasing the technologies may not be the same as the ones designing the curriculum (Fishman, Marx, Blumenfeld, Krajcik, & Soloway, 2004). Thus it is essential that those in charge of implementing this technology also coordinate with the curriculum designers, and technical support personnel at the school to ensure the technology will integrate smoothly into the classroom.

Teacher-level Factors

The teacher is undoubtedly a critical determining factor in the success of any technology implementation project in the classroom. As Callister and Dunne (1992) warned, "If the teacher does not know what to make of the tool, or fears it, or misconstrues its uses, it will be used badly or not at all" (p. 325).

Teachers' attitudes. Teacher attitudes and beliefs are powerful forces which play a significant role in influencing what takes place in the classroom and whether or not teachers' choose to use technology in the classroom. It has been observed that if teachers believe computers are not fulfilling their needs or the needs of their students, they are likely to resist any attempts to integrate technology into their classroom (Askar & Umay, 2001). Among other factors that affect the successful use of computers in the classroom, teacher attitudes are one of them, and whether positive or negative, they have an impact on how teachers respond to technologies. As a result this impacts the way students view computers at school (Teo, 2006) and also affects current and future use of computers. It doesn't matter how powerful or high-tech the technology is, successful integration depends on teachers having a positive attitude towards this technology (Huang & Liaw, 2005). Teachers must develop a positive attitude towards technology and feel comfortable using them as instruction tools to achieve successful integration of technology into the classroom (Casey & Rakes, 2002).

Teachers' pedagogical beliefs (student centered vs. teacher centered).

Every teacher holds a set of beliefs regarding teaching practices and how students acquire knowledge. Ertmer (2005), in his research on the relationship between teacher beliefs and technology practices, defined these beliefs as pedagogical beliefs. As access to technology began to increase in the early to mid-2000s, researchers

began to focus more on the relationship between teachers' pedagogical beliefs and technology use that facilitated student-centered learning (Dexter & Anderson, 2002; Ertmer, 2005; Judson, 2006). Student-centered learning, as defined by Means and Olson (1997), was using technology to “promote student learning through collaborative involvement in authentic, challenging, multidisciplinary tasks by providing realistic complex environments for student inquiry, furnishing information and tools to support investigation, and linking classrooms for joint investigations” (p. 9). McCain (2005) further elaborates that the main issue today in the 21st century isn't the use of technology in classrooms, rather the more important issue is “to develop thinking skills in our students so that they will be able to utilize the power of technological tools to solve problems and do useful work” (p. 84).

According to Zhao and Cziko (2001), many teachers adopt new technology without making changes to their teaching style because technology falls under a lower level of the belief-goal hierarchy than pedagogical beliefs and teaching approaches (or, in Rokeach's 1968 schema, less central to a teacher's belief system). Furthermore, teachers are more likely to resist the technology if they feel pressured to change their pedagogy in order to accommodate new technologies (Zhao & Cziko, 2001). Thus, teachers' pedagogical beliefs have an important role in the adoption of technologies by teachers and their integration into the classroom.

Conclusion

This chapter provides an overview regarding the history of computers in education, computers in language learning, tablet PCs, and factors contributing to ICT use. The next chapter will provide information about the methodology of the study including the setting and participants, the research design, materials and instruments, and finally procedures and data analysis.

CHAPTER III: METHODOLOGY

Introduction

This study explored factors contributing to teachers' use of tablet PCs in the classroom. Specifically, this study examined EFL teachers' tablet PC use along with other factors such as facilitating conditions, teacher attitudes towards tablet PCs, teachers' pedagogical beliefs, age, teaching experience, experience using computers/tablet PCs, and teaching hours per week, in order to see which of these factors contribute towards EFL teachers' tablet PC use in the classroom.

The study addressed the following research questions:

- 1) To what extent do high school students use tablet PCs in the EFL classroom?
- 2) Which factors contribute to students' use of tablet PCs in the EFL classroom?

This chapter presents the setting and participants of the study, the research design, the instruments used for data collection, the procedures of data collection, and data analysis. In the first section, the setting and participant details are discussed. In the second section, the research design is explained. In the third section, information related to instruments used for data collection is presented. In the fourth section, the procedures for data collection are outlined. Lastly, in the final section, the data analysis procedures are presented.

Setting and Participants

Data collection was restricted to high schools located in the city of Ankara. Criteria sampling was used to determine the participants of this study. The selection criteria were high school teachers working in schools where students received tablet PCs under the FATIİH project umbrella. Forty-four teachers from nine different

public high schools participated as volunteers in this study. Five of the high schools were located in the city center, whereas the remaining four were located in a semi-urban area. These nine high schools were also part of a pilot project in Turkey called the FATIH project. This project aimed to enable equal opportunities in education and improve technology in all 42,000 schools that include preschool, primary, and secondary education, by providing all students with tablet PCs and equipping every classroom with a smart board. Since my study relates to the use of tablet PCs in the classroom, these pilot high schools that were chosen by the FATIH project to test the outcomes of the project, were specifically selected for my study.

Participants of this study were 44 high school EFL teachers teaching at these pilot high schools in Ankara. Students studying at public high schools in Turkey are required to take one English language course each year until they graduate. Hence each high school has a certain number of EFL teachers depending on the size of the high school. A total of 63 EFL teachers at the nine pilot high schools in Ankara were asked in person to fill out the questionnaire. Out of the 63 EFL teachers to whom surveys were handed out, only 44 EFL teachers filled out the questionnaire and returned it, for a response rate of 69.8% (see Table 1).

Table 1

Gender of the Sample

Gender	f	%
Male	4	9.1%
Female	40	90.9%

(*N*=44)

The sample consisted of 9.1% males and 90.9% females. Majority of the respondents were female teachers.

Table 2

Teaching School of the Sample

School Name	f	%
Agincourt C.I.	4	9.1
Birchmount C.I.	6	13.6
Cedarbrae C.I.	4	9.1
Thomson C.I.	4	9.1
Leacock C.I.	8	18.2
Jarvis C.I.	6	13.6
Kipling C.I.	4	9.1
Pearson C.I.	3	6.8
Garneau C.I.	5	11.4

(N=44)

The sample represented a variety of schools in Ankara. The schools were given pseudonyms to protect the identities of the teachers due to the small number of EFL teachers at each school. Participants from each school varied among the nine schools in Ankara (see Table 2). The largest numbers of participants were from Leacock C.I. (18.2%) and the smallest from Pearson C.I. (6.8%). The other schools fell in between these two extremes.

Table 3

Education of the Sample

Education	f	%
Bachelor's Degree	37	84.1%
Master's Degree	7	15.9%
PhD Degree	0	0

Education level of the participants showed some variation. The majority of the participants (84.1%) had a bachelor's degree while the remaining 15.9% had a Masters level education. There was no respondent with a doctoral degree (see Table 3).

Table 4

<i>Education Major of the Sample</i>		
Education Major	f	%
English related subject	42	95.5%
Other	2	4.5%

Among the respondents, nearly all of the respondents (95.5%) did their major in an English related subject (e.g. English language and literature or English language teaching), while only 4.5% of the respondents did their major in another subject (see Table 4). Since the survey asked an open-ended question regarding their education major, the responses weren't very specific and thus couldn't be categorized.

Table 5 below reveals that the mean age of the teachers was 42.98 years. The minimum age of the teachers who participated in the study was 27 years and the maximum was 59 years. For teaching experience, the average teaching experience of the teachers was 17.98 years with minimum experience of 1 year and maximum of 40 years. Furthermore, computer experience of all the teachers was also explored. The results revealed that the mean of computer experience was 10.40 years, with maximum experience of 25 years. One teacher also had less than a year experience using the computer. Finally the last demographical factor was teaching hours per week. The results showed that the mean for teaching hours per week was 23.43 hours per week with minimum of 16 and maximum of 46 hours per week.

Table 5

Descriptive Statistics of Age, Teaching Experience, Computer Experience and Teaching Hours

Variable	M(SD)	Mini-Max
Age (in years)	42.98(8.41)	27-59
Teaching experience (in years)	17.98(9.86)	1-40
Computer experience (in years)	10.40(6.74)	0-25
Teaching hours (in hours per week)	23.43(6.10)	16-46

Research Design

This is a quantitative descriptive study aimed to find out how EFL teachers in Ankara high schools are using tablet PCs and what factors are contributing to the use of these tablet PCs. In order to obtain this data, an instrument was developed by the researcher. The instrument was piloted first and necessary changes were made. The researcher then distributed the instrument to EFL teachers at each of the nine high schools in Ankara. Data collected from the surveys was then entered into SPSS and analyzed to see the extent of tablet PC use and also which factors contributed to tablet PC use in the classroom. In the following section, the instrument and materials used for this study will be discussed.

Instruments and Materials

The data collection instrument of this study was a questionnaire that was employed to collect quantitative data. The questionnaire was composed of five sections: a) facilitating conditions for tablet PC use, b) teacher attitudes towards tablet PC use, c) teachers' pedagogical beliefs, d) use of tablet PCs, e) demographic information of the participants (see Appendix A for the English version of the questionnaire; also see Appendix B for the Turkish translation of the questionnaire). The questionnaire was first designed in English and then translated to Turkish for the comfort and ease of the EFL high school teachers. The questionnaire was first given to an official translator to translate and then back-translated by colleagues

experienced in translation and interpretation. Colleagues felt that the first translation wasn't adequate and volunteered to re-translate the questionnaire and back translate it again. The questionnaire was then pre-tested among a sample of five colleagues to identify any words or phrases that might be unclear or ambiguous. Small changes were made regarding word choice and structure on few of the items.

This first section of the questionnaire focused on examining the teachers' views about the facilitating conditions for tablet PC use at their schools. The second section examined teacher attitudes towards tablet PCs. The third section investigated teachers' pedagogical beliefs. The fourth section measured various uses of tablet PCs by the students as reported by their respective teachers. Finally, the last section took basic demographic information of the teachers. The reason for including the first three sections (i.e. facilitating conditions, tablet PC attitudes, and teachers' pedagogical beliefs) is due to the fact that current literature points out these factors as highly probable contributing factors towards use of technology in the classroom (Becker & Anderson, 1998; Huang & Liaw, 2005; Teo, 2008; Venkatesh et al., 2003; Zhao & Cziko, 2001).

The data collection instrument used in this study was constructed by combining elements from three different instruments (Becker & Anderson, 1998; Teo, 2008; and Venkatesh et. al., 2003). The first two sections of the instrument measuring facilitating conditions and teacher attitudes towards tablet PCs used a five-point Likert scale ranging from 1 representing *strongly disagree* to 5 representing *strongly agree*. The third section measuring teachers' pedagogical beliefs presented respondents with several pairs of statements to which the respondent could choose from a 5 point scale which statement was closer to his or her own point of view. The fourth section measured use of tablet PCs on a five-point

scale ranging from never, once or twice a year, several times a year, several times a month, and several times a week. The final section collected personal characteristic information. This questionnaire was composed of 38 items in total (see Table 6 for details on each component of the questionnaire).

Table 6

Components of the Questionnaire

Components of Questionnaire	Source adapted from	Number of items
Facilitating conditions	Venkatesh et al. (2003)	7
Attitudes towards tablet PCs	Teo (2008)	10
Pedagogical beliefs	Becker and Anderson (1998)	5
Tablet PC use	O'Dwyer, Russell & Bebell (2005)	8
Personal Characteristics	Vannatta & Nancy (2004)	8

The first component of the questionnaire consisted of seven Likert scale items that focus on the facilitating conditions for tablet PC use. Facilitating conditions as defined by Venkatesh et al. (2003) are “the degree to which an individual believes that an organizational and technical infrastructure exists to support use of the system” (p. 453). Venkatesh et al. (2003) researched various models related to use of technology and its acceptance: theory of reasoned action (TRA), technology acceptance model (TAM), motivational model (MM), theory of planned behavior (TBP), combined TAM and TBP (C-TAM-TBP), model of PC utilization (MPCU), innovation diffusion theory (IDT), social cognitive theory (SCT). The definition of facilitating conditions stated above stems from three different constructs: perceived behavioral control (TBP/DTPB, C-TAM-TPB), facilitating conditions (MPCU), and compatibility (IDT). On the instrument used by Venkatesh, there were a total of eleven items corresponding to these three constructs.

After reviewing all three constructs and items related to them, seven items that were suitable for this research were chosen.

The second component of the instrument is related to the teachers' attitudes towards tablet PCs. This part consisted of ten Likert scale items that were adapted from Teo's (2008) study. The participants were asked to report on what their attitudes were towards tablet PCs.

The third component of the instrument investigated teachers' pedagogical beliefs and was adapted from Becker and Anderson's (2008) Teaching, Learning, and Computing (TLC) survey. In this section of the instrument, both teachers' beliefs about good teaching and also their beliefs about the nature of learning were explored. Participants were presented with several pairs of contrasting statements regarding pedagogical beliefs, and were asked to choose on a 5-point scale which statement among each pair came closest to their personal point of view.

Data Collection Procedures

In order to conduct the study at the high schools, a research proposal was drafted and sent to the Ministry of National Education (MoNE) for permission to conduct the study. After gaining permission from MoNE, the researcher visited each of the nine high schools and personally handed out the surveys to the teachers. In most cases the teachers filled out the survey the same day during their break; however in other cases two visits were required to give teachers more time to fill out the survey.

Piloting

After getting approval from MoNE, the pilot study was conducted on March 6, 2015 at a high school in Ankara to assure validity, reliability, and clarity of the

questionnaire. Participants from the pilot study were asked to give feedback on the items and to indicate any unclear and ambiguous items in the questionnaire. The attitudes towards tablet PCs section of the questionnaire was very long and had items that were very similar to each other according to the feedback. In addition some items in the use of tablet PC section of the questionnaire were also said to be not applicable. Based on this feedback during the piloting, necessary changes were made to the questionnaire. Participants of the pilot study were not used in the actual study. The Cronbach Alpha coefficient was calculated in order to check the reliability and examine the internal consistency of the instrument. The measure of the Cronbach Alpha for facilitation conditions scale was .782 and for tablet PC attitudes was .70. Cronbach Alpha for teaching philosophy component of the questionnaire was not calculated since the items were not of the traditional Likert scale type.

Data Analysis Procedures

The data obtained from the surveys were analyzed quantitatively by using the Statistical Package for Social Sciences (SPSS) version 22. Both descriptive and inferential statistics were employed in this study. Frequencies and percentages, means, and standard deviations for each survey question were computed, and the data were reported in tables. Multiple correlations were computed and tested for significance. Multiple regression analysis was used to explore factors contributing to use of tablet PCs in the classroom.

Normality Test Results

A Shapiro-Wilk test was used to test for normality for all the variables in the study in order to determine the kind of statistical tests that would be used on the data. The following variables were normally distributed: school, working conditions, pedagogical beliefs, teaching experience, computer experience, and age. The

following remaining variables were not normally distributed: tablet PC attitudes, individual use, group use, internet use, educational game use, fun game use, speaking English use, presentation use, outside use, educational level, major, gender and teaching hours. In the following chapter, suitable statistical tests will be applied to analyze the data.

Conclusion

In this methodology chapter, the setting and participants, research design, instruments, data collection procedures, and data analysis procedures were described in detail. The next chapter will provide the detailed analysis of the quantitative data gathered from the 44 participants through the questionnaires.

CHAPTER IV: DATA ANALYSIS

Introduction

The purpose of this study is to explore EFL high school teachers' use of tablet PCs in the classroom. This study also examines factors that contribute to the use of tablet PCs in high school English classrooms. The research questions addressed in the study were as follows:

- 1) To what extent do high school students use tablet PCs in the EFL classroom?
- 2) Which factors contribute to students' use of tablet PCs in the EFL classroom?

In order to answer the research questions of this study, data were collected from 44 teachers teaching at high schools across Ankara during the 2014-2015 academic year. A questionnaire developed by the researcher was given in person to the teachers at different schools. The data collected through the questionnaire were analyzed using Statistical Package for Social Sciences (SPSS) version 22.0.

This chapter presents the results of the study in accordance with the research questions in two main parts. In the first part, the use of tablet PCs in the classroom is described using descriptive analysis of data from the questionnaire. EFL teachers' reported use of the tablet PCs by their students is broken down into various types of use: individual, group, research using the internet, educational games, fun games, speaking with English speakers online, presenting information, and projects or assignments outside the classroom. In the second section, the various potential contributing factors towards tablet PC use in the classroom are analyzed using correlation analysis and hierarchical regression of data from the questionnaire. Both

descriptive and inferential statistics were used to see the relationship between the variables.

EFL Teachers' Reported Use of Tablet PCs in the Classroom

In order to analyze the data for student use of tablet PCs as reported by teachers, responses of participants from the fourth section of the questionnaire were used. Teachers were asked to report their students' use of tablet PCs using the following scale: never, once or twice a year, several times a month, several times a week. Each time category was assigned a value from one to five, one being 'never' and five being 'several times a week'. Student use of tablet PCs was further classified into seven types of use: individual, group, internet, educational games, fun games, making presentations, and outside class. Table 7 summarizes the mean scores for each type of use.

Table 7

Mean Scores of Teacher-Reported Student Use of Tablet PCs in the Classroom

Variable	M(SD)
Use of Tablet PCs	
Individual use	2.00(1.22)
Group use	1.84(1.22)
Internet use	4.02(1.28)
Use for educational games	3.00(1.82)
Use for fun/games	4.25(1.43)
Use for speaking English	2.28(1.51)
Use for making presentations	2.16(1.48)
Outside class use	2.82(1.40)

The results show that from among the different uses of tablet PCs, use for fun/games was reported highest by teachers (4.25 out of 5), which means they were reportedly being used ‘several times a month’ for this purpose. This was closely followed by internet use, also at ‘several times a month’, then use for educational games at ‘several times a year’. Interestingly both individual and group use of tablet PCs for school work was reported to be only ‘once or twice a year’.

In addition to the mean scores descriptive analysis for each type of use, a frequency analysis was also run to show the number of teachers who reported students’ use of tablet PCs. Table 8 summarizes the frequency of use by teachers for individual, group, outside and presentation use.

Table 8

Individual, Group, Outside, and Presentation Student Use of Tablet PCs Reported by Teachers

Rate of use	Types of Use			
	Individual Use	Group Use	Outside Use	Present Use
Never	21 (47.7)	27 (61.4)	11 (25.0)	22 (50.0)
Once or twice a year	10 (22.7)	4 (9.1)	7 (15.9)	8 (18.2)
Several times a year	8 (18.2)	8 (18.2)	12 (27.3)	6 (13.6)
Several times a month	2 (4.5)	3 (6.8)	7 (15.9)	1 (2.3)
Several times a week	3 (6.8)	2 (4.5)	7 (15.9)	7 (15.9)
Total	44 (100.0)	44 (100.0)	44 (100.0)	44(100.0)

The results show that 47.7% of teachers reported students never use tablet PCs individually and 61.4% of teachers reported students never use tablet PCs in a group setting. In terms of tablet PC use outside the classroom, only 15.9% of teachers reported students using them several times a week and several times a month. Whereas 25% teachers reported students never use them for outside use, and 27.3% reported students use them several times a year. For presentation use, the numbers are similar to individual and group use, with 50% of teachers reporting students never use tablet PCs for presentation use, and only 15.9% of teachers reported using them several times a week.

Table 9

Internet, Educational Game, Fun Game, and Speak English Use of Tablet PCs Reported by Teachers

Rate of use	Types of Use			
	Internet Use	Educational Game Use	Fun Game Use	Speak English Use
Never	4 (9.1)	17 (38.6)	6 (13.6)	21 (47.7)
Once or twice a year	2 (4.5)	3 (6.8)	1 (2.3)	7 (15.9)
Several times a year	5 (11.4)	4 (9.1)	1 (2.3)	6 (13.6)
Several times a month	11 (25)	3 (6.8)	4 (9.1)	3 (6.8)
Several times a week	22 (50)	17 (38.6)	32 (72.7)	7 (15.9)
Total	44(100)	44 (100)	44 (100)	44 (100)

Table 9 shows student use of tablet PCs reported by teachers for Internet, educational game, fun game, and speaking English. For Internet use, 50% of teachers

reported students use tablet PCs to do research or find information using the internet several times a week. For education game use, there is a split where 38.6% of teachers reported students never use tablet PCs for educational games, and on the other hand 38.6% of teachers also reported that students use tablet PCs for education games several times a week. For fun/game use, 72.7% of teachers indicated that students use tablet PCs several times a week to play games for fun. A large number of teachers, about 47.7%, reported that students were never using their tablet PCs to speak with English speakers, whereas only 15.9% of teachers reported that students used them several times a week for that purpose.

Another type of analysis was run in order to see how teachers from different schools reported using tablet PCs to see if there were any patterns among different schools. Figure 1 summarizes use of tablet PCs across the different schools involved in the study.

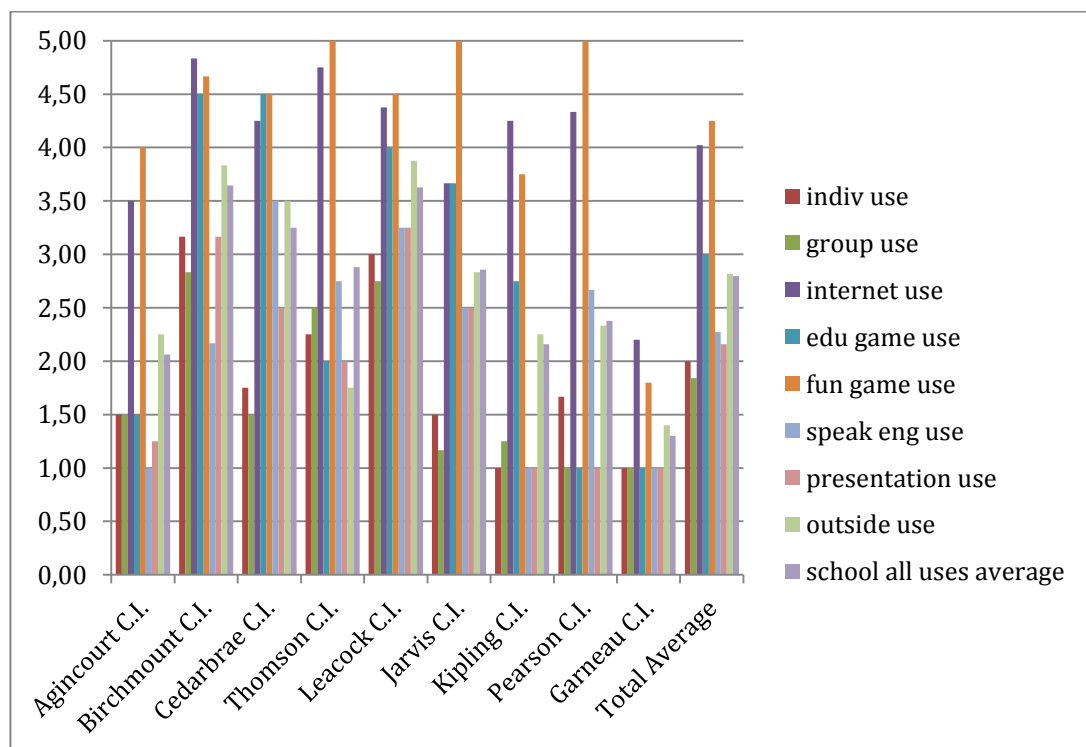


Figure 1. Use of tablet PCs across schools.

From Figure 1 we can see that most of the schools are reporting high values of use (higher mean scores) for fun games, educational games, and internet. Kipling, Pearson, and Garneau are showing a similar pattern of use with relatively lower use trends compared to the rest of the schools. The highest use trends are shown by Leacock, Birchmount, Cedarbrae, and Thomson. Agincourt is somewhere in between the lowest and highest trends of use.

Factors that Contribute towards Tablet PC in the Classroom

The second research question of the present research was related to the exploration of factors contributing to high school EFL teachers' use of tablet PCs in the classroom. The factors examined can be divided into two parts: demographic factors and other factors. Demographic factors included age, gender, educational level, teaching experience, computer experience, and teaching hours. Gender was excluded from the study because there weren't enough males in the study to make a valid comparison. Educational level was also excluded from the study due to the fact that most participants had bachelor degrees. Apart from demographic factors, other factors included facilitating conditions, teacher attitudes towards tablet PCs, and teachers' pedagogical beliefs.

Firstly, the correlation between demographic factors and reported uses of tablet PCs was explored. Secondly, correlation between other factors (i.e. facilitating conditions, attitudes towards tablet PCs, and teachers' pedagogical beliefs) and reported use of tablet PCs was explored.

Correlation analysis – demographics factors and uses of tablet PCs

Due to the result of the normality test showing a non-normal distribution (see Chapter 3), a non-parametric Spearman rank order correlation test was conducted to see the relationship between demographical variables (i.e. age, teaching experience,

computer experience and teaching hours) and various reported uses of tablet PCs.

Table 10 summarizes the correlation test results between demographic variables and tablet PC use variables.

Table 10

Correlation between Demographics and Uses of Tablet PCs

Variables	Age	Teaching experience	Computer experience	Teaching hours
Individual use	.423**	.322*	-.133	-.114
Group use	.417**	.325*	-.258	-.040
Internet use	.268	.323*	.139	-.038
Educational game use	.331*	.421**	-.231	-.289
Fun game use	.323*	.321*	.098	-.237
Speaking English use	.477**	.435**	-.122	.101
Presentation use	.627**	.549**	-.170	-.214
Outside class use	.297	.460**	-.180	-.083

*p < .05 **p < .01

As a result of the Spearman rank order correlation test (see Table 10), a number of significant relationships were discovered. In the SPSS Survival Manual, Pallant (2005) mentions that a relationship can be classified as strong when the value of the Spearman correlation (r) is between .50 and 1.0 or -.50 and -1.0. A correlation value between .30 and .49 or -.30 and -.49 is considered as a medium strength relationship. Lastly a correlation value between .10 and .29 or -.10 and -.29 is considered a weak relationship (Pallant, 2005). According to these criteria, age and teaching experience both showed a strong, positive correlation with presentation use. Similarly, age and teaching experience also showed a medium, positive correlation with most of the uses of tablet PCs including individual use, group use, educational

game use, fun game use, speak English use. Lastly, teaching experience showed a medium, positive correlation with internet use and outside use.

Descriptive statistics – facilitating conditions, attitude towards tablet PC use, and pedagogical beliefs

Apart from demographic factors, there were three other major factors explored to see if they contributed to the use of tablet PCs. They were facilitating conditions, tablet PC attitudes, and pedagogical beliefs. Scales were formed for each of these factors. The questionnaire consisted of 38 total items out of which 22 items were directly related to these three factors (facilitating conditions, tablet PC attitudes, and teachers' pedagogical beliefs). The first seven items corresponded to the facilitating conditions factor. The next ten items corresponded to the attitude towards tablet PC use factor. Finally the following five items fell under the pedagogical beliefs factor (see Appendix A for a copy of the instrument). For each item, the participants were required to choose from a five-point Likert scale ranging from Strongly Disagree "1" to Strongly Agree "5".

For analysis purposes, a mean value was calculated for each of the factors (facilitating conditions, tablet PC attitudes, and pedagogical beliefs) by first calculating the mean for each single item, then grouping the related items with their factors and calculating the means for each factor. Descriptive analysis was run in order to examine the mean scores for each of the main factors (see Table 11).

Table 11

Descriptive Statistics of Other Factors related to Tablet PC Use in the Classroom

Variable	M(SD)
Factors related to Tablet PC use	
Facilitating conditions	2.92(.86)
Tablet PC attitudes	3.33(.67)
Pedagogical beliefs	3.34(.78)

The above table shows means and standard deviations for factors related to tablet PC use. For the first factor, facilitating conditions related to tablet PC use, the mean value was in the neutral range. The second factor, which was attitude towards computer, shows a slightly higher value than neutral, thus indicating that teachers' attitude towards tablet PCs was neither positive nor negative, but rather leaning a little to the positive side. Finally, the pedagogical beliefs factor also showed a slightly higher value than neutral, a higher number meaning they are learner centered and a lower number meaning they are teacher centered goes to show that the teachers were leaning more towards the learner-centered pedagogical beliefs, but only by a slight amount.

Facilitating Conditions Scale. There were seven items grouped together to form the facilitating conditions scale. Table 12 below shows the seven items that fall under the facilitating conditions scale along with their calculated means and standard deviations from the total 44 participants.

Table 12

Questionnaire Items related to Facilitating Conditions Scale

Questionnaire Items	\bar{x}	SD
I have the necessary knowledge to make use of tablet PCs	3.32	1.23
I have the required resources to make use of tablet PCs	3.20	1.41
Using tablet PCs fits into my work style	3.05	1.26
A specific person (or group) is available for assistance with tablet PC difficulties	2.98	1.25
I think tablet PCs fit well with the way I like to work	2.73	1.34
Tablet PCs are compatible with other systems I use*	2.68	1.12
Specialized instruction concerning tablet PCs was made available to me	2.57	1.45

N=44, * This item was reverse coded in the actual questionnaire,
 ** The items are listed from highest to lowest according to their means

Tablet PC Attitude Scale. There were ten items grouped together to form the tablet PC attitude scale. Table 13 below shows the ten items that fall under the tablet PC attitude scale along with their calculated means and standard deviations from the total 44 participants.

Table 13

Questionnaire Items related to Tablet PC Attitude Scale

Questionnaire items	\bar{x}	SD
I only use tablet PCs at school when I am told to*	3.91	0.98
Using a tablet PC does not scare me at all	3.73	1.00
I hesitate to use a tablet PC in case I look stupid*	3.73	1.25
Tablet PCs make me feel uncomfortable*	3.52	1.15
I am not in complete control when I use a tablet PC*	3.39	1.26
I could probably teach myself most of the things I need to know about tablet PCs	3.36	1.20

Table 13 (cont'd)

Questionnaire Items related to Tablet PC Attitude Scale

Questionnaire items	\bar{x}	SD
Tablet PCs make it possible to work more productively	3.27	1.23
Tablet PCs can allow me to do more interesting and imaginative work	3.16	1.20
I do not need someone to tell me the best way to use a tablet PC	2.70	1.17
I use tablet PCs regularly throughout school	2.61	1.40

Pedagogical Beliefs Scale. There were five items grouped together to form the pedagogical beliefs scale. Each item consists of a pair of contrasting statements. Participants had to choose on a 5-point scale which statement they agree with more. Table 14 below summarizes the pedagogical beliefs items from the questionnaire (refer to Appendix A for complete items) along with their calculated means and standard deviations from the total 44 participants.

Table 14

Teachers' Agreement with Contrasting Statements of Pedagogical Beliefs

Questionnaire item phrases (refer Appendix A for full item)	Favored the Student Centered Beliefs (%)	Middle position on 5-point scale (%)	Favored the Teacher Centered Beliefs (%)
Facilitator vs. Explainer	57	9	34
Sense-making vs. Curriculum coverage	59	14	27
Familiarity with many ideas vs. Few complex ideas	36	23	41
Student interest vs. Textbook content	57	14	30
Multiple project activities vs. Short-term whole-class assignments	57	11	32

N=44, *Mean values scores are calculated based on student centered beliefs (i.e. higher mean values portray higher student centered beliefs)

Correlation analysis – factors vs. use of tablet PCs

The relationship between the other factors related to tablet PC use (facilitating conditions, tablet PC attitudes, and pedagogical beliefs) and various reported uses of tablet PCs was explored. Since the variables were not all normally distributed (refer to Chapter III), a Spearman rank order correlation analyses was applied. The results are presented below in Table 15:

Table 15

Relationships among Other Factors and Reported Uses of Tablet PCs

Variables related to tablet PC use	Facilitating conditions	Tablet PC attitudes	Pedagogical Beliefs
Individual use	.40*	-.06	.16
Group use	.36*	.01	.15
Internet use,	.41**	-.06	.05
Use for educational games	.43*	.12	.06
Use for fun games	.03	-.12	.03
Use for speaking English	.39*	-.04	-.07
Use for making presentations	.50**	.01	.04
Outside class use	.34*	.05	.23

*p < .05 **p < .01

Facilitating conditions had a significant positive relationship of medium strength with all the various reported uses of tablet PCs except for with use for making presentations, with which facilitating conditions had a strong positive correlation. In addition, facilitating conditions did not have any significant relationship with tablet PC use for fun games.

Conclusion

In this chapter the data gathered through the use of questionnaires from 44 EFL high school teachers in Ankara were used to answer the research questions of the study. The first research question was answered by the descriptive analysis of the fourth and fifth sections of the questionnaire. As for the second research question, correlation analyses were used to explain the relationship between the factors related to tablet PC use and the reported use of tablet PCs by EFL high school teachers. The next chapter will present an overview of the study, the findings and discussion, pedagogical implications, limitations of the study, and suggestions for further research.

CHAPTER V: CONCLUSION

Introduction

This study investigated EFL high school teachers' use of tablet PCs in their classrooms. The study also examined which factors predict the use of tablet PCs in the classroom. To this end, the study addressed the following research questions:

- 1) To what extent do high school students use tablet PCs in the EFL classroom?
- 2) Which factors contribute to students' use of tablet PCs in the EFL classroom?

This chapter consists of four sections. In the first section, the findings of the study are evaluated and discussed with regards to the research questions and the relevant literature. In the second section, pedagogical implications are presented. In the third section, the limitations of the study are defined. Finally, in the fourth section, suggestions for further research are provided.

Findings and Discussion

Summary of Findings

Tablet PC Use. As predicted from early classroom observations, teacher reported tablet PC use by students was very low overall with most (88.2%) teachers reporting that their students either never used tablet PCs, or used them no more than several times a year. The results did show an unusually high amount of usage for fun/game use from most teachers (72.7%) reporting that their students were using their tablet PCs several times a week just to play games for fun.

It was interesting to note that schools located in the central part of the city near the downtown area showed higher trends of reported use versus those schools which are located a bit farther from the city center.

Factors Related to Tablet PC Use. Results indicated that teachers' age and teaching experience had positive correlations with most types of use. On the other hand, the other two demographic variables (i.e. computer experience and teaching hours) had very weak correlations with any type of use.

With regards to the other factors (i.e. facilitating conditions, tablet PC attitudes, and pedagogical beliefs), only facilitating conditions had a significant positive relationship of medium to strong strength to all types of use except for use for fun games with which it had no significant relationship. The other two variables (tablet PC attitudes and pedagogical beliefs) did not have any significant relationship with any of the types of uses.

Context of Findings

Use of Tablet PCs. Data collected from the questionnaire was used to find out about the use of tablet PCs in the classroom. It was observed that most of the EFL teachers reported students were not using their tablet PCs in the classroom. These findings coincide with another earlier study on the FATIH project conducted by Pamuk et al. (2013), which revealed that there was some promising use of interactive whiteboards in the classroom however limited or in some cases no use of tablet PCs by the teachers. Çiftçi, Taşkaya, and Alemdar (2013) also conducted a study about the FATIH project where they interviewed teachers about their opinion on the project and they found that 81% of teachers thought that this project would not be implemented properly and nearly half of them said it would fail completely. A

more recent study conducted by Dündar and Akçayır (2014) with 206 high school students, explored students' use of tablet PCs and their attitude towards it. Students had been using tablet PCs for 6-7 months when this study was conducted. The study reported that students had a positive attitude towards tablet PCs and there was no difference between male and female use of tablet PCs.

Factors Predicting Use of Tablet PCs. In the present study several factors were explored to see their relationship with use of tablet PCs. The factors included the teachers' age, teaching experience, computer experience, teaching hours per week, attitude toward tablet PCs, pedagogical beliefs and facilitating conditions at the schools. From among these factors only three factors showed any significant relationship with use of tablet PCs. Teaching experience, age, and facilitating conditions at the schools, all showed positive significant correlations with use of tablet PCs. This is in contrast to other similar studies. For example a study conducted in the US with university students using the UTAUT model, revealed that experience with computers had a significant impact on the acceptance of technology (Moran, Hawkes, & Gayar, 2010). Another study conducted on faculty use of tablet PCs at a college of business by Anderson, Schwager, and Kerns (2006), revealed that facilitating conditions were found not to be significant factor related to use of tablet PCs. In this study performance expectancy and voluntariness were revealed to be the most leading drivers of acceptance (Anderson et al., 2006).

Teacher attitudes towards tablet PCs were neutral however leaning towards the positive side. Even if teacher attitudes are positive, this may not necessarily mean that teachers are open to accepting this technology. In a qualitative study conducted by Ifenthaler and Schweinbenzb (2013), they found that a majority of their participants also showed positive attitudes at the beginning of the study, however

after looking more closely they found that participants had some reservations despite their positive attitudes. An example given by one of the participants in the Ifenthaler and Schweinbenzb (2013) study was that the positive attitude only lasted if the technology was running without any technical issues. They noted that during the implementation of tablet PCs some of the participants' attitude started to shift due to changed mode of use and perceived technical problems. There is a possibility that participants of this study might also have some reservations that were not captured with the quantitative instruments used in this study.

Pedagogical beliefs data from the questionnaire reveals that most teachers were aware of student centered pedagogical beliefs, however there was no relation between teachers' pedagogical beliefs and teachers' reported student use of tablet PCs.

The findings of this study contradict multiple studies on this topic. A study by Ravitz, Becker, and Wong's (2000) revealed that teachers with strong student centered teaching beliefs were more likely to engage students in constructivist computer use. Another study by Tondeur, Hermans, Braak, and Valcke (2008) also found that teachers with relatively strong constructivist beliefs (i.e. student centered beliefs) tend to show a higher frequency of educational computer use. Interestingly this study also found that both teachers with both high constructivist beliefs and those with high traditionalist beliefs (i.e. teacher centered beliefs) lead to the most frequent adoption of all types of computer uses. On the other hand, a study conducted by Ifenthaler and Schweinbenzb (2013) on the acceptance of tablet PCs found that only 1 out of the 18 participants in the study actually intended to use tablet PCs in a way that might lead to a student centered teaching practice.

Pedagogical Implications

The findings of this study suggested that teachers generally had a positive attitude towards tablet PCs and they agreed with student centered pedagogical beliefs. However use of tablet PCs was still very low. This low use of tablet PCs might be explained by the facilitating conditions at the schools. Teachers were not very positive regarding several aspects of the facilitating conditions. Teachers' reported problems with regards to getting technical assistance, tablet PCs fitting in with the teachers' work style or way of teaching, tablet PCs' compatibility with other systems, and finally the lack of specialized instruction in how to use the tablet PC. Results of this study show that teachers were not satisfied with these aspects of facilitating conditions and there is a lot that can be done to improve on these fronts. Thus, some pedagogical implications will be pointed out for policy makers, school management, teachers and parents to ensure the future success of such technology implementations in the education industry.

The two aspects of facilitating conditions, technical assistance and tablet PC compatibility with other systems, go hand in hand because they have to do with the technical infrastructure setup at the school. Since most teachers reported very low scores for both these issues, an improvement in this area could potentially lead to higher rates of tablet PC use in the classroom. Technical assistance has always been an important issue for user acceptance when it comes to technology deployment and implementation in any organization (Mumtaz, 2000). When deploying a new technology at a school, arrangements should be made to ensure someone is available to assist when a difficulty arises with the use of tablet PCs. Secondly, the tablet PCs should also be compatible with the existing technical infrastructure in the school. Existing technical infrastructure that the tablet PC should be compatible with may

include the Wi-Fi connection, projector, interactive whiteboard, sound system, and even the tablet PCs themselves should be able to interact with other tablet PCs.

The second important point when it comes to technology acceptance is specialized instruction and ensuring that the new technology will fit in with teachers' work style or way of teaching. Teachers' current work style may not suit the way the new technology is meant to be used. As Baylor and Ritchie (2002) mention in their study, regardless of how good the technology is, teachers will not accept it until the teachers have the necessary skills, knowledge, and attitudes to incorporate it into the curriculum. Baylor and Ritchie (2002) continue by advising that this generally comes from self-education or professional development in the form of in-service training provided by schools or the Ministry of National Education. However this can take a long time. Brunner (1992) and Elmer-Dewitt (1991) suggest that it can take as long as five to six years for teachers to feel in command of educational technologies and to know how and when to use them. Since the time of these studies, the length of time may have come down significantly as more people are familiar with technology use in their day-to-day lives.

Russell, Bebell, O'Dwyer et al. (2003) raise another important point regarding ways to equip and ready teachers for the right use of technology in the classroom.

They note that:

...preparing teachers to teach with technology is to move away from focusing on teaching technology and instead focus on teaching with technology—rather than introducing technology as an available yet peripheral tool, emphasizing technology as an integral tool with diverse uses and inherent

potential to enhance teaching and learning beyond what the traditional methods allow. (p. 309)

Thus one way teachers can learn how to use these technologies appropriately is by going to institutions with high levels of technical infrastructure and being paired with mentor teachers there who are competent and effective in the use of technology for teaching purposes (Akcaoglu, 2008). By observing other successful teachers, other teachers will feel more confident and motivated in employing these practices in their own classroom. Researchers have also suggested that this idea of observing effective technology practices, in turn leads to skills that are actually transferable to the “real-world” classroom, unlike attending courses and seminars which may not actually lead to actual transferrable skills in the classroom (Howland & Wedman, 2004; Marra, 2004).

Limitations of the Study

This study had several limitations that suggest that the findings must be interpreted with caution. The first limitation was the limited number of participants this study was based on. Due to the small number of EFL teachers at each high school and the challenge of contacting them all via email due or through a central database, the researcher had to visit each school in person to deliver and collect the surveys. Thus a higher number of participants may have more representative of the population.

The second limitation was that the results of this study were based on EFL teachers working at high schools in a metropolitan city in Turkey quite close to the city center. The results may not apply to other teachers, for example middle school teachers or university teachers. Moreover the participants were EFL teachers, thus

the findings might not be generalizable to teachers of other subjects. In addition to that this study was conducted in a metropolitan city in Turkey and results may vary depending on the size of the city or proximity of schools to the city center. If the schools were located in the countryside, farther away from the city center, or if the schools were located in a smaller city, the results may not be the same.

Another limitation of the present study was that teachers were asked to report on students' use of tablet PCs due to the complexities involved in surveying students. Thus if actual students were surveyed regarding their own tablet PC use, this might have a change in the findings.

The methodology implemented in this study had innate limitations due to it being a quantitative study and thus was susceptible to the limitations of quantitative studies in general. A qualitative component such as interviews along with the questionnaires given to the teachers might have provided more nuanced data. Another issue is the reliability of the responses on the questionnaires. The Turkish education system continues to be more hierarchical and top down than European and North American systems. Therefore this raises the questions of accuracy due to fear of repercussion from school management or the Ministry of National Education. In addition to that interviews may provide deeper insight regarding issues related to tablet PC use and also bring to light other factors related to tablet PC use that have not been covered in this study. The original design of the study did include interviews however because of the demand on teachers' time, interviews were then omitted from the research.

Suggestions for Further Research

Since this study's population was limited to only a small number of high schools in Ankara, further studies could be conducted in which data from high schools located in different cities Turkey could be used to see the overall situation in Turkey and also compare results from different cities.

A different research design might address some of the limitations of this study. For instance a mixed method study with both quantitative and qualitative components could be conducted to get more reliable results. Adding a qualitative component to the study might also reveal some additional factors or barriers to using tablet PCs in the classroom that were not included in this study. Classroom observations could be also included to actually see how the teachers are teaching, and how students are using the tablet PCs, if they are using them at all.

Facilitating conditions in schools is another area that needs to be explored further in depth. One area of facilitating conditions that needs to be looked into is specialized instruction for the technology being introduced. Studies need to look at what kind of training is effective when it comes to new technologies being introduced in the classroom. Another important aspect of facilitating conditions that needs to be further researched is the specific technical needs of each technology. In order for the technology to fit into the classroom, it seems important that the technical requirements of the technology, compatibility issues, support requirements, software required and so on be identified.

Conclusion

This study investigated EFL teachers use of tablet PCs and the factors related to tablet PC use in the classroom. Forty four EFL teachers teaching at high schools in

Ankara participated in the study. Data was gathered through a questionnaire related to the use of tablet PCs and factors related to tablet PC use.

The results revealed that there was very limited student use of tablet PCs reported by EFL teachers. Teachers reported that the tablet PCs were mostly being used by the students to play games for fun. With regards to the factors related to tablet PC use, it was found that teachers mostly had a positive attitude towards tablet PCs and they also agreed with student centered pedagogical beliefs. Moreover tablet PC use did show a significant positive correlation with teachers' age, teaching experience, and facilitating conditions. When looked at facilitating conditions in more detail, it was found that teachers reported problems specifically with regards to getting technical assistance with tablet PCs, tablet PCs not fitting in with their work style or way of teaching, tablet PCs not being compatible with other systems in the class, and finally specialized instruction not being available for them in how to use the tablet PC.

REFERENCES

- Aşkar, P. & Umay, A. (2001). Perceived computer self-efficacy of the students in the elementary mathematics teaching programme. *Hacettepe University Journal of Education*, 21(1), 1-8.
- Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50(2), 179-211.
- Akcaoğlu, M. (2008). *Exploring technology integration approaches and practices of preservice and in-service English language teachers* (Doctoral dissertation, Middle East Technical University, Ankara, Turkey). Retrieved from <https://etd.lib.metu.edu.tr/upload/12609579/index.pdf>
- Anderson, J. E., Schwager, P. H., & Kerns, R. L. (2006). The drivers for acceptance of tablet PCs by faculty in a college of business. *Journal of Information Systems Education*, 17(4), 429.
- Balanskat, A., Blamire, R., & Kefala, S. (2006, December 11). The ICT impact report. *A review of studies of ICT impact on schools in Europe*, 11. Retrieved from http://colccti.colfinder.org/sites/default/files/ict_impact_report_0.pdf
- Baylor, A. L., & Ritchie, D. (2002). What factors facilitate teacher skill, teacher morale, and perceived student learning in technology-using classrooms? *Computers & Education*, 39(4), 395-414.
- Beatty, K. (2003). *Teaching & researching: Computer-assisted language learning*. Essex, England: Pearson Education Limited.

- Becker, H. J. & Anderson, R. E. (1998). Teaching Learning, and Computing: Teacher's Survey: Combined Versions 1-4. [Electronic Version]. *National Science Foundation and the Office of Educational Research and Improvement, U.S. Department of Education, 1998*. Retrieved January, 22, 2016 from https://www.msu.edu/course/cep/807/*cep240studyrefs/becker1998summary.pdf
- British Educational Communications and Technology Agency (Becta) (2004). *A review of the research literature on barriers to the uptake of ICT by teachers*. Retrieved February 14, 2016 from <http://becta.org.uk>
- Bjerede, M & Bondi, T (2012). *Learning is Personal: Stories of Android Tablet Use in the 5th Grade*. Retrieved from www.learninguntethered.com/wp-content/uploads/2012/08/Learning-is-Personal.pdf
- Brett, P. (1997). A comparative study of the effects of the use of multimedia on listening comprehension. *System*, 25(1), 39-53.
- Brett, P. (1998). Using multimedia: A descriptive investigation of incidental language learning. *Computer Assisted Language Learning*, 11(2), 179-200.
- Brunner, C. (1992). *Integrating technology into the curriculum: Teaching the teachers* (No. CTE-TR-25). New York: Bank Street College of Education, Center for Technology in Education.
- Burden, K., Hopkins, P., Male, T., Martin, S., & Trala, C. (2012). *iPad Scotland evaluation*. Retrieved from <http://www.janhylen.se/wp-content/uploads/2013/01/Skottland.pdf>

- Callister Jr, T. A. & Dunne, F. (1992). The Computer as Doorstop: Technology as Disempowerment. *Phi Delta Kappan*, 74(4), 324-26.
- Casey, H. B. & Rakes, G. C. (2002). An analysis of the influence of technology training on teacher stages of concern regarding the use of instructional technology in schools. *Journal of Computing in Teacher Education*, 18(4), 124-132.
- CEO Forum. (2001). *Year 4 STAR Report*. Retrieved from: <http://www.electronic-school.com/2001/09/0901ewire.html#forum>.
- Chambers, J. A. & Sprecher, J. W. (1983). *Computer-assisted instruction: Its use in the classroom*. Englewood Cliffs, N.J: Prentice-Hall.
- Çiftçi, S., Taşkaya, S. M., & Alemdar, M. (2013). The opinions of classroom teachers about FATİH project. *Elementary Education Online*, 12(1), 227-240.
- Clarke, B. & Svanaes, S. (2014, April 9). *An updated literature review on the use of tablets in education*. *Tablets for Schools*. Retrieved from <http://maneele.drealentejo.pt/site/images/Literature-Review-Use-of-Tablets-in-Education-9-4-14.pdf>
- Davies, G. & Steel, D. (1981). *First steps in computer-assisted language learning at Ealing College of Higher Education*. Paper presented at the CAL 81 Symposium, University of Leeds. Retrieved from http://www.ict4lt.org/en/Davies_Steel_1981.doc. Acesso em, 20(08), 2011.
- Davies, G., Walker, R., Rendall, H., & Hewer, S. (2012). Introduction to computer assisted language learning (CALL). Module 1.4. *Information and*

Communications Technology for Language Teachers (ICT4LT). Slough: Thames Valley University. http://www.ict4lt.org/en/en_mod1-4.htm.

Dexter, S. & Anderson, R. E. (2002, September). *USA: A model of implementation effectiveness*. Paper presented at the annual meeting of the European Conference on Educational Research, Lisbon, Portugal.

Dundar H. & Akcayır M (2014) Implementing tablet PCs in schools: students' attitudes and opinions. *Computer Human Behavior*, 32, 40–46

Earle, R. S. (2002). The integration of instructional technology into public education: Promises and challenges. *Educational Technology*, 42(1), 5-13.

Elmer-Dewitt, P. (1991). The revolution that fizzled. *Time*, 137(20), 48-49.

Ertmer, P. A. (2005). Teacher pedagogical beliefs: The final frontier in our quest for technology integration? *Educational Technology Research and Development*, 53(4), 25-39.

Fishman, B., Marx, R. W., Blumenfeld, P., Krajcik, J., & Soloway, E. (2004). Creating a framework for research on systemic technology innovations. *The Journal of the Learning Sciences*, 13(1), 43-76.

Frank, K. A., Zhao, Y., & Borman, K. (2004). Social capital and the diffusion of innovations within organizations: The case of computer technology in schools. *Sociology of Education*, 77(2), 148-171.

Freedman and Dalton. (2012). Case Study of BYOD approaches at Wildern School, Southampton, UK. A Case Study. Retrieved from

<http://www.ictineducation.org/home-page/2012/11/30/byod-case-study-wildern-school.html>

Groff, J. & Mouza, C. (2008). A framework for addressing challenges to classroom technology use. *AACe Journal*, 16(1), 21-46.

Groves, M., Jarnigan, M., & Eller, K. (Eds.). (1998). *Proceedings of the Families, Technology and Education Conference*, Chicago, IL: US.

Hagler, M. O. & Marcy, W. M. (2000). The legacy of PLATO and TICCIT for learning with computers. *Computer Applications in Engineering Education*, 8(2), 127-131.

Hart, R. S. (1995). The Illinois PLATO foreign languages project. *CALICO Journal*, 12(4), 15-37.

Healey, D. & Johnson, N. (Ed.). (1995). *1995 TESOL CALL interest section software list*. Alexandria, VA: TESOL Publications.

Heinrich, P. (2012). The iPad as a tool for education: A study of the introduction of iPads at Longfield Academy, Kent. *Nottingham: NAACE: The ICT Association*.

Howland, J. & Wedman, J. (2004). A process model for faculty development: Individualizing technology learning. *Journal of Technology and Teacher Education*, 12(2), 239.

Huang, H. M. & Liaw, S. S. (2005). Exploring users' attitudes and intentions toward the web as a survey tool. *Computers in Human Behavior*, 21(5), 729-743.

Ifenthaler, D. & Schweinbenz, V. (2013). The acceptance of Tablet-PCs in classroom instruction: The teachers' perspectives. *Computers in Human Behavior*, 29(3), 525-534.

International Society for Technology in Education. (2000). *National educational technology standards for students: Connecting curriculum and technology*. Washington, DC: U.S. Department of Education.

Joint policy statements of CALICO, EUROCALL, and IALLT. (1999, 30 April–1 May). Retrieved from http://calico.org/CALL_document.html

Jones, C. (1986). It's not so much the program, more what you do with it: The importance of methodology in CALL. *System*, 14(2), 171-178.

Judson, E. (2006). How teachers integrate technology and their beliefs about learning: Is there a connection? *Journal of Technology and Teacher Education*, 14(3), 581.

Kenner, R. (1996). A short history of the founding of the CALL-IS Interest Section, The CALL Interest Section: Community History, Montreal. Retrieved from http://rogerkenner.ca/Gallery/CALL_IS/founding.htm

LeBaron, J., Collier, C. (2001). Curriculum planning for technology-rich instruction. *Technology in its place: Successful technology infusion in schools* (pp. 17-29). San Francisco, CA: Jossey-Bass Wiley.

Levien, R. E. (1972). *The emerging technology. Instructional uses of the computer in higher education*. New York, NY: McGraw-Hill.

- Levy, M. (1997). *Computer-assisted language learning: Context and conceptualization*. Oxford, England: Oxford University Press.
- Levy, M. & Hubbard, P. (2005) 'Why call CALL CALL?' (editorial), *Computer Assisted Language Learning* 18(3): 143–9.
- Loveless, T. (1996). Why aren't computers used more in schools? *Educational Policy*, 10(4), 448-467.
- Mann, D., Shakeshaft, C., Becker, J., & Kottkamp, R. (1999). *West Virginia's basic skills/computer education program: An analysis of student achievement*. Santa Monica, CA: Milken Family Foundation.
- Marra, R. M. (2004). An online course to help teachers "use technology to enhance learning": Successes and limitations. *Journal of Technology and Teacher Education*, 12(3), 411.
- McCain, T. (2005). *Teaching for tomorrow. Teaching content and problem-solving skills*. Thousand Oaks, CA: Corwin Press.
- Means, B. & Olson, K. (1997). *Technology and education reform: Studies of education reform*. Washington, DC: U.S. Government Printing Office.
- Merrill, M. D. (1994). *Instructional Design Theory*. Englewood Cliffs, NJ: Educational Technology Publications.
- Ministry of National Education (MoNE) (2012). *Fatih project pilot schools list* [Data file]. Retrieved from http://hedb.meb.gov.tr/net/_Duyuru_dosyalar/fatihek3.pdf

- Moeller, A. J. (1997). Moving from instruction to learning with technology: Where's the content? *CALICO Journal*, 14(2-4), 5-13.
- Moore, G. C. & Benbasat, I. (1991). Development of an instrument to measure the perceptions of adopting an information technology innovation. *Information Systems Research*, 2(3), 192-222.
- Moran, M., Hawkes, M., & El Gayar, O. (2010). Tablet personal computer integration in higher education: Applying the unified theory of acceptance and use technology model to understand supporting factors. *Journal of Educational Computing Research*, 42(1), 79-101.
- Morris, M. (2002, August). *How new teachers use technology in the classroom*. Paper presented at the Annual Summer Conference of the Association of Teacher Educators, Williamsburg, VA.
- Mumtaz, S. (2000). Factors affecting teachers' use of information and communications technology: A review of the literature. *Journal of Information Technology for Teacher Education*, 9(3), 319-342.
- Noeth, R. J. & Volkov, B. B. (2004). *Evaluating the effectiveness of technology in our schools: ACT policy report*. Iowa City, IA: ACT. Retrieved from <http://files.eric.ed.gov/fulltext/ED483855.pdf>
- Pamuk, S., Cakir, R., Ergun, M., Yilmaz, H., & Ayas, C. (2013). The use of tablet PC and interactive board from the perspectives of teachers and students: Evaluation of the FATİH project. *Educational Sciences: Theory & Practice*, 13(3), 1815-1822.

Perry, G. Jr. & Areglado, R. (2001). The computers are here! Now what does the principal do? In J. Lebaron & C. Collier (Eds.), *Technology in its place: Successful technology infusion in schools* (pp. 87-98). San Francisco, CA: Jossey-Bass.

Ravitz, J., Becker, H., & Wong, Y. (2000). *Constructivist-compatible beliefs and practices among U.S. teachers*. Irvine, CA: Center for Research on Information Technology and Organizations.

Richards, J. C. & Rodgers, T. S. (2001). *Approaches and methods in language teaching* (2nd ed.) New York, NY: Cambridge University Press.

Rokeach, M. (1968). *Beliefs attitudes and values*. San Francisco: Jossey-Bass Inc., Publishers.

Russell, M., Bebell, D., O'Dwyer, L., & O'Connor, K. (2003). Examining teacher technology use implications for preservice and inservice teacher preparation. *Journal of Teacher Education*, 54(4), 297-310.

Şahin, S., Aktürk, A. O., & Çelik, İ. (2013). A Study on teachers', students' and their parents' views on the FATİH Project. *Online Submission*, 7(12), 1889-1895.

Saettler, L. P. (2004). *The evolution of American educational technology*. Charlotte, NC: Information Age Publishing.

Sherry, L. & Gibson, D. (2002). The path to teacher leadership in educational technology. *Contemporary Issues in Technology and Teacher Education*, 2(2), 178-203.

Skinner, B. F. (1957). *Verbal behavior*. New York: Appleton-Century-Crofts.

- Stevens, V. (1989). A direction for CALL: From behavioristic to humanistic courseware. In M.C. Pennington (Ed.), *Teaching languages with computers: The state of the art* (pp. 31-43). La Jolla, CA: Athelstan.
- Teo, T. (2006). Attitudes toward computers: A study of post-secondary students in Singapore. *Interactive Learning Environments*, 14(1), 17-24.
- Teo, T. (2008). Pre-service teachers' attitudes towards computer use: A Singapore survey. *Australasian Journal of Educational Technology*, 24(4), 413-424.
- Thompson, R. L., Higgins, C. A., & Howell, J. M. (1991). Personal computing: Toward a conceptual model of utilization. *MIS Quarterly*, 15(1), 125-143.
- Thorne, S. & Smith, B., (2011). Second language development theories and technology-mediated language learning. *CALICO Journal*, 28(2), 268-277.
- Tondeur, J., Hermans, R., Van Braak, J., & Valcke, M. (2008). Exploring the link between teachers' educational belief profiles and different types of computer use in the classroom. *Computers in Human Behavior*, 24(6), 2541-2553.
- Tracey, D. H. & Young, J. (2006). Technology and early literacy: The impact of an integrated learning system on high risk kindergartners' achievement. *Reading Psychology*. 28(5), 443-467.
- Underwood, J. H. (1984). *Linguistics, computers, and the language teacher: A communicative approach*. Rowley, MA: Newbury House.
- UNESCO Institute for Statistics. (2014). *Information and Communication Technology (ICT) in Education in Asia: A comparative analysis of ICT*

integration and e-readiness in schools across Asia. Montreal, Quebec:
UNESCO Institute for Statistics.

Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. *MIS Quarterly*, 27(3), 425-478.

Warschauer, M. (1996). Computer-assisted language learning: An introduction. In S. Fotos (Ed.), *Multimedia language teaching*, 3-20. Tokyo: Logos International.

Warschauer, M. & Healey, D. (1998). Computers and language learning: An overview. *Language Teaching*, 31(02), 57-71.

Warschauer, M. & Kern, R. (2000). *Network-based language teaching: Concepts and practice*. New York: Cambridge University Press.

WestEd. (2002). *Resilience and youth development module: Aggregated california data fall 1999 to spring 2002*. Los Alamitos, CA. Retrieved from www.wested.org/chks/pdf/rydm_aggregate.pdf

Zhao, Y. & Cziko, G. A. (2001). Teacher adoption of technology: A perceptual control theory perspective. *Journal of Technology and Teacher Education*, 9(1), 5-30.

Zhao, Y., Pugh, K., Sheldon, S., & Byers, J. (2002). Conditions for classroom technology innovations. *The Teachers College Record*, 104(3), 482-515.

APPENDICES

Appendix A: Questionnaire (English)

TEACHER SURVEY

1. Indicate how much you disagree or agree with each of the following statements about work conditions related to Tablet PC use?

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I have the required resources to make use of Tablet PCs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I have the necessary knowledge to make use of Tablet PCs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A specific person (or group) is available for assistance with Tablet PC difficulties	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Specialized instruction concerning Tablet PCs was made available to me	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tablet PCs are not compatible with other systems I use*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I think Tablet PCs fit well with the way I like to work	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Using Tablet PCs fits into my work style	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

2. Indicate how much you disagree or agree with each of the following statements about attitudes related to Tablet PC use?

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Tablet PCs make me feel uncomfortable*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Using a Tablet PC does not scare me at all	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I hesitate to use a Tablet PC in case I look stupid*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tablet PCs make it possible to work more productively	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tablet PCs can allow me to do more interesting and imaginative work	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I could probably teach myself most of the things I need to know about Tablet PCs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I am not in complete control when I use a Tablet PC*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I do not need someone to tell me the best way to use a Tablet PC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I only use Tablet PCs at school when I am told to*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I use Tablet PCs regularly throughout school	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- 3. Different teachers have described very different teaching philosophies to researchers. For each of the following pairs of statements, check the box that best shows how closely your own beliefs are to each of the statements in a given pair. The closer your beliefs to a particular statement, the closer the box you check.**

"I mainly see my role as a facilitator. I try to provide opportunities and resources for my students to discover or construct concepts for themselves."

"That's all nice, but students really won't learn the subject unless you go over the material in a structured way. It's my job to explain, to show students how to do the work, and to assign specific practice."

"The most important part of instruction is the content of the curriculum. That content is the community's judgment about what children need to be able to know and do."

"The most important part of instruction is that it encourage "sense-making" or thinking among students. Content is secondary."

"It is useful for students to become familiar with many different ideas and skills even if their understanding, for now, is limited. Later, in college, perhaps, they will learn these things in more detail."

"It is better for students to master a few complex ideas and skills well, and to learn what deep understanding is all about, even if the breadth of their knowledge is limited until they are older."

"It is critical for students to become interested in doing academic work— interest and effort are more important than the particular subject-matter they are working on."

"While student motivation is certainly useful, it should not drive what students study. It is more important that students learn the history, science, math and language skills in their textbooks."

"It is a good idea to have all sorts of activities going on in the classroom. Some students might produce a scene from a play they read. Others might create a miniature version of the set. It's hard to get the logistics right, but the successes are so much more important than the failures."

"It's more practical to give the whole class the same assignment, one that has clear directions, and one that can be done in short intervals that match students' attention spans and the daily class schedule."

4. During class time, how often did students perform the following activities this year?

	Never	Once or twice a year	Several times a year	Several times a month	Several times a week
Students work individually on school work using Tablet PCs.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Students work in groups in school work using Tablet PCs.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Students perform research or find information using the internet.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Students use Tablet PCs to play educational games.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Students use Tablet PCs to play games for fun.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Students use Tablet PCs to speak with English speakers.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Students present information to the class using a Tablet PC.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Students do a project or assignment using Tablet PCs outside of class time.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

5. Personal Characteristics

1. Education level? Bachelor's degree Master's degree PhD
Major? _____
2. Teaching Experience? _____ year(s)
3. Experience using computers and/or Tablet PCs? _____ year(s)
4. Age? _____
5. Gender? Male Female
6. In the last two years, I have completed _____ (# of actual) hours of professional development.
7. In the last two years, I have completed _____ (# of actual) hours of training related to technology.
8. How many hours do you teach per week? _____ hours

Appendix B: Questionnaire (Turkish)

ÖĞRETMEN ANKETİ

1. Tablet PC kullanımı ile ilgili çalışma şartları hakkında aşağıdaki ifadelerin her birine ne kadar katılıp katılmadığınızı belirtiniz.

	Kesinlikle Katılmıyorum	Katılmıyorum	Kararsızım	Katılıyorum	Kesinlikle Katılıyorum
Tablet bilgisayarlardan faydalanmak için gerekli kaynaklara sahibim	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tablet bilgisayarlardan faydalanmak için gerekli bilgiye sahibim	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tablet bilgisayarlarla ilgili yaşadığım zorlukları aşmamda bana yardım edecek belirli bir kişi (ya da bir grup) var	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tablet bilgisayarlarla ilgili özel bir eğitim almam sağlandı	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tablet bilgisayarlar kullandığım diğer sistemlerle uyumlu değil	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tablet bilgisayarlar tercih ettiğim çalışma şekline uyuyor	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tablet bilgisayarları kullanmak benim çalışma tarzıma uyuyor	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

2. Tablet bilgisayar kullanımı ile ilgili tutumlar hakkında aşağıdaki ifadelerin her birine ne kadar katılıp katılmadığınızı belirtiniz.

	Kesinlikle Katılmıyorum	Katılmıyorum	Kararsızım	Katılıyorum	Kesinlikle Katılıyorum
Tablet PC kullanırken kendimi rahat hissetmiyorum	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tablet bilgisayar kullanmak beni hiç korkutmuyor	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Mahcup olacağım düşüncesiyle Tablet PC kullanmaya çekinirim	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tablet bilgisayarlar daha üretken bir şekilde çalışmayı mümkün kılar	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tablet bilgisayarlar benim daha ilginç ve daha yaratıcı işler yapmama olanak tanır	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tablet bilgisayar hakkında bilmem gereken şeylerin çoğunu muhtemelen kendi başıma öğrenebilirdim	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tablet bilgisayar kullandığım zaman, hiçbir şey tamamen kontrolüm altında değil	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bir tablet bilgisayarın en iyi şekilde nasıl kullanılacağına dair kimsenin beni bilgilendirmesine gerek yok	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sadece bana söylendiği zaman okulda Tablet bilgisayar kullanırım	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Okulda düzenli olarak Tablet bilgisayar kullanırım	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3. Farklı öğretmenler araştırmacılara çok farklı eğitim felsefeleri sundular. Aşağıdaki her ifade çifti için hangisinin sizin felsefenize daha yakın olduğunu düşünüyorsunuz onu işaretleyiniz. İfade, sizin düşüncenize ne kadar yakınsa, ifadeye o yakınlıkta kutucuğu işaretlemeye özen gösteriniz.

"Genellikle kendimi 'kolaylaştırıcı kişi' olarak görüyorum. Öğrencilerimin kavramları kendileri keşfetmeleri veya kafalarında kavram oluşturmaları için fırsatlar ve kaynaklar sağlama konusunda onlara yardımcı oluyorum."

"Bunlar çok hoş fakat bence gereken etkinlikler düzenli bir şekilde verilmediği takdirde öğrenciler öğrenemezler. Bunları açıklamak, nasıl yapılacağını göstermek ve onlara alıştırmak benim işim."

"Öğretimin en önemli kısmı, öğretim programının içeriğidir. Bu içerik öğrencilerin neleri öğrenmeleri gerektiği doğrultusunda zümre tarafından belirlenir."

"Öğretimin en önemli kısmı öğrencileri 'öğrendiklerini anlamlandırma' ya veya onları düşünebilmeye teşvik etmesidir. İçerik ikinci plandadır."

"Öğrencilerin şuanki anlayışları biraz sınırlı olsa da birçok fikir ve becerilere şimdiden aşina olmaları onlar için faydalı olacaktır. Daha sonra, üniversitede belki bunları daha detaylı bir şekilde görecekler."

"Öğrencilerin öğrenme kapasiteleri küçük yaşları nedeniyle sınırlı olsa bile birkaç karmaşık fikir ve beceride tam bilgi sahibi olmaları ve derin kavramanın ne olduğunu öğrenmenin nasıl bir şey olduğunu görmeleri çok daha iyi olacaktır."

"Öğrencilerin akademik çalışmalarla ilgilenmesi oldukça önemlidir – ilgi ve çabaları, üzerinde çalıştıkları konudan daha önemlidir."

"Öğrenci motivasyonu önemlidir, ancak onların ne çalışacakları konusunda yönlendirici olmamalıdır. Öğrencilerin tarihi, bilimi, matematiği ve dil becerilerini kitaplarından öğrenmeleri daha önemlidir."

"Sınıfta her çeşitten etkinliklerin olması iyi bir fikir. Bazı öğrenciler okudukları bir tiyatro metninden bir sahneyi canlandırırken diğerleri de setin minyatürünü oluşturabilirler. Lojistiği doğru bir şekilde yapmak zor ancak kazanımlar başarısızlıklardan çok daha önemlidir."

"Tüm sınıfa öğrencilerin dikkat süresi ve günlük ders programlarına uygun, anlaşılır açıklaması olan ve kısa aralıklarla yapılabilen aynı ödevi vermek daha pratik olur."

4. Bu yıl öğrenciler ne sıklıkla ders saatinde aşağıdaki eylemleri gerçekleştirdiler?

	Hiç	Yılda bir veya iki kez	Yılda birkaç kez	Ayda birkaç kez	Haftada birkaç kez
Öğrenciler okul ödevlerini Tablet bilgisayar kullanarak bireysel olarak yapar.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Öğrenciler okul ödevlerini gruplar halinde çalışırken Tablet bilgisayar kullanarak yapar.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Öğrenciler araştırma yaparken veya bilgi toplarken İnternete başvurur.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Öğrenciler eğitsel oyunları oynamak için Tablet bilgisayarları kullanır.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Öğrenciler eğlenme amacıyla oyun oynamak için Tablet bilgisayar kullanır.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Öğrenciler İngilizce konuşanlar ile konuşmak için Tablet bilgisayarları kullanır.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Öğrenciler sınıfa bir bilgi verirken tablet bilgisayar kullanır.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Öğrenciler sınıf dışında bir proje veya ödevi yaparken Tablet bilgisayar kullanır.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

5. Kişisel Özellikler

1. Eğitim seviyesi? __Lisans __Yüksek Lisans __Doktora

Branş? _____

2. Öğretim deneyimi? ___yıl

3. Bilgisayar veya tablet bilgisayar kullanma deneyimi? ___yıl

4. Yaş? ____

5. Cinsiyet? __Erkek __Kadın

6. Son iki yılda _____gerçek saat mesleki gelişimi tamamladım.

7. Son iki yılda, _____gerçek saatlik teknoloji eğitimini tamamladım.

8. Haftada kaç saat ders veriyorsunuz? ____ saat