

RUNNING HEAD: TECHNOLOGY IN LANGUAGE EDUCATION

TECHNOLOGY USE IN POST SECONDARY LANGUAGE EDUCATION

by

KIRSTEN LYNNE STAUFFER

B.A., University of Delaware, 2001

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written by Kirsten Lynne Stauffer  
has been approved for the Department of Linguistics (TESOL)

---

Maria L. Thomas-Ružić, Ph.D.  
Committee Chair

---

Patricia K. Mosele, Ph.D.  
Committee Member

---

Kira Hall, Ph.D.  
Committee Member

Date \_\_\_\_\_

The final copy of this thesis has been examined by the signatories, and we find that both the content and the form meet acceptable presentation standards of scholarly work in the above mentioned discipline.

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In 21<sup>st</sup> century life, technology pervades our personal and professional lives. Post secondary language education is no exception to this phenomenon. In response to changing learner needs and advancements in technology and pedagogy, instructors face challenges to seamlessly blend appropriate technology tools into their repertoire. This study investigates various types of technology tools used in personal and professional domains. Findings suggest that there is a higher incidence of technology use in participants' personal lives as compared to similar technology tools in their language teaching practice. Additionally, the study suggests that current tools used inside and outside of the face-to-face classroom are teacher-centered, as compared to learner-centered approaches that could benefit the learning process to a higher degree. Therefore, this study recommends facilitating lifelong learning through professional development opportunities, including the formation of cohorts, that promote the transfer of experiences acquired through personal use to the professional realm with pedagogical reasoning.

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## CONTENTS

## CHAPTER

I. INTRODUCTION.....	1
Background of the Study.....	1
Purpose Statement.....	5
Study Significance.....	6
Arrangement of Ideas.....	8
II. REVIEW OF THE LITERATURE.....	10
History of Technology and Language Learning.....	10
<i>Methods and Approaches</i> .....	10
Computer-Assisted Language Learning (CALL).....	13
<i>Normalization</i> .....	16
<i>Future of CALL</i> .....	17
<i>Mobile-Assisted Language Learning (MALL)</i> .....	18
The Learners.....	18
The Language Educators.....	20
<i>Attitudes and Perceptions</i> .....	21
<i>Technology Usage</i> .....	23
<i>Technology Training</i> .....	24
<i>Pedagogical Training</i> .....	28
<i>Time</i> .....	29
Survey of Technology Tools Used in Post Secondary Language Education...	30
<i>Course Management Systems (CMS)</i> .....	30
<i>Computer Mediated Communication (CMC)</i> .....	31
<i>The Internet and World Wide Web</i> .....	32
<i>Web 2.0</i> .....	32
<i>Digital Recordings</i> .....	33
<i>Digital Storytelling</i> .....	34
<i>Games and Virtual Realities</i> .....	34
III. METHODS.....	36
Survey Questions and Data Analysis.....	38
IV. FINDINGS.....	47
Participants.....	47
Technology Usage.....	49
Technology Tools.....	49
Instructional Content Delivery and CMS / LMS.....	51

Comfort and Interest Perceptions.....	52
Technology Training.....	54
V. DISCUSSION.....	58
Personal Use and Teacher-Centered Tools.....	58
Professional Development.....	60
VI. IMPLICATIONS AND CONCLUSION.....	65
REFERENCES.....	68
APPENDIX	
A. Email to Potential Participants in the Research Study.....	74
B. Questionnaire.....	75
C. Additional Data.....	84

## TABLES

## Table

1. Warschauer's Three Stages of CALL (Bax, 2003, p. 15).....	15
2. Restricted, Open and Integrated CALL: An Outline (Bax, 2003, p. 21).....	15
3. Instructional Content Delivery.....	41
4. CMS / LMS Functions.....	42
5. Tool Functions in Personal and Professional Domains.....	43
6. Teacher Language.....	48
7. Participants' Age.....	48
8. Years of Language Teaching Experience.....	49
9. Use of Tool Functions Across Domains.....	50
10. Instructional Content Delivery.....	51
11. Perception: I find technology to be frustrating.....	52
12. Perception: I like learning new things by using technology.....	53
13. Perception: In the future, I would like to use more technology tools in my teaching.	53
14. Where do you receive technology training?.....	54
15. Perception: I would integrate more technology if I had more training.....	55
16. Perception: I receive enough support to teach with technology.....	56
17. Perception: I receive new ideas for using technology tools from colleagues / friends.	56
18. Perception: I search out new ideas / ways to teach with technology on my own....	57

FIGURES

Figures

1. Study Design.....	36
2. Allan Carrington’s Pedagogy Wheel.....	63



## ABBREVIATIONS

ACTFL	American Council on the Teaching of Foreign Languages
ALM	Audio-Lingual Method
ASR	Automatic Speech Recognition
CALL	Computer-Assisted Language Learning
CBI	Content-Based Instruction
CLT	Communicative Language Teaching
CMC	Computer Mediated Communication
CMS	Course Management System
EFL	English as a Foreign Language
ESL	English as a Second Language
FLL	Foreign Language Learning
FLT	Foreign Language Teaching
FSL	French Second Language
iCALL	Intelligent Computer-Assisted Language Learning
ICT	Information and Communication Technology
IEP	Intensive English Program
K-8	Kindergarten to 8 <sup>th</sup> Grade
K-12	Kindergarten to 12 <sup>th</sup> Grade
L1	First Language
L2	Second Language
LMS	Learning Management System

MALL	Mobile-Assisted Language Learning
MOOCs	Massive Online Open Courses
PI	Programmed Instruction
SLA	Second Language Acquisition
TBL	Task-Based Learning
TBLT	Task-Based Language Teaching
TEFL	Teaching English as a Foreign Language
TESOL	Teaching English to Speakers of Other Languages
UNESCO	United Nations Educational, Scientific, and Cultural Organization
VoIP	Voice over Internet Protocol

## CHAPTER I: INTRODUCTION

**Background of the Study**

Imagine life without technology. Now remember what life was like 20 or even ten years ago, and recall how technological advances have increased the speed and ease at which it is possible to accomplish tasks, be organized, communicate and stay connected, find an infinite amount information in a split second, and be entertained, just to name a few. Technology has not only influenced change in personal and professional daily activities, but has impacted language teaching and learning. In an exchange of comments following an article about facilitating professors' use of technology (Winston, 2013), one poster remarked that students would cause colleges to shut down if instructional modes reverted to the traditional "lectures, paper and pencil". In short, technology is reshaping the state of language learning and teaching environments, pedagogical framework, and Second Language Acquisition (SLA) research. Technology is now a standard part of the post secondary language face-to-face and online (hybrid / blended and/or distance learning) classroom environments; successful integration of technology tools is facilitated when the instructor understands the field's development, is aware of perceptions and attitudes involving technology in language education, uses sound pedagogical practices, and has knowledge and skills of appropriate available resources.

In the decade between my undergraduate and graduate studies, I noticed a marked difference the role technology played in post secondary language learning. During that time period, I incorporated various technology tools when possible in teaching Business English and English as a Foreign Language (EFL) in Germany and English as a Second Language (ESL) to adults through a community literacy organization in the United States. However, I often found

myself limited due to the “digital divide,” (Motteram, 2013) which prevented me from incorporating as much technology as I would have wished. My “digital divide” existed primarily because of three reasons. First, my own knowledge of various tools and pedagogical uses of technology were not then what they are today. Second, adequate resources and infrastructure (e.g. audio, visual, and projection equipment; computers; and Internet) lacked in the physical teaching space. In Germany, I traveled from client to client, so my resources were limited to what I could carry in a backpack or what was available in the room where instruction was given. While working with recent immigrants, I was limited by the non-profit’s funding to support technology. Instruction was given primarily in church basements and inner-city elementary classrooms that did not offer more than a television and video (VHS/DVD) player. A third “digital divide” stemmed from the students’ own limited accessibility to technology devices and means. Immigrant populations often did not have regular access to a personal computer or the Internet - let alone possess skills to be able to use them. What I experienced as “digital divides” in previous EFL/ESL settings, do not appear to exist in most present day post secondary language institutions.

Throughout my Teaching English as a Foreign Language (TEFL) Certificate program in 2001, technology was presented primarily as a way to accompany certain teaching methods (e.g. cassettes and CDs to support the Audio-Lingual Method – ALM), to be a resource in lesson / material development (e.g. the Internet and other software applications developed to foster language learning), and to be a vehicle for employment opportunities (especially job postings – domestic and abroad, found on the Internet). Despite the late 1990s and early 2000s being a time of “a respectable body of [Computer-Assisted Language Learning, CALL] research, including quantitative as well as structured qualitative and action research studies” (Hanson-Smith &

Rilling, 2006, p. 4), I received no formal training in CALL (the use of computers and associated applications in language learning), a commonly cited reason for not integrating technology into language instruction. Furthermore, “the theoretical foundations of learning have moved at a rapid pace over the last two decades from behavioral to cognitive to constructivist, and it is the confluence of the advances in theory and the affordances of technology that have created excellent opportunities for teachers in higher education” (Herrington & Herrington, 2007, n.p.).

Jack Richards citing Hayo Reinders noted that an instructor’s technical know-how determined his or her ability to use, create, or teach with tech (2011, pp. 7-8). Over the years, I believe my own technology growth has been self-motivated; I have sought out new ideas on my own and from cohorts, honed my technology skills in my non-ESL / EFL professional and personal life, enrolled in (and even paid for) graphic design classes and other technology workshops to be able to “use” technology tools and “create” material. The “teaching” part has more been by evoking SLA groundings through experimenting in the classroom and developing lessons and materials.

In addition to my personal affinity towards personal use of technology, I, like many but not all practitioners, believe that technology can offer great benefits to language learning by providing authentic resources, increased personalization of learning, autonomy, self access, and learner interaction. The technology toolbox that I used was “Non-Computer-Based Technology” (Douglas, 2007, pp. 197-199) (e.g. professional and self produced listening and video recordings).

Also during the time span between my own foreign language studying in a university face-to-face classroom and teaching at a post secondary Intensive English Program (IEP), the physical classroom and technology environment changed. Even at the turn of the 21<sup>st</sup> century,

textbooks came standard with audiotapes and personal computers were restricted to dorm rooms or campus computing labs with wired Internet access. Presently, wireless Internet connection is commonplace with college students yielding at least one mobile device at all times. Additionally, the classroom is now better equipped with more technological infrastructure (e.g. digital projection/sound connections, interactive whiteboards, wireless Internet connections, etc.), enabling the possible use of various applications of CALL and Mobile-Assisted Language Learning (MALL). These increased resources have enabled what Brown listed as “uses of CALL in the language classroom” - “collaborative projects, peer-editing of compositions, e-mail, blogs, web-based bulletin board communication, web page design, videoconferencing, reinforcement of classroom material (available through computers), podcasting, games and simulations, computer-adaptive testing, speech recognition software, concordancing, and multimedia presentations” (pp. 202-205).

I also discovered that my initial uses of technology were teacher-centered, in that I supplied authentic materials, or used them for other what Elizabeth Hanson-Smith and Sarah Riling described as “administrative / organization” purposes (e.g. “grades, communication, lesson planning, material creation, and professional development”) (2006, p. 2). I was not using their other two categories of technology practice: technology for “blended” learning (incorporating technology tasks with the face-to-face classroom environment) or “distance” learning (a strictly virtual class) (p. 2-3).

In addition to the great strides in technological advancements (from language games with graphic files that would cause computers to freeze to apps available on mobile devices at the speed of light), there is also a noticed difference in the learner. The Millennial Generation, alternatively called the Net Generation or Generation Y (typically Baby Boomers’ offspring), has

lived in a world influenced by a digital world and the Internet (Oxford & Oxford, 2009). Furthermore, college students today feel social pressure own and are more able to afford at least one mobile device. In my interest to more effectively teach the college bound English language learner, I began a journey to learn more about how I could appropriately and seamlessly incorporate technology tools into my repertoire, something that Stephen Bax wrote extensively about as “normalization” (Chambers & Bax 2006; and Bax, 2011). I also wanted to “use technology to extend and increase [my] effectiveness,” (Ertmer & Ottenbreit-Leftwich, 2010, p. 257) as an instructor. Therefore, I began to wonder what other technology tools existed, who used these tools, why were they chose or avoided to integrate technology, and how other instructors learned about technology tools and skills. My queries about these technology tools formed the basis of this research.

### **Purpose Statement**

The primary purpose of this study was to provide an investigation and descriptive overview of the uses of technology tools by language instructors in post secondary education. Language instructors are limited to those who teach second languages (e.g. English as a Second Language or Spanish as a Second Language), foreign languages (e.g. modern languages), bilingual courses, or teacher training / development programs. For this study, I focused on higher educational settings (i.e. IEPs, community college / college / university courses, or other private / public language institutions). This study also investigated the perceptions of technology in language teaching. The secondary purpose of this study was to examine relationships found across the data and to identify any patterns or trends that influence the instructors’ uses of technology in teaching. The questions guiding the research were:

1. Does the length of language teaching experience or the instructor's age relate to his/her use of technology in personal and/or professional domains?
2. Are there associations between the instructors' personal use of technology on the one hand and their professional/academic uses of technology on the other?
3. Are there associations between the types of technology used across instructors' personal and professional domains?
4. What do instructors view as constraints or support for their use of technology in their language teaching practices?

### **Study Significance**

The use of ever advancing technology has created new dimensions of language learning. As technology has been evolving, so have methods employed in language instruction. Benefits of the incorporation of technology tools in language education have shown to provide learners with more autonomy, community building, collaboration, reduction of the affective filter<sup>1</sup>, customization of learning (e.g. availability, meaningful connections, speed, etc.), more communication, applications in real-world tasks, authentic exposure to language and culture, multiple ways of combining linguistic elements to recycle content which is important to the second language acquisition process, to name a few. As commonly described in the literature, a general consensus of the learners' benefits from technology use in language instruction does not exist; however, one would expect that instructors' beliefs, reasons, skills, and practices vary greatly.

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<sup>1</sup> The affective filter is one hypothesis in Stephen Krashen's Monitor Model that suggested negative emotions could constrain language acquisition.



In a world of constant technological changes and new tools, instructors are faced with adapting, creating, and searching for new material with meaningful content. The integration of technology with pedagogically sound reasoning (Blake, 2013; Brown, 2007; Kervin & Derewianka, 2011; Levy, 2009; Stanley, 2013) is not a simple task, but subject to multiple factors, with circumstances unique to each instructor. In reviewing the literature related to language teaching/learning and the use of technology, several themes emerged influencing the instructors' use of technology, including: instructors' teaching experience, personal use of technology, training, and perceptions (Kim, Ruckert, Kim, & Seo, 2013; Ertmer, Ottenbreit-Leftwich, Sadik, Sendurur, & Sendurur, 2012; Cetto, 2010; Ertmer & Ottenbreit-Leftwich, 2010; Ismail, Almekhlafi, & Al-Mekhlafy, 2010; Herrington & Herrington, 2007; & Sokolik, 2006). Outside pressures that influence technology use are due to administrative decisions, budgets, curriculum requirements, training, personal comfort levels and knowledge, time, availability of hardware / software / infrastructure, etc. (Green, 2013; Hubbard, 2008; Kumar, Rose & D'Silva, 2008; Luke & Btitten, 2007; Valazquez-Torres, 2006; Snow, 2005; Meskill, Mossop, DiAngelo, & Pasquale, 2002; & Turnbull & Lawrence, 2002). Technology has also ushered in a plethora of applications that teachers can use to enhance the educational environment through administration, communication, instruction, engagement, connecting students with authentic resources, assessment, and evaluation of language learning.

The majority of the literature and research related to technology integration in language instruction appears to serve several purposes:

1. Instructional design / exploration for teachers / administrators (including pedagogical support for technology use and suggested activities / tasks / tools);

2. Research studies documenting effectiveness / outcomes / benefits / criticisms of individual (or combined) tools;
3. Perceptions of learners and teachers in regards to the use of technology; and
4. History of the field's development.

However, there is critical need to report on the actual usage of technology and tools in personal and professional domains and related perceptions in post secondary language instruction. Hence my study on the self-reported technology use in different domains by post secondary language educators is to understand “who” is currently using technology in post secondary language education, “what” tools are being employed, and “which” domains (personal and professional) do instructors use with technology, along with trends that arise across the data.

### **Arrangement of Ideas**

Following the introduction (Chapter 1) of my thesis, Chapter 2 presents my literature review, which opens with an overview of the history of technology in language teaching. There is a considerable body of literature that examines the past connection as “virtually every type of language teaching has had its own technologies to support it” (Warschauer & Meskill, 2000). Understanding of the major developments in technology and language education, especially in regards to CALL, helps to explain how language teaching has changed and needs to reshape to reach the Millennial or Net Generation learners. Additionally, many scholars point to the potential of technology integration in language teaching being in its infancy. Connections from history also allow the field to continue building on established foundations, and evolve by challenging or re-examining methods and techniques parallel to a dynamic and rapid change in technology. Next in my literature review, I examine the change in the learners and how technology has created a new language learner in the 21<sup>st</sup> century. This is followed by a review

of related to teachers' attitudes, perceptions and experiences (e.g. knowledge, personal use, technology training, and pedagogical training, as the role of the teacher is crucial for the successful integration of technology in post secondary education. Finally, the literature review concludes with a survey of several commonly used technology tools employed in post secondary language instruction.

Chapter 3 describes the methods I used to construct the questionnaire to gather and analyze the quantitative data. In Chapters 4 and 5, I present my findings and subsequent discussion of the patterns and connections in the data that provide the "snapshot" of the current status of "who" is using technology, "what" technology tools are being used, and "which" domains are technology tools being used. In these sections, I discuss the fact that the language instructors are using technology in both their personal and professional lives. However, the use of technology is greater in their personal domain. While the 22 participants included in this study use more interactive features in their personal life, their integration of technology in language teaching is more teacher-centered. Additionally, since the post secondary language instructors receive most of their training through their department, program, or institution and they do not pay for training, the majority either collaborates with each other or explores technology options on their own. As the instructors in this study reported a rather strong interest towards the future use of technology in their teaching, I offer a few recommendations to further facilitate the training and idea exchanges to support the continuation of technology integration into post secondary language education. Most significantly among these recommendations is the promotion of cohorts within departments, institutions, and programs to share technical skills and tool ideas. Finally, Chapter 6 provides the implications and conclusion of the study.

## CHAPTER II: REVIEW OF THE LITERATURE

**History of Technology and Language Learning***Methods and Approaches*

Language instruction a century ago was vastly different from today. The current state of language teaching and learning has been a progression of different methodologies and the evolution of technology. Since the conception of primitive listening devices, such as phonographs and gramophones, language learning has benefited from audio listening and recording tools. These devices and those that followed, including today's modern digital versions, have afforded learners to be exposed to language and culture, to hear language spoken by native and non-native speakers, and to even record and playback their own voices. Additionally, upgrades to these tools have significantly impacted and enhanced various methods of instruction. As researchers have reported, this shared history is important to note, as some methods and technologies are still employed today in different formats. Importance lies in “reflecting on pedagogy in technology-mediated language learning environments and assess the extended use and value” (Levy, 2009, p. 779) of new and old tools. (The pedagogical methods discussed below are ones that literature cites as being influenced by technological advances.)

During the late 19<sup>th</sup> century and early 20<sup>th</sup> century, the Direct Method grew in popularity, as it was a vastly different approach from the Grammar-Translation Method, which did not have speaking as an objective. The Direct Method, commonly associated with the “Berlitz Method,” placed emphasis on the spoken language for communication and understanding through immersion or direct contact with the language. Berlitz International, Inc. is an example of how a method of language instruction, advances in technology, and responses to changing student

needs have worked together. Maximilian D. Berlitz founded today's Berlitz International, Inc. in 1878, and taught through the Grammar-Translation Method. After hiring a Frenchman who did not speak English, Berlitz noticed a surprising progression of students' French language acquisition only after six weeks of instruction. As the company continued to grow and expand, it realized their diverse learners' needs were changing. In 1970, the company began producing audiocassettes, which expanded language exposure to students. Moving into the 21<sup>st</sup> century, Berlitz began offering additional multimedia products with exposure to authentic content and virtual learning environments.

Partially in response to World War II and the need to quickly train military personnel to become orally proficient in foreign languages, the U.S. military instituted intensive language courses using the "Army Method" or "Michigan Method," and later known as the Audio-Lingual Method (ALM) in the 1950s, grew out of structural linguistics and behavioral psychology (Larsen-Freeman & Anderson, 2013; Brown, 2007). These behaviorist ideas influenced the conditioning and habit-forming design of the method – emphasizing oral communication through a series of repetitive and pattern based oral / aural drills with vocabulary and grammar taught in context (without explicit instruction). These exercises became known as "kill and drill." At the same time, language labs (individual audio booths with tape-recorders and headsets) started to grow in popularity, as ALM exercises became individualized to the learner. Originally thought to create less work for the instructor, ALM actually increased the teacher's time to construct exercises and supervise lab time (Lado, 1988, p. 235). Additionally, language labs and ALM exercises were found to be ineffective in providing motivation alone and lacking in teacher feedback. Furthermore, the labs were costly to maintain, as the machines needed routine maintenance and repairs from vandalism caused by bored students. Although language labs still

exist today, the tape-recorders have been replaced with computers. Today, language programs and software still offer digital versions of ALM style “kill and drill” exercises for self-study. Furthermore, many language textbooks began to offer cassette tapes (which are now fairly obsolete), CDs, DVDs, and companion websites purveying additional practice.

Also during the 1950s, behaviorist B. F. Skinner began experimenting to make pedagogical and classroom experience enhancements, and developed the learning methodology of Programmed Instruction (PI, also known as programmed learning). The basic principles of PI were demonstrated through the use of a mechanical device, known as a teaching machine (originally created in the 1920s by Sidney L. Pressey to provide intelligence and information tests) (Skinner, 1958). Skinner viewed PI and the teaching machine as a way to increase student autonomy - by allowing students to work at their own pace, through carefully constructed and sequenced small steps of instruction. Additionally, students received immediate feedback on their performance, shaping their behavior to answer correctly, which he believed was a motivating factor. While PI was practiced in the 1960s and 70s, it grew out of favor in the 1980s because of changing interests in language pedagogy.

In the late 1970s and early 1980s, Communicative Language Teaching (CLT) began to take hold and was based on a Communicative Approach that strived for learners to achieve linguistic and communicative competences based on meaningful, authentic tasks that emulated real-world situations (Larsen-Freeman & Anderson, 2013; Brown, 2007). Applications of this framework include Task-Based Language Teaching (TBLT or Task-Based Learning – TBL), which was very student centered, placed emphasis on meaning and designed real-world activities to promote communication, and engaged any of the four language skills and cognitive processes. Content-Based Instruction (CBI), which grew in popularity in the 1990s, is similar to TBLT;

however, it focuses on teaching linguistic abilities along with content-based curricula. Today, TBLT and CBI blend well with technology integration. Technology equips these approaches with a greater opportunity for learners to become actively involved in connecting with authentic language and cultural materials, engaging with other speakers, and partaking in real-world (TBLT) or academic (CBI) tasks.

### **Computer-Assisted Language Learning (CALL)**

Literature widely accepted Mike Levy's definition of Computer-Assisted Language Learning as "the search for and study of applications of the computer in language teaching and learning" (1997, p. 1). In his 2003 book, *Teaching and Researching: Computer-assisted Language Learning*, Tom Beatty defined CALL as "any process in which a learner uses a computer and, as a result, improves his or her language" (as cited in Hubbard, 2009, p. 1). As explanations for "improve" Hubbard suggested a number of different perspectives:

- Learning efficiency: learners are able to pick up language knowledge or skills faster or with less effort;
- Learning effectiveness: learners retain language knowledge or skills longer, make deeper associations and/or learn more of what they need;
- Access: learners can get materials or experience interactions that would otherwise be difficult or impossible to get or do;
- Convenience: learners can study and practise with equal effectiveness across a wider range of times and places;
- Motivation: learners enjoy the language learning process more and thus engage more fully;

- Institutional efficiency: learners require less teacher time or fewer or less expensive resources (Hubbard, 2009, p. 2).

CALL programs have been categorized into four basic distinctions: 1. CALL specific software, designed intentionally with language learning applications in mind - to act as a tutor, often in the form of an interactive CD-ROM or web-based program; 2. Internet-based learning programs (e.g. online versions of dictionaries, concordancers, news / media sources, digital texts, web publishing, blogging, wiki, and webquests); 3. Computer Mediated Communication (CMC), a medium for global communication, which exists synchronously as online chats, simultaneous text messaging, video conferencing or asynchronously in the form of emails and discussion boards / forums; and 4. Generic applications that were not consciously created for the language learner, rather tools for general computing (e.g. word processing, spreadsheets, presentation creation, multimedia features, etc.).

To understand the future of CALL, there has to be an understanding of its past and present (Bax, 2003). However, explaining the past is not without some controversy. CALL has been around in practice since the 1960s, although it received its name in the 1980s. The extensive body of literature documents the history of CALL in two ways: 1. Chronological approach (describing technology by technology); and 2. Systematic phases corresponding roughly to time periods, which under closer scrutiny overlap.

Mark Warschauer wrote extensively on three phases of CALL (Warschauer & Meskill, 2000, Warschauer & Healey, 1998; and Warschauer 1996).

1. Behavioristic (Structural) CALL
2. Communicative CALL
3. Integrative CALL



**Table 1: Warschauer's three stages of CALL**

Warschauer's three stages of CALL			
<i>Stage</i>	1970s–1980s: Structural CALL	1980s–1990s: Communicative CALL	21st Century: Integrative CALL
<i>Technology</i>	Mainframe	PCs	Multimedia and Internet
<i>English-teaching paradigm</i>	Grammar- translation and audio-lingual	Communicate [sic]language teaching	Content-Based, ESP/EAP
<i>View of language</i>	Structural (a formal structural system)	Cognitive (a mentally constructed system)	Socio-cognitive (developed in social interaction)
<i>Principal use of computers</i>	Drill and practice	Communicative exercises	Authentic discourse
<i>Principal objective</i>	Accuracy	And fluency	And agency

(Warschauer, 2000 as depicted in Table 1 of Bax, 2003, p. 15)

While Bax credited Warschauer with the first analysis of typological of CALL, he argued for a different interpretation (Bax, 2003). His three categories consisted of: Restrictive CALL; Open CALL; and Integrated CALL.

**Table 2: Restricted, Open and Integrated CALL: an outline**

Restricted, Open and Integrated CALL: an outline								
Content	Type of task	Type of student activity	Type of feedback	Teacher roles	Teacher attitudes	Position in curriculum	Position in lesson	Physical position of computer
<i>Restricted CALL</i> Language system	Closed drills Quizzes	Text reconstruction Answering closed questions Minimal interaction with other students	Correct, incorrect	Monitor	Exaggerated fear and/ or awe	Not integrated into syllabus—optional extra	Whole CALL lesson	Separate computer lab
<i>Open CALL</i> System and skills	Simulations Games CMC	Interacting with the computer Occasional interaction with other students	Focus of linguistic skills development Open, flexible	Monitor/ facilitator	Exaggerated fear and/or awe	Toy Not integrated into syllabus—optional extra Technology precedes syllabus and learner needs	Whole CALL lesson	Separate lab—perhaps devoted to languages
<i>Integrated CALL</i> Integrated language skills work Mixed skills and system	CMC WP e-mail	Frequent interaction with other students Some interaction with computer through the lesson	Interpreting, evaluating, commenting, stimulating thought	Facilitator Manager	Normal part of teaching—normalised	Tool for learning Normalised integrated into syllabus, adapted to learners' needs <i>Analysis of needs and context precedes decisions about technology</i>	Smaller part of every lesson	In every classroom, on every desk, in every bag
	Any, as appropriate to the immediate needs							

(Table 2 from Bax, 2003, p. 21).

*Normalization*<sup>2</sup>

Stephen Bax (2003) identified the end goal of CALL as ‘normalisation,’ the “concept relative to any kind of technological innovation and refers to the stage when the technology becomes invisible, embedded in everyday practice and hence ‘normalised’” (p. 23). He further suggested that as of 2003, CALL had not achieved this goal, but would

when computers ... are used every day by language students and teachers as an integral part of every lesson, like a pen or a book. Teachers and students will use them without fear or inhibition, and equally without an exaggerated respect for what they can do. They will not be the centre of any lesson, but they will play a part in almost all. They will be completely integrated into all other aspects of classroom life, alongside coursebooks, teachers and notepads (pp. 23-24).

As CALL has evolved, there have been numerous studies to explain possible reasons for obstacles facing the normalization of computers in language education, including issues involving the teacher (Maftoon & Shahini, 2012). Through a qualitative and part ethnographic study at two sites in England, Andrea Chambers and Stephen Bax (2006) found four issues to be addressed if CALL was to be normalized:

1. Logistics (facilities incorporated with teaching space, classroom setup to facilitate easy transition between CALL and non-CALL activities, and teachers having enough planning and time to integrate computer use into their daily repertoire);
2. Stakeholders’ (teachers and administrators) conceptions, knowledge and abilities (need to feel confident, realization that computer use is conducive to learning, and avoidance of ‘technical fallacy’ – the notion that hardware or software is the single factor of success or failure);

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<sup>2</sup> Stephen Bax is a British Researcher and Scholar; therefore, in direct reference to his work, normalisation is spelled with the Received Pronunciation of British English.

3. Syllabus and software integration (proper amalgamation of CALL into the syllabus, with sufficient teacher support and use of open source CALL materials to adapt them to better align with the syllabus); and 4. Training, development and support (should be offered through a top-down – expert-novice collaborative approach, reliable support and encouragement to address and overcome fears and lack of skills, and pedagogical support) (pp. 477-478).

### *Future of CALL*

As more and more learners emerge tech savvy, various teaching styles need the integration of technology.

If CALL is to survive and prosper, then we need a dedicated cadre of graduate students, especially doctoral students, willing to select CALL as their area of specialization. The paths of CALL and the language teacher education will increasingly be determined by such students and those they will educate in the decades to come (Hubbard, 2008).

With the dynamic fluidity of technology evolution and language acquisition research, what is commonplace practice with technology tools and CALL today will be obsolete in the future. What seem like infinite possibilities in the future will become reality soon enough. Likewise, tools that were once cutting edge (e.g. 8-track tape, audiocassettes, slide projectors, overhead transparencies, etc.) are now ancient relics. Preserving data storied on such devices needs to be converted to new digital formats. Finally, there have been significant early developments in artificial intelligence and its link to intelligent CALL (iCALL) in such formats as automatic speech recognition (ASR) and ‘chatterbot’ (a computer able to converse with a human through oral or typed input) (Kervin & Derewianka, 2011).

*Mobile-Assisted Language Learning (MALL)*

Simultaneously as Information and Communications Technology (ITC) (devices and applications that use telecommunications to access information) have become more portable and increasingly ubiquitous, the “digital divide” has been decreasing with other mobile technologies becoming more readily available (including wireless Internet connections), a new form of CALL has emerged. MALL, also referred to as mobile learning or m-learning, fosters language learning on mobile devices, such as cellphones, smartphones, media players (e.g. mp3 and mp4 devices), tablets, etc. In addition to content and communication (e.g. telephoning, email, instant messaging, and social networking) available through the Internet, there is a huge market for apps (applications, programs). Similar to CALL, MALL gives the learner even more autonomy, customized learning environments, accessibility to language learning, and practice in their “third space” at any time possible. They are simply another instructional tool, and not a replacement for a teacher. One commonly cited limitation of current mobile devices is the size of display screens and typing features. However, as technology progresses, so to will the quality and user-friendliness of the products improve. The ever-expanding possibilities of MALL are viewed as the future landscape of language learning. Furthermore, as this is a relatively new area of development, more research is needed on language instructor and learner perspectives and usage (Kim, Rueckert, Kim, & Seo, 2013) and more direction is needed for effective pedagogical integration of these devices and applications into language learning (Park, 2011).

**The Learners**

Understanding the contemporary learner is crucial to achieve seamless and successful technology integration into language pedagogy. Today’s post secondary learners are part of the change brought on by technology; and are part of the Millennial or Net Generation. Marc

Prensky (2001a) coined the term “digital natives” to reflect a new generation of learners who have grown up in the digital age of technology. Their entire lives have been spent immersed in a culture of computers, video games, mobile phones, multimedia and digital content (e.g. music, videos, photographs, images, etc.), and the Internet. They are consumers and producers of multimedia, social media, and other forms of digital and viral communication. For them, technology is a language they know. Prensky further suggested (2001a, 2001b) that digital input has altered the brain structure of “digital natives.” Researchers have written that learners are now engaged in a “third space” or “third place,” that is a digital environment, outside of the home (“first”) and work/school (“second”) spaces (Blake, 2013; Godwin-Jones, 2005). Globalization is expanding the role and influence of technology, especially on young people around the globe. The “growing realization of the differences between today’s students and those of even a few years ago has led many teachers to reflect on the way they teach and to begin to try new methods and tools that are more relevant and engaging” (Ertmer, et.al., 2012, p. 432).

In some places, governments or institutions are mandating technology integration, especially into education. For example, countries such as Argentina and Uruguay are working towards 1:1 computing for K-12, meaning one personal computing device for each learner. More and more domestic K-12 schools are investing in technology and pushing 21<sup>st</sup> century skills to be in compliance with government initiatives (e.g. No Child Left Behind Act of 2001, Common Core State Standards Initiative, etc.). These learners will enter post secondary education with years of technology experience. Colleges and universities are investing enormous sums of money on developing and maintaining infrastructure, equipment, support, and resources to staying technologically advanced. Some institutions are also providing or requiring personal devices (computers or mobile devices) to be used as part of academic study. As

reported by George Chinnery (2006), “Duke University provided free iPods to its entire Fall 2004 entering freshman class” (p. 9).

In contrast, educators that do not possess the same exposure to the digital world or skills are considered “digital immigrants” (Prensky, 2001a). They learned in ways vastly different from the way in which many their students learn. Language pedagogy and methodology books reiterate that educators need to understand the needs and goals of their learners (Lado, 1988; Brown, 2007; Larsen-Freeman & Anderson, 2011). To reach the new generation of learners, the use of technology in language instruction today is almost impossible to neglect. Technology’s place in society (and in education) is one that is not easily explained. Some embrace it and others reject it.

### **The Language Educator**

In order for successful integration of technology, teachers’ attitudes, perceptions, and experience need to be known (Chambers and Bax, 2006; Velazquez-Torres, 2006; and Bax, 2003). Some attitudes and perceptions are shaped by experiences and outside pressures, which could include administrative decisions / mandates, budgets (for resources, materials, and training), availability of hardware / software / infrastructure, curriculum requirements, and time, to name a few. Not everyone in the Millennial generation (born in the 1980s and 1990s) is tech savvy, and there are many instructors born prior to 1980 that are tech gurus. Navigating technology tools can often be difficult for any novice, experienced, “digital native,” or “digital immigrant” teacher of any language, and made even more difficult if not employed with sound pedagogical practice. Understanding attitudes, perceptions, experiences, and knowledge are important factors to consider in the development of language educators, at any level, but especially in post secondary education.

*Attitudes and Perceptions*

A long-standing and well-documented fear of technology use in language teaching is that it will diminish the need for a language teacher. Researchers and organizations have been demystifying this fallacy, as technology is not able to replace the pedagogical reasoning that comes with an experienced human teacher. Researchers and authors have noted that learners need to interact with a teacher for meaningful communication, facilitating learning, and delivery of content. “Just as doctors use technological advances to practice medicine, trained teachers should use technology to teach, but the teacher’s interaction with the learner is crucial,” (Lado, 1988, p. 228). Additional support can be found in the American Council on the Teaching of Foreign Languages’ (ACTFL) (n.d.) position statement:

... acknowledges and encourages using the potential of technology as a tool to support and enhance classroom-based language instruction...However, because language is one of the most complex of all human activities and interactions ACTFL also recognizes the pivotal role of a qualified language teacher to incorporate and manage the implementation of technology so that it effectively supports the language learning experience. The use of technology should never be the goal in and of itself, but rather a tool for helping language learners to use the target language in culturally appropriate ways to accomplish authentic tasks...Therefore, ACTFL strongly advises school and university administrators to place the responsibility for language instruction in the hands of qualified language teachers rather than solely in technology programs. ([https://www.actfl.org/news/position-statements/role-technology-language-learning.](https://www.actfl.org/news/position-statements/role-technology-language-learning))

SLA research has also revealed that technology “plays a complementary, rather than substituting, role” (Chen, 2011, p. 27), for an actual teacher in the classroom. Balancing the misconception with reality, instructors that integrate technology will replace those that do not.

Bridging the educator’s technology comfort level is significant for engaging students. Another concern of teachers has been that their students are more familiar or knowledgeable about technology, and are more comfortable using it than they are. Maggie Sokolik (2006) conducted a small-scale survey of thirty undergraduate non-native English learners to understand their perspective of instructor technology use in their classes. She found that 66% of the respondents (undergraduate students) reported they believed their teachers knew less about the Internet and technology than they did. These students also noted that their teachers were more knowledgeable about their field than the students. Additional studies have shown that teachers often share this sentiment. Instructors feeling inferior to their students often avoid integrating technology in the classroom or assigning out of class work. An explanation for this phenomenon is: saving-face as a way to maintain a hierarchical structure in the classroom. Timothy Teo argued students’ opinions of technology use in language teaching could be influenced by their teachers’ negative or positive attitudes (as cited in Maftoon & Shahini, 2012, p. 20).

In a qualitative study of Puerto Rican pre- and in-service language teachers, Nancy Velazques-Torres (2006) found that “the participants who have completed their degrees in the last 5 years [between 2000-2005] feel more comfortable with computers than those who did over 15 years ago [circa 1990]. Nevertheless, they still did not feel prepared to integrate the emerging technologies into their language lessons” (p. 6). First of all, novice teachers are still learning to be teachers – as in they need to become familiar with the management of all aspects of the classroom (e.g. behavior, curriculum development and implementation, etc.) and understand



institutional requirements. Secondly, many teachers need time to experiment with the various methods and approaches they previously observed or learned about in their training. Finally, some still lack the motivation, time, equipment, or skills to be able to incorporate technology into their repertoire.

### *Technology Usage*

“Teachers’ computer acceptance is an important factor to the successful use of computers in education. Thus there is a need to examine the factors affecting teachers’ computer use and its implications to teachers professional development strategies” (Kumar, Rose, D’Silva, 2008). Recent research (as cited in Ertmer & Ottenbreit-Leftwich, 2010) further suggested a correlation between an increase in educators’ personal and professional technology use and computer use for instructional purposes. As part of Miles Turnbull and Geoff Lawrence’s (2002) study of 274 French Second Language (FSL) teachers across Canada, they found that 37% of the respondents reported using a personal computer for one to three hours per week with word processing, email and Internet as the top three applications. The study also found that 58% of the respondents used computers in their FSL teaching. However, this reflected that almost half of the reported users in teaching did not use computers in their personal lives. Of the reported 41% that did not use computers in FSL they cited lack of access, knowledge of technology integration, and evidence of effectiveness, along with the belief that computers took too much time.

Ertmer & Ottenbreit-Leftwich (2010) recounted data from studies exemplifying use is more teacher-centered, “low-level” such as instructional material with little interaction or “facilitate student learning” through computers to assist with written or research homework, practice, or other administrative tasks, such as checking grades online (p. 256). “High-level”

uses of technology tend to be more student-centered (p. 262). In terms of technology, student-centered learning has been described by Ted McCain as “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” (as cited in Ertmer et. al. 2012, p. 424). As part of the journey to integrate more meaningful, student-centered learning, teachers need to possess a “strong self-efficacy” (Ertmer & Ottenbreit-Leftwich, 2010) to stay current with technology tools and pedagogical concerns. Researchers further suggested that time is important for both “digital natives” and “digital immigrants”/ novice and experienced teachers to build confidence and familiarity (Meskill, et al., 2002; Sokolik, 2006).

### *Technology Training*

In addition to the necessary infrastructure and equipment (including hardware and software), educator training has been found to be an important investment (Warschauer & Meskill, 2000). As technology keeps advancing, some educators and administrators feel left behind. Campus Computing Project’s 2013 Survey of 451 senior technology information officers and officials at U.S. colleges found that assisting faculty use and integration of technology was a top priority for the next two to three years (Green, 2013). However, providing training takes time, money and know-how.

It is well cited in literature that while individual comfort with technology is a factor in technology integration; instructors need additional training in technology tools themselves as well as pedagogical purposes for its integration into language learning (Warschauer 2002; Ertmer & Ottenbreit-Leftwich, 2010; Richards, 2011; Motteram, 2013; Pour, 2013). Researchers have argued that professional development at both the pre-service and in-service levels is necessary.

(Metskill, Mossop, DiAngelo, & Pasquale, 2002; Emert & Ottenbreit-Leftwich, 2010; & Kim, Rueckert, Kim, & Seo, 2013).

As vividly apparent in the literature, teacher training has emerged as fundamental to the success or failure of technology integration and CALL to language learning. Researchers have indicated that many TESOL (Teaching English to Speakers of Other Languages) graduate and undergraduate programs do not include adequate instruction of technology integration (Valzquez-Torres, 2006). Philip Hubbard (2008) suggested “there is evidence that language teachers are leaving their certification and degree programs with little or nothing in the way of formal training in the use of technology in language training” (p. 176). Hubbard further offered seven possible explanations as to why teacher training programs are not drawing short on adequate pre-service training: 1. Inertia (maintaining status quo); 2. Ignorance; 3. Insufficient time; 4. Insufficient infrastructure; 5. Insufficient standards; 6. Lack of established methodology; and 7. Lack of experienced, knowledgeable educators (pp. 177-178). Students completing technology training as part of their TESOL MA program at California State University, Los Angeles, reported the “know-how” was an added benefit to their job search in a very competitive market (Snow, 2005, p. 266).

Once a language educator graduates with technology training and skills, it is a never-ending process to stay current. In some institutions, technology is mandated and teachers are forced to use them, and play catch-up in the learning process. While pre-service training can be controlled by the program objectives, in-service training might not be as successful, if it is not required or compensated (Hubbard, 2008). Miles Turnbull and Geoff Lawrence’s (2002) study of Canadian K-12 schools found that only a small number of their participants (FSL teachers) received technology training from their institutions. Even fewer respondents reported that they

taught themselves, paid for outside training, or learned from colleagues, friends, family members, or students.

In addition to staying current in the tools available, another challenge educators face has been understanding the vast varieties of devices, especially if students are using their own devices (Kukulska-Hume, 2006). Gone are the days of Apple's Macintosh and Microsoft Operating Systems as the main distinction between computer users. Today, the expanding mobile device market is making it more difficult for educators to stay current on features and limitations of various devices, platforms, and operating systems. The use of mobile devices is still in its infancy, and possibilities for the future are endless.

The literature notes that there are various approaches to teacher training and professional development in regards to technology tools for language teaching.

Teacher learning need not be restricted to the classroom where one teaches. Teachers certainly learn within their classrooms – from themselves while teaching and from students while learning. However, teachers are situated in a variety of other opportunities in which learning takes place: in-service, workshops, structured courses, faculty and district meetings, and school-based professional conversations (Wenzlaff & Wieseman, 2004, p. 113).

For some, it begins with an overview course, multiple classes / projects, or specific in-depth training on a particular tool or practice, perhaps in a classroom with a lecture, demonstration, or workshop. A growing source of training has been found online, as it can offer cost-efficient ways to provide courses or specific information about a certain topic; and lends well to self-directed learning patterns. Collaboration from friends and colleagues, or in “discourse communities” (Putnam & Borko, 2000), has become another major source of training and idea

exchanges. Learning research shows that knowledge can be socially constructed (Larsen-Freeman & Anderson, 2011; Brown, 2007; Wenzlaff & Wieseman, 2004; & Putnam & Borko, 2000). Especially for experienced professionals, the discourse community provides for intellectual exchange during professional development settings. Modeling is one method in which training occurs, and can be done in a classroom setting, online or through collaboration. Oftentimes, self-acquisition of technology skills is useful, as too much saturation or too little information can be over/underwhelming to the teacher. Some of the literature has suggested a mixed approach where basics are taught explicitly with time to practice and then further exploration via online resources or self-study.

There is a growing body of literature that offers teachers resources in two dominant categories. The first category consists of instructional reference material, which appears in several versions. There is an extensive collection of training materials and resources available in print and online. These articles, help forums, digital videos, and books instruct teachers about the merits of these different forms as well as suggest how to incorporate them into their repertoire. Some materials have been produced by textbook authors, researchers, teachers, and publishing companies. Creators and inventors of certain products and technology tools have designed training resources as well, or ways to access help. Additionally, institutions and departments have often offered design training and development materials, in a digital format or in a face-to-face session. Perhaps one of the fastest growing areas for resources are those that have been created by and for a community of teachers – including website forums / discussion boards, and a plethora of diverse videos (especially available on YouTube) and podcasts. The second category of literature is based on studies and reports about specific technology tools.

These scholarly reports have documented the effectiveness, outcomes, benefits, and criticism of individual or combined technology tools used in language teaching.

### *Pedagogical Training*

“Above all else, the language profession must move beyond a simple computer functional competence (knowing how to use the tools) toward both a critical competence (realizing what the tools are good for) and then, finally to a rhetorical competence (understanding how these tools will help transform the learning environment)” (Blake, 2013). Therefore, it has become imperative for instructors to have a solid foundation of various language teaching approaches and methods (similar to those discussed above), sociocultural perspectives of language learning, and SLA theories. Understanding language learning and the methodologies are important if teachers are going to effectively use methodologies and develop material (Gass, 2013, p. 2). Some of the benefits of language learning technology have been rooted in SLA theories. Researchers have reported affordances that technology can offer to second and foreign language instruction; including learner autonomy, collaboration, community building, motivation, reduced affective filter, interaction with authentic resources, realized acquisition, identity, and personal development, etc.

“Teachers should always remember that in language learning, no particular technology is superior to any other tool; it is all in the way the activities are implemented to engage and foster the student’s own sense of agency” (Blake, 2013, p. xvii). Furthermore, the plethora of options can leave instructors questioning pedagogically sound reasons for implementing technology into instruction, as opposed to utilizing technology simply because it is available. Graham Stanley (2013) called this decision making process “a principled approach.” This is not a localized

sentiment to North America. The United Nations Educational, Scientific, and Cultural Organization (UNESCO) Institute for Information Technology in Education (2004) stated:

The positive affordances of ICTs (Information & Communication Technologies) in FLT / FLL (foreign language teaching / foreign language learning) have been recognised in most educational contexts; the technology and materials are available, but ongoing training is essential if we are to reap the benefits of the rich learning environment. As training and education become increasingly time and place independent, new models must be found to integrate the new media into a principled approach to integrate the new media into a principled approach to teaching and learning, which enriches and supplements traditional materials and well-tried delivery systems in existing institutions (p. 7).

### *Time*

Time has also been cited as being a contributing factor as to how teachers integrate or shun technology integration. One way to strengthen the teachers' skills and confidence with technology is to provide "time to play with the technology" (Bridget Somekh, 2008, as cited in Ertmer & Ottenbreit-Leftwich, 2010, p. 261). In addition to dedicated training time, researchers have reported that once teachers have the necessary skills, they need time to be able to make practical applications of the tools into their teaching. Oftentimes, those who are underprepared are using the tools ineffectively. As there are a myriad of new tools and applications, technology integration takes time, even for a skilled instructor. Software / application updates provide new features or fix bugs; however, there is also a learning curve to use these tools. While some administrative tools add to an instructor's efficiency, there have also been reported downsides (e.g. information loss) should they fail. Additionally, when learners are using a hybrid or

blended class environment (i.e. combining the traditional face-to-face classroom with an online environment), the teacher's time investment becomes a critical component for feedback, accessibility, and interaction with the learners. Increased accessibility corresponds to some educators feeling like the workday never ends. Finally, creating meaningful technology lessons or activities often take more time to develop than a traditional lesson. Finding the appropriate resources, adapting or creating new material, testing technology, and having a "plan B" for when the technology does not work all require time commitments.

### **Survey of Technology Tools Used in Post Secondary Language Education**

In addition to changing needs of the learners, technology has also ushered in additional applications to enhance the educational environment through administration, communication, instruction, engagement, connecting students with authentic resources, assessment, and evaluation of language learning. Some of the new resources are designed with language learning in mind (CALL and MALL), while others use applications designed for other purposes (Computer Mediated Communication – CMC, gaming, virtual worlds, word processing, Internet, etc.). In a world of constant technological changes, instructors are faced with adapting, creating, and searching for new material with meaningful content. Whether teachers are digital natives or digital immigrants, they must make choices that determine what and how technology is integrated into their teaching, in a face-to-face and/or online environment. As previously mentioned, there is extensive SLA research to support the use of various forms of present-day technology tools.

#### *Course Management Systems (CMS) / Learning Management Systems (LMS)*

CMS or LMS (e.g. Moodle, Desire2Learn, BlackBoard) are software applications to foster e-learning by mostly administrative means. Features of CMS / LMS are largely



managerial, as in they allow teachers to organize and distribute teaching materials and resources; report grades, track progress, and provide feedback; serve as a vehicle for assignment collection; etc. However, with the exception for facilitating learner engagement through emails or discussion boards / forums, these systems are mostly teacher centered and provide little interaction between students. Therefore, many of the functions of CMS / LMS are teacher centered, as they present instructional or administrative information. Conversely, they offer the teacher efficient ways to connect with their students, as the systems are accessible via the Internet or other networked connections.

### *Computer Mediated Communication (CMC)*

As described above, CMC facilitates communication via two or more electronic devices (interlocutors using pragmatic rules such as turn-taking behaviors). Basically, it has moved face-to-face and handwritten correspondences into the digital age. As technology keeps progressing the scope of this field keeps increasing. However, there still exist two categories within CMC. Synchronous applications include those interactions, which are simultaneous such as instant messaging, chatrooms, telephoning, Voice over Internet Protocol (VoIP) and video conferencing. Asynchronous methods include email, discussion boards / forums, listservs, blogs, wikis, and RSS feeds, are also able to allow users to “publish” work. Additionally, as technology advances, these tools have become more readily available, less expensive, and operate through expanding options of computers and mobile devices. The future of CMC also includes more integration with artificial intelligence in the form of voice recognizing software (which can also analyze learners’ speech) and chatterbots (i.e. Apple’s Siri). Successful integration of CMC tools in language teaching can create a more student centered learning environment.

There has been a burgeoning number of studies on the various CMC tools. However, since social media falls under the umbrella of CMC, it has created a whole new area for research studies related to language learning through these tools. Carla Meskill and Joy Quah claimed that “the bulk of the research data is comprised of transcripts of online interactions with three foregrounded foci emerging: focus on the environment, focus on the socio/affective outcomes and focus on pedagogy” (2012, p. 51).

### *The Internet and World Wide Web*

Researchers have reported that the introduction of the Internet has been perhaps one of the greatest tools to language learning. Not only has the Internet opened an infinite number of possibilities on the World Wide Web, it has also created global connections that were previously not possible. In addition to a venue for connecting with other humans, the Internet has helped foster learning in new ways. Webquests are activities where learners use the Internet to search the World Wide Web in order to solve a specific task. Activities address target vocabulary and inductive syntax imbedded in real-world sources. Additionally, learners explore content and culture in the target language. Research emulates an authentic native speaker task. This task-based and content-based learning activity focuses on reading (or listening). Writing can be added by answering questions, creating a report, and speaking can be supported by working in pairs or small groups.

### *Web 2.0*

Web 2.0 has advanced the notion of the World Wide Web for just receiving information from static sites to creating spaces for users to interact and collaborate with each other. Social networking has become its primary function. It has ushered in social media, creating virtual communities and forums for both synchronous and asynchronous forms of CMC to engage in

language learning. Additionally, it allows users to build joint documents and share digital information. As mobile devices have become less expensive and more commonplace, Web 2.0 tools are becoming more widely available to language teachers and learners. Furthermore, “the wide availability of Web 2.0 tools has made access to powerful communication and collaboration tools almost a ‘non-issue’ for any teacher who has Internet access in his/her classroom” (Ertmer, et. al., 2012, p. 424). Unfortunately, as both MALL and Web 2.0 are still in their infancy, there are not many empirical studies on these technologies; however, their use is based on SLA theoretical paradigms (Jee, 2011). Common Web 2.0 tools include: blogs (e.g. Blogger), microblogs (e.g. Twitter), audioblogs, vlogging / video blogging (e.g. widely available on YouTube), wikis, social networking sites (e.g. Facebook, LinkedIn), and other sharing applications (e.g. Flickr, Glogster, GoogleDocs, WordPress), to name a few.

### *Digital Recordings*

Audio and video recording allows students to collect new information, and also serve as a valuable self-assessment tool. Students can create digital recordings for the purpose of gathering new information, role-playing, practicing pronunciation, building fluency, and obtaining language samples for further analysis. Additionally, video recording provides learners a chance to become aware of non-verbal elements that accompany their own speech. Digital recording also offers students the opportunity to re-record as many times as they would like to keep perfecting their product. The finished product can be used for a formal assessment, benchmark piece, or added to a portfolio. Furthermore, the accessibility of digital recordings and videos allow students opportunities to explore the language with many linguistic, paralinguistic, and sociocultural benefits. The World Wide Web, Web 2.0, and other digital devices / tools have helped to stimulate the accessibility of audio files (e.g. music, electronic books, sound

recordings, ALM exercises, news / media resources, etc.), podcasts and videos to provide authentic learning experiences.

### *Digital Storytelling*

In digital storytelling, learners have an opportunity to create a multi-media presentation by capturing and sharing acquired information or to create original pieces integrating different forms of media and practicing various linguistic elements. Judith Rance-Roney described digital storytelling as “a 2-5 minute movie-like digital production that learners create using one of several readily available software programs” (2008, p. 29). She cautioned, “digital storytelling itself is not the goal but only one of several vehicles through which students can practice language and showcase what they can do with it (p. 29). Besides developing language skills, learners are enhancing presentation and computer skills. This type of activity can help students move through the process of brainstorming, researching, drafting, editing, recording, and revising phases to allow for learning through feedback. Depending on the technology used, students can create formal presentations better suited for face-to-face environments or shared in an online environment. Building on community, collaboration, and communication, the product can be created individually, in pairs, or in small groups. Finally, projects like these allow students to take ownership of their work, have a product that can be placed in a portfolio, and give them a voice in a new language. In sum, digital storytelling is very student centered.

### *Games and Virtual Realities*

“Classroom based games motivate students to engage in L2 practice with exercises involving dice, cards, and other props that stimulate thinking and provoke pleasure and/or productive competition” (Blake, 2013, p. 165). While games found online are not designed the same (different number of users, tasks, rewards, etc.), they allow for play. “The cognitive or

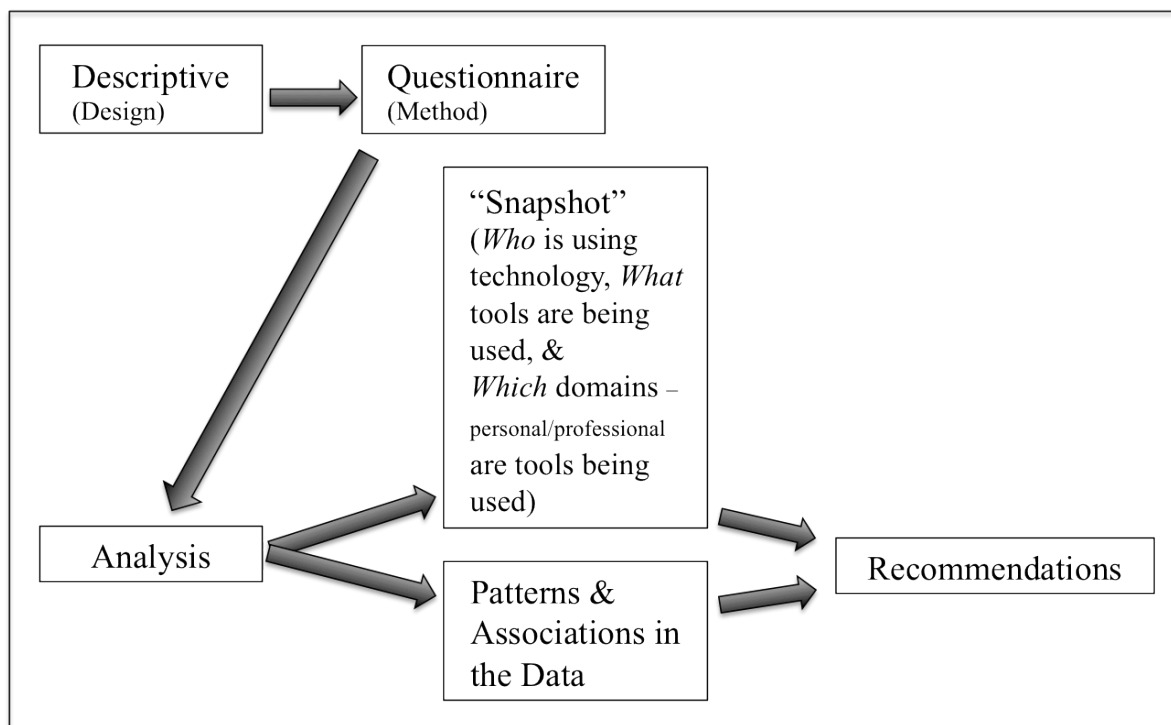
psychological benefits of play are certainly real, whereas the potential risks are minimized or even nonexistent in the play environment” (p. 166). Furthermore, play helps create a more “student-centered, student-driven classroom” (p.174). Since the Net Generation spends a large amount of time engaged in videogames, researchers and educators are investigating the connections between these online environments and language learning (Goodwin-Jones, 2005).

Another emerging area in the field of language instruction is *Gamification*, where principles of games are applied to language learning. Research often cites the work of the Russian psychologist Lev Vygotsky. However, there have been games designed specifically for language instruction, and others that were intended for native speakers but have become popular with language learners. Virtual realities (e.g. Second Life) provide users an experience in which they are able to “live” in a virtual world and communicate / interact through an avatar with others. This is also supported through CMC, and there are scores of other online resources to assist users in the game. “Whilst not specifically designed as a language-learning resource, it does nevertheless provide the potential for interaction within a realistic, social, immersive setting that has the capacity to support learners in their attempts to construct meaning” (Kervin & Derwianka, 2011, p. 332). While SLA researcher perspectives on the language learner’s benefits from virtual games vary (Meskill & Quah, 2012), “for many students, the advantage lies in being able to transfer the linguistic skills acquired in the virtual world to the real one” (Levy, 2009, p. 777).

## CHAPTER III: METHODS

For this research study, I followed a descriptive design to investigate and capture post secondary language instructors' self-reported behaviors and opinions about technology integration. The descriptive design of this study was well suited to yield a portrait or snapshot of the current language educators (including some of their beliefs), what technologies they were currently using, and which domains they were using technology. A close-ended survey (with occasional optional "other" responses) was developed as the instrument for data collection.

Figure 1 depicts the study design.



**Figure 1. Study Design**

As this was a survey based on technology, it seemed appropriate to develop a brief (approximately 10-minute), four-part questionnaire created using *Qualtrics Survey Software* and distribute it through email, targeting language instructors in domestic post secondary institutions

with language teaching responsibilities. I set specific criteria for the participant in the study, and this information was included in the email inviting involvement in the study. Specifically: *be a faculty member or graduate student with language teaching responsibilities at the University of Colorado Boulder or a language educator affiliated with another post secondary / higher-education institution or program. Language was defined as a second / foreign language or bilingual program: i.e. English as a Second Language – ESL, French as a Foreign Language, Bilingual English-Spanish, etc. Computer languages (i.e., C++) and sign languages were excluded.* The Institutional Review Board reviewed this study.

Using a digital survey as the instrument for data collection allowed for a wider population pool of participants meeting the above stated criteria than utilizing focus groups or individual interviews. Capturing identifiable information was irrelevant as follow up discussions were not necessary with the participants. Additionally, the survey was completely anonymous<sup>3</sup>. Therefore, participants were free to answer openly and honestly without coercion, posing no adverse influences on the data. This study did not involve vulnerable populations, and assumed a minimum age of a graduate student (at least age 20). Overall, the digital survey was of minimal risk to the participants. Following Institutional Review Board protocol, participants received an informed consent statement and were free to withdraw from the survey at any point without adverse reaction. To help keep the data clean, data from partially completed surveys were not recorded for analysis. While a preliminary study (i.e. pilot or feasibility) was not conducted, a draft of the questionnaire was tested by a few colleagues meeting the participation criteria to ensure that the survey was user-friendly and produced clear useable data for analysis. (The data recorded from this group was not included in the actual analysis.)

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<sup>3</sup> *Qualtrics Survey Software* assigned a response code for each completed survey, and did not identify the participant's IP address.

A minimum population of 20 (fully completed surveys / recorded responses) was desired; however, due to the nature of the distribution it was possible that more post secondary language instructors would participate, and an exact number of invited participants was unknown. In the end, 22 completed responses were collected between May 6 and May 13, 2014. Although 22 might seem to be a rather small population size, it was adequate to analyze and represent trends in the data. In the literature, studies examining different aspects of technology in language instruction had smaller population sizes. A study by Meskill, Mossop, DiAngelo and Pasquale (2002) examined the use of technology in K-8 teachers, both experienced and novice, and had only eight participants. While more completed questionnaires would have naturally afforded a larger amount of data, this study could provide a preliminary basis for a more expansive survey of this nature or identify potential areas for future qualitative or empirical studies.

### **Survey Questions and Data Analysis**

The close-ended questions were carefully designed from research, exploration of various devices / applications / programs, and consultation with others to be able to capture data to answer the four guiding research questions. The questionnaire (available in Appendix 2) consisted of four parts:

*Part 1: Biographical & Institutional Information* – In order to discover who the current language teachers are collectively, participants provided answers to 9 questions. These questions provided variables for which samples could be examined, e.g., age and total number of years teaching language (independent variables). These two independent variables were important for answering the first guiding research questions: *Does the length of language teaching experience or the instructor's age relate to his / her use of technology in personal and professional domains?*



Instead of asking for a job title (e.g. professor, instructor, lecturer, teaching assistant, etc.), it was more logical to ask about the number of years teaching language. (i.e. A graduate student teaching assistant might have 10 or more years of language teaching experience and a particular lecturer may only have three years of experience.) Based on the concepts of digital natives and digital immigrants, age compared with the amount of personal / professional use of technology provided a way to analyze the idea of who used technology and in which domains. Both age and teaching experience yield data to support and refute documented beliefs that novice teachers do not possess necessary training / skills to integrate technology or have enough “self-efficacy” (Etmer & Ottenbreit-Leftwich, 2010) in their own teaching abilities. In terms of defining the number of years that qualify a teacher as *novice* and *experienced* is subject of debate. Emphasis is typically placed on the first year of instruction. For the purposes of this study, the data based on teaching experience allowed me to group the participants into three groups: *novice* (possessing three years or less of experience), *experienced 1* (having more than three years to 10 years in the field), and *experienced 2* (having 11 or more years of experience). Three groups were selected to specifically look at the difference between those teachers with more experience (11 years or more) and those with experience in the field (for 3+-10 years).

As for grouping participants according to age, I classified participants by ten-year spans. Since there is no definitive start and end year for the Net Generation (a.k.a. Millennials, Generation Y), I decided to categorize participants reporting their age as 20-29 as members (born 1984/5 – 1994/5) in one group, and those reporting age 40 and above in a second group. The participants reporting their age between 30-39 were placed in a group by themselves because they comprised the largest number of participants per 10 year age bracket, and were classified

into *experienced 1* or *experienced 2* groups. Other Part 1 questions were used as independent variables when examined in relationship with responses in Parts 2, 3, and 4.

*Part 2: Personal Technology Use* – Technology tools used in the personal domain is one indication of the teachers’ skills, which are a necessary foundation (Ertmer & Ottenbreit-Leftwich, 2010). Participants answered three questions describing the personal devices they owned (e.g. computer, smartphone, or other mobile device). If a positive response was recorded, they were asked if that device was used for professional purposes. Additionally, they were asked if in their personal life they used 20 different functions of the devices. Data from these questions provided insight to the teachers’ personal use when compared with demographics in Part 1 and professional use in Part 3.

*Part 3: Technology Use in Teaching* – In addition to having the knowledge of technology tools themselves, teachers need to possess confidence and command of which tools provide appropriate pedagogical support for learning (Ertmer & Ottenbreit-Leftwich, 2010). Participants are asked to report on their professional use of technology, including delivery of instructional content, use of a CMS / LMS, professional website and content, and types of technology resources used in the face-to-face or blended classroom environments.

Although teachers, especially digital natives, might possess technology skills, Ertmer & Otterbreit-Leftwich (2010) wrote that many teachers only use “Low-Level,” technology, that is the types of tools used are not very supportive of student centered learning, rather “support traditional, teacher-directed instruction... or focus on the development of students’ technical skills” (p. 256).

Although technology is used in instructional delivery, much of the technology use is still teacher-centered. While necessary, teacher-centered delivery of content often does not require

students to interact with the material. Methods such as Clickers (portable devices that allow student participants to interact with the instructor in real time during a face-to-face class) and Flipped Classroom Material (instructional content presented to the student prior to discussion or instruction in the face-to-face classroom) can engage students at either a “low” or “high” level. For example, if Clickers are used for attendance taking purpose, then the tool is used more for administrative and teacher-centered purposes. However, if the learners are interacting with the instructor through quizzes or surveys, the instructor is immediately able to gauge understanding and proceed accordingly, which could result in a more student-centered learning experience. Similarly, if material presented in a Flipped Classroom does not require the students to interface with the resources other than absorbing content through a video, audio, or text passage, the instructional delivery is again a low level of technology usage. Table 3 depicts the use of technology in instructional delivery.

**Table 3: *Instructional Content Delivery***

Teacher Centered	Student Centered	Teacher or Student Centered (depending on usage)
Audio	Mobile device, computer, or smartphone	Clickers
Chalkboard or dry erase board		Flipped Classroom (students watch tutorials / read instructional content prior to class)
Digital presentations		
Overhead projector with transparencies		
Videos		

While providing efficiency for instructors and increased accessibility to resources for learners, CMS / LMS functions are mostly teacher-centered. Core to the concept of CMS / LMS,

these online systems allow instructors to provide a visible space for class administration, enabling students with controlled access to receive course materials, submit assignments, see grades and/or attendance, which are all low level uses of technology. While teachers are afforded other benefits of the systems, such as ability to check for plagiarism and act as assessment tools (surveys, quizzes), these functions are largely teacher-centered. However, if a teacher uses features enabling interaction between students or students and other speakers of the language, such as discussion boards / chat rooms, class blogs, and gaming, the CMS / LMS becomes more student-centered. Table 4 illustrates the various functions of a CSM (e.g. Desire2Learn) in terms of teacher and student centeredness.

**Table 4: CMS / LMS Functions**

Teacher Centered	Student Centered	Teacher & Student Centered (depending on usage)
Attendance tracking *	Discussion boards or chat rooms	Quizzes *
Check for plagiarism *	Gaming	Surveys *
Dropbox for students to submit assignments *	Unlocking features (students complete certain tasks or receive certain scores to receive additional assignments or rewards) *	
Grade book *		
Post homework *		
Post optional reading, video, or audio files *		
Post pre-class assignments (flipped classroom materials) *		

\* Notes the function as administrative or instructional delivery in nature.

Relationships of the data from Part 2 and 3 provide answers to the second and third guiding research questions.

Guiding research question 2: *Are there associations between the instructors' personal use of technology on the one hand and their professional uses of technology on the other?*

Guiding research question 3: *Are there associations between the types of technology used across instructors' professional and personal domains?*

To compare responses to questions about tool functions asked in Part 2 with those asked in Part 3, there had to be a connection between the applications. Therefore, each tool function was classified into one of six categories based on its purpose. The seven categories include: administrative, collaborative, communication, information, multimedia, social media, and a miscellaneous category of other. While some tools differed between the personal and professional domains, this categorization system allows for transfer of similar purpose. Table 5 shows the categorization of the tools in both domains by the seven categories of purpose.

**Table 5: Tool Functions in Personal and Professional Domains**

Type of Function	Personal Domain	Professional Domain		
	<i>Personal Use Functions</i>	<i>Professional Use Functions</i>	<i>Instructional Delivery</i>	<i>CSM or Professional Website</i>
Administrative	Calculator			Grade Book
	Calendar or reminders (e.g. appointments, tasks, etc.)			Attendance tracking
	Clock (including alarm clock, stopwatch, timer, etc.)			Check for plagiarism
				Dropbox for students to submit assignments
				Post homework assignments
				Quizzes
				Surveys

Collaborative	Access, create, share, edit, or retrieve documents stored on the cloud (e.g. Dropbox, Evernote, Google Docs, etc.)	Shared documents (students collaborate to create documents / presentations)		
		Wikis		
Communication	Email	Email		
	Telephone			
	Video chats (e.g. Facetime, Google Hangout, ooVoo, Skype, etc.)	Voice over IP applications (e.g. Skype, ooVoo, etc.)		
Information	Internet browsing or searches	WebQuests (students find information on the Internet)		
	News or weather source	Online dictionaries / concordancers		Optional assignments / readings/ materials
	Specific programs or applications (incl. business, GPS or navigation, graphic design, food & drink, finance, health & fitness, hobby, home & garden, kids, lifestyle, medical, reference, shopping, sports, travel, etc.)	Language specific programs		
Multimedia	Audio recorder	Student audio / video recordings		
	Music (e.g. GarageBand, mp3 player, podcasts, web radio, etc.)	Audio files	Audio	
	Photo or video (incl. camera, editing, sharing, storage)	Digital storytelling (e.g. Camtasia Studio, iMovie, PowerPoint with voice over, VoiceThread, etc.)		
	Video watching or sharing (e.g. Hulu, Netflix, TED, YouTube, etc.)	Videos / other digital images	Flipped classroom (students watch tutorials / read instructional content prior to class)	Post pre-class assignments (flipped classroom materials)
		Podcasts / videocasts	Videos	Post required videos or audio files
		Audio labs		
		Repetitive audio drills		

Social Media	Blogging	Blogs (audio or text)		
	Instant messages, chatrooms, texting	Bulletin or discussion boards		Discussion boards or chatrooms
	Social media (e.g. Facebook, Foursquare, Instagram, LinkedIn, Pinterest, Twitter, etc.)	Social Media (e.g. Facebook, Twitter, etc.)		
Other	Documents or presentations (e.g. word processing, spreadsheets, presentations)	Word processing	Digital presentations (e.g. Keynote, PowerPoint, Prezi, etc.)	
	Games	Digital games (designed for language pedagogy)		Gaming
		Digital games (other)		Games (or links to games)
		Virtual worlds (e.g. Second Life, Twinity, etc.)		Unlocking features (students complete certain tasks or receive certain scores to receive additional assignments or rewards)
		Computer labs		
	Reading			Required readings

Data reported on Table 5 was then further analyzed to determine the usage level of each category by the average number of participants reporting. A four-tiered usage system (High Use = 17-22 participants, Medium-High Use = 11-16 participants, Medium-Low Use = 6-10 participants, and Low Use = 0-5 participants) was used to compare the six categories across the two domains.

*Part 4: Opinions About Technology Use* – Participants evaluated 12 statements on a Likert scale specifying their level of agreement or disagreement. Ertmer & Ottenbreit-Leftwich (2010) examined the teachers as an agent of technology integration and their belief systems played an important role in “leveraging technology resources as meaningful pedagogical tools” (p. 255). The twelve questions served as variables to examine relationships across data from the other three parts. Part 4 questions are important variables to answer the fourth guiding question:

*What do instructors view as constraints or support for their use of technology in their language teaching practices?*



## CHAPTER IV: FINDINGS

The findings are organized by: Participants, Technology Usage, Technology Tools, Instructional Content Delivery and CMS / LMS, Comfort and Interest Perceptions, and finally Technology Training.

**Participants**

Overall, there were 25 participants that began the online survey, with 22 fully completing the survey. Therefore, data used for the analysis were produced from the 22 participants. The majority of the respondents (18 out of 20) reported teaching at a College or University. Only two respondents (out of 20) reported teaching private clients. Of the 18 participants at a College or University, four taught in a Foreign Language Program (i.e. Modern Languages), 13 taught at an Intensive English Program (IEP), one taught in a Second Language Program (e.g. English as a Second Language, Spanish as a Second Language), none taught in a Teacher Training/Development Program, and one reported an undefined *Other*. Language instructors reported (out of 20) the length of one instructional session / period: 14 in a 5-8 week session, seven in a 9-16 week session, and one with open enrollment (i.e. no start or end date).

There was a diversity of languages present within the study group. Although there were five first languages (L1) reported (19 out of 22 participants), the majority of the participants declared English as their L1. Several of the instructors reported teaching more than one language, including Second Languages (L2). Table 6 shows teacher languages, both their mother tongue and the language in which they instruct.

**Table 6: Teacher Language**

Language	First Language	Language of Instruction
<i>Arabic</i>	2	1
<i>Chinese</i>	1	0
<i>English</i>	14	16
<i>French</i>	0	0
<i>German</i>	0	1
<i>Italian</i>	0	0
<i>Japanese</i>	1	2
<i>Korean</i>	0	0
<i>Russian</i>	0	2
<i>Spanish</i>	1	3
<i>Other</i>	0	2
<i>Other: Czech</i>	0	1
<b>Total</b>	<b>19</b>	<b>28</b>

The survey population was comprised of participants ranging in age from 20 to 60+. Since the participants' exact age was not asked, the average age of the participants in the population or samples is unknown. There was no clear correspondence between the participants' age and their experience level. For example, not all of the 20-29 aged participants were novice teachers, or all of the respondents in the 40+ age group fit into the experienced 2 category. Table 7 depicts the participants by age, and Table 8 shows participants categorized by the number of years of language teaching experience.

**Table 7: Participants' Age**

Age	Responses	%
20-29 Years Old	5	23%
30-39 Years Old	9	41%
40 + Years Old	8	36%
<i>Total</i>	<i>22</i>	<i>100%</i>

**Table 8: Years of Language Teaching Experience**

Experience	Responses	%	Average Experience in years
0-3 Years ( <i>Novice</i> )	4	18%	$\bar{x} = 2.125$
4-10 Years ( <i>Experienced 1</i> )	9	41%	$\bar{x} = 6.056$
11+ Years ( <i>Experienced 2</i> )	9	41%	$\bar{x} = 18.667$
<i>Total</i>	<i>22</i>	<i>100%</i>	$\mu = 10.5$

### Technology Usage

In terms of personal devices: 100% of the participants reported owning a personal computer (which 100% were also used for professional purposes); 86% (18 out of 21) reported owning a smartphone (e.g. Android, Blackberry, iPhone, Samsung, etc.); and 64% (14 out of 22) disclosed owning a tablet or other mobile device (e.g. Android, Google, iPad, Kindle, Microsoft, Nook, Samsung, etc.). Additionally, many of the respondents stated that they used their mobile devices (e.g. smartphones, tablets, etc.) for professional purposes.

### Technology Tools

Participants reported more use of technology tools in their personal life than for professional purposes. As previously stated, the various types of functions available on a technology device (e.g. computer, smartphone, tablet, etc.) or through a program, such as a CMS / LMS, were categorized into six purposes of functions: administrative, collaborative, communication, information, multimedia, social media, and other (including word processing and reading device). (Appendix C contains charts detailing the results of various tools grouped

by seven categories.) Table 9 illustrates how much each category was used by the participants in both personal and professional domains.

**Table 9: Use of Tool Functions Across Domains**

Type of Function	Personal Domain	Professional Domain
Administrative	High Use	Medium-Low Use
Collaborative	High Use	Low Use
Communication	High Use	Medium-High Use
Information	High Use	Medium-High Use
Multimedia	High Use	Medium-Low Use
Social Media	High Use	Low Use
Other	Medium-High Use	Medium-Low Use
<p>High Use = 17-22 participants            Medium-High Use = 11-16 participants            Medium-Low Use = 6-10 participants            Low Use = 0-5 participants</p>		

In the personal domain, participants across age groups and experience levels reported using the various functions and applications very highly. Some of the features that received 100% usage across the various sample groups included: email, Internet browsing, photo or video (including camera, editing, sharing, storage). The two features that received the least overall usage included blogging (14%) and games (57%). Within these two categories, the younger survey participants (20-29 age group) and those with with experience played more games and reported blogging more.

In contrast, comparable functions of technology devices used for professional purposes in teaching were used far less frequently. For example, while in the personal domain, instructors reported 95% usage of Internet browsing or searches and using it as a news or weather source, only 14% of the teachers reported using WebQuests (explained on the survey as *students find information on the Internet*) with their students. Similarly, 95% of the respondents reported

watching videos on their technology devices for personal use, and only 77% provided students with videos and other digital images in their professional domain.

Although 100% of the respondents reported using computers, only 59% used computer labs with their students. Likewise, 86% reported using the cloud to store and share personal documents, but only 32% had students use shared documents.

Instructors reported 100% using instant messages, chatrooms, and texting, and 91% utilizing popular social and professional social media sites in their personal life. However, only 9% reported using social media sites with their students.

### **Instructional Content Delivery and CMS / LMS**

Participants reported using various types of methods for delivering instructional content, with the majority reporting teacher-centered presentation methods. Table 10 presents the order in which teachers reported the method in which they present instruction (noting centeredness).

**Table 10: *Instructional Content Delivery***

Order	Delivery Method	Reporting (out of 22)
1	Chalkboard or dry erase board (teacher-centered)	22
2	Videos (teacher-centered)	21
3	Digital presentations (teacher-centered)	20
4	Audio (teacher-centered)	19
5	Mobile device, computer, or smartphone (student-centered)	18
6	Flipped classroom (either - depending on use)	8
7	Overhead projector with transparencies (teacher-centered)	3
8	Clickers (either - depending on use)	1

As described previously, CMS / LMS are typically very teacher-centered. Out of the entire survey population, only 14 of the 22 (64%) participants shared that they used a CMS / LMS. Of the possible uses of the systems, only three CMS / LMS users utilized student-centered

features (two using discussion boards or chat rooms, and one using gaming features). The most frequently used functions were as a grade book, a check for plagiarism, a location for students to submit work, and a space to post class related material.

### Comfort and Interest Perceptions

In terms of perceptions, teachers overall reported a rather neutral sense ( $\mu = 3.55$  on a scale of 5, with 1 being in complete agreement and 5 complete disagreement) towards the statement, “I find technology to be frustrating.” The 30-39 age group reported finding technology less frustrating than the other two age groups (followed by the 20-29 age group and finally the 40+ age group). When examining the experience levels, the novice group expressed the least amount of frustration ( $\bar{x} = 4.25$ ), followed by the experienced 1 group ( $\bar{x} = 4$ ), and finally experienced 2 group ( $\bar{x} = 3.11$ ). Table 11 illustrates the perceptions gauging participant frustration with technology.

**Table 11: Perception: I find technology to be frustrating.**

Population / Sample	Agree Completely	Somewhat Agree	Neutral	Somewhat Disagree	Disagree Completely	Total Responses	Mean*
Total Population	0	6	3	8	5	22	3.55
Age 20-29	0	1	1	2	1	5	3.6
Age 30-39	0	1	1	4	3	9	4
Age 40+	0	4	1	2	1	8	3
Novice	0	0	0	3	1	4	4.25
Experienced #1	0	1	1	4	3	9	4
Experienced #2	0	2	2	1	2	9	3.11
<i>Mean*</i>							
Agree Completely	1						
Somewhat Agree	2						
Neutral	3						
Somewhat Disagree	4						
Disagree Completely	5						

Although there are some mixed feelings about technology frustration, overall the instructors reported self-interest to learn new things by using technology ( $\mu = 1.73$ ). This was

supported in the various samples of the total population. Table 12 depicts the responses to the statement, “I like learning new things by using technology.”

**Table 12: Perception: I like learning new things by using technology.**

Population / Sample	Agree Completely	Somewhat Agree	Neutral	Somewhat Disagree	Disagree Completely	Total Responses	Mean*
Total Population	10	8	4	0	0	22	1.73
Age 20-29	2	2	1	0	0	5	1.8
Age 30-39	6	1	2	0	0	9	1.56
Age 40+	2	5	1	0	0	8	1.88
Novice	1	2	1	0	0	4	2.5
Experienced #1	6	1	2	0	0	9	1.56
Experienced #2	3	3	3	0	0	9	2
<i>Mean*</i>							
Agree Completely	1						
Somewhat Agree	2						
Neutral	3						
Somewhat Disagree	4						
Disagree Completely	5						

Finally, respondents reported fairly strong interest to incorporate more technology into their future teaching repertoire ( $\mu = 1.41$ ). Again, this remained consistent among the various sample groups. Table 13 presents the responses to the statement, “In the future, I would like to use more technology tools in my teaching.”

**Table 13: Perception: In the future, I would like to use more technology tools in my teaching.**

Population / Sample	Agree Completely	Somewhat Agree	Neutral	Somewhat Disagree	Disagree Completely	Total Responses	Mean*
Total Population	14	7	1	0	0	22	1.41
Age 20-29	3	2	0	0	0	5	1.4
Age 30-39	5	3	1	0	0	9	1.56
Age 40+	6	2	0	0	0	8	1.25
Novice	3	1	0	0	0	4	1.25
Experienced #1	5	3	1	0	0	9	1.56
Experienced #2	6	2	1	0	0	9	1.44
<i>Mean*</i>							
Agree Completely	1						
Somewhat Agree	2						
Neutral	3						
Somewhat Disagree	4						
Disagree Completely	5						

## Technology Training

In response to technology training questions, most of the respondents (82%, or 18 out of 22) reported receiving training through their department, program, or institution. Twelve participants (55%) also reported that they sought assistance from a colleague, and 12 participants (55%) conducted their own training by experimenting. Nine participants (41%) stated that they receive training by doing Internet or YouTube searches, which is a form of self-teaching. Even fewer reported receiving training at conferences (eight participants or 36%) and from family or friends (6 participants 27%). Only one participant (5%) reported in each of the following categories: Online learning modules (from MOOCs, software companies), an undefined *other*, and he/she did not receive or seek out any training (as reported by a 20 something year old novice teacher). None of the participants paid for additional training from other institutions. Table 14 illustrates the manners in which the participants reported receiving technology training.

**Table 14: *Where do you receive technology training?***

Rank	Answer	Total Response	%	Age 20-29	%	Age 30-39	%	Age 40 +	%	Novice	%	Experienced 1	%	Experienced 2	%
1	My department / program / institution	18	82%	4	80%	8	89%	6	71%	3	75%	8	89%	7	78%
2	Colleague	12	55%	2	40%	5	56%	5	71%	1	25%	5	56%	6	67%
2	Self (experiment)	12	55%	3	60%	6	67%	3	43%	2	50%	6	67%	4	44%
3	Internet or YouTube searches	9	41%	1	20%	4	44%	4	57%	1	25%	4	44%	4	44%
4	Conference	8	36%	1	20%	3	33%	4	57%	0	0%	3	33%	5	56%
5	Friend or family member	6	27%	1	20%	2	22%	3	43%	0	0%	2	22%	2	22%
6	Online modules (from MOOCs, software companies, etc.)	1	5%	0	0%	1	11%	0	0%	0	0%	1	11%	0	0%
6	Other	1	5%	0	0%	0	0%	1	14%	0	0%	0	0%	1	11%
6	I do not receive / seek out any training	1	5%	1	20%	0	0%	0	0%	1	25%	0	0%	0	0%
7	Other institution (I pay)	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
<i>Total Responses</i>		22		5		9		8		4		9		9	

In terms of perceptions related to technology training, the instructors responded fairly strongly that they would use more technology tools if they received more training ( $\mu = 1.77$ ). In examining the various samples, the youngest instructors (20-29,  $\bar{x} = 2.2$ ) and those with the least amount of experience (novice,  $\bar{x} = 2.25$ ) were the least likely to integrate more technology with



additional training. Conversely, the oldest (40+,  $\bar{x} = 1.38$ ) and the most experienced (experienced 2,  $\bar{x} = 1.67$ ) were the most likely groups to incorporate more technology if they had additional training. Table 15 presents the responses to the statement, “I would integrate more technology if I had more training.”

**Table 15: Perception: I would integrate more technology if I had more training.**

Population / Sample	Agree Completely	Somewhat Agree	Neutral	Somewhat Disagree	Disagree Completely	Total Responses	Mean*
Total Population	8	12	1	1	0	22	1.77
Age 20-29	1	3	0	1	0	5	2.2
Age 30-39	2	6	1	0	0	9	1.89
Age 40+	5	3	0	0	0	8	1.38
Novice	1	2	0	1	0	4	2.25
Experienced #1	2	6	1	0	0	9	1.89
Experienced #2	4	1	1	0	0	9	1.67
<i>Mean*</i>							
Agree Completely	1						
Somewhat Agree	2						
Neutral	3						
Somewhat Disagree	4						
Disagree Completely	5						

Overall, the respondents somewhat agreed with the notion that they received enough support, training, funding from their department, program, or institution ( $\mu = 2.41$ ). While this appeared be consistent among the various sample groups, the youngest (20-29,  $\bar{x} = 2$ ) and those with more than 3 years – 10 years of experience (experienced 1,  $\bar{x} = 2.22$ ) felt the most satisfaction with the technology services and funding provided by their employer. On the other hand, those over 40 ( $\bar{x} = 2.88$ ) and with the most experience (experienced 2,  $\bar{x} = 2.56$ ) reported a marginal difference of less satisfaction with institutional support. Table 16 depicts the responses to the statement, “I receive enough support (funding, IT assistance, training, etc.) from my institution / department to teach with technology.”

**Table 16: Perception: I receive enough support to teach with technology.**

Population / Sample	Agree Completely	Somewhat Agree	Neutral	Somewhat Disagree	Disagree Completely	Total Responses	Mean*
Total Population	4	7	9	2	0	22	2.41
Age 20-29	2	1	2	0	0	5	2
Age 30-39	2	3	4	0	0	9	2.22
Age 40+	0	3	3	2	0	8	2.88
Novice	1	1	2	0	0	4	2.25
Experienced #1	2	3	4	0	0	9	2.22
Experienced #2	1	4	4	1	0	0	2.56
<i>Mean*</i>							
Agree Completely	1						
Somewhat Agree	2						
Neutral	3						
Somewhat Disagree	4						
Disagree Completely	5						

Overall when it came to the perception of receiving new ideas from colleagues and/or friends, the respondents agreed fairly strongly ( $\mu = 1.59$ ). This seemed especially true among the 20-29 year old instructors ( $\bar{x} = 1.4$ ) and the novice teachers ( $\bar{x} = 1.5$ ). At the slightly lower end of the spectrum were the 30-39 age group ( $\bar{x} = 1.78$ ) and those with more than three to 10 years of experience (experienced 1,  $\bar{x} = 1.78$ ). Table 17 gives the responses to the statement, “I receive new ideas for using technology tools from colleagues / friends.”

**Table 17: Perception: I receive new ideas for using technology tools from colleagues / friends.**

Population / Sample	Agree Completely	Somewhat Agree	Neutral	Somewhat Disagree	Disagree Completely	Total Responses	Mean*
Total Population	11	9	2	0	0	22	1.59
Age 20-29	3	2	0	0	0	5	1.4
Age 30-39	3	5	1	0	0	9	1.78
Age 40+	5	2	1	0	0	8	1.5
Novice	2	2	0	0	0	4	1.5
Experienced #1	3	5	1	0	0	9	1.78
Experienced #2	4	1	1	0	0	9	1.67
<i>Mean*</i>							
Agree Completely	1						
Somewhat Agree	2						
Neutral	3						
Somewhat Disagree	4						
Disagree Completely	5						

Finally, the instructors accounted for their own search for new ideas or methods to integrate technology into their practice. Again, the all of the participants were in somewhat agreement that they take it upon themselves to investigate technology for professional use ( $\mu = 2.23$ ). Those most likely to initiate their own exploration were those who were the oldest (40+,  $\bar{x} = 2$ ) and those with more than 11 years of experience (experienced 2,  $\bar{x} = 2.11$ ). In contrast, the 20-29 age group ( $\bar{x} = 2.6$ ) and the novice group ( $\bar{x} = 2.25$ ) were marginally less likely to seek new ideas or methods on their own. Table 18 illustrates the responses to the statement, “I search out new ideas / ways to teach with technology on my own.”

**Table 18: Perception: I search out new ideas / ways to teach with technology on my own.**

Population / Sample	Agree Completely	Somewhat Agree	Neutral	Somewhat Disagree	Disagree Completely	Total Responses	Mean*
Total Population	6	10	1	5	0	22	2.23
Age 20-29	1	2	0	2	0	5	2.6
Age 30-39	3	3	1	2	0	9	2.22
Age 40+	2	5	0	1	0	8	2
Novice	1	2	0	1	0	4	2.25
Experienced #1	3	3	1	2	0	9	2.22
Experienced #2	4	1	1	0	0	9	2.11
<i>Mean*</i>							
Agree Completely	1						
Somewhat Agree	2						
Neutral	3						
Somewhat Disagree	4						
Disagree Completely	5						

## CHAPTER V: DISCUSSION

Overall, 100% of the participants reported using technology in their post secondary language teaching and in their personal lives. This included a mix of instructors teaching their L1 or an L2, coming from a diverse age and experience ranges, and varying opinions about technology in post secondary language education. With participants reporting a broad spectrum of age and experience levels, it was difficult to position any one age group into one experience level and vice a versa. Hence, age groups and experience levels are not mutually exclusive. This seems to confirm that language educators come into the profession at various points throughout their lives. The data analysis revealed some slight differences (in types of devices, instructional delivery, tools used, and opinions) apparent across either sample populations of age or experience levels. Adhering to the age descriptions of digital natives (post 1984) and digital natives (pre 1984), the data were not that divergent. Consequently, the aggregate of the survey population provides a more relevant descriptive overview of types of technology and domains used by post secondary language instructors. Additionally, while there was some variation in perceptions across the disparate sample populations, they contrasted very little. This was quite evident from the means to various perception questions (referred to in Tables 11-13 and 15-18). Therefore, this discussion focuses largely on the total population rather than distinctions found across sample populations determined by age or experience level.

### **Personal Technology Use and Teacher-Centered Tools**

The primary purpose of this study was to provide an investigation and description of the uses of technology tools by language educators in post secondary education. Participants of this study confirm that technology is being used in both personal and professional domains.

However, in terms of Stephen Bax's notion of normalization (where technology tools are integrated seamlessly) (Bax, 2003, pp. 23-24), the data revealed two important findings: 1. technology tools and devices are more extensively used in their personal lives; and 2. teacher-centered tools are utilized more commonly in their language teaching.

First, it appears that post secondary language instructors have fully integrated technology into their personal lives, but have not achieved the same level of assimilation in their teaching repertoire. As previously noted, all of the instructors own a personal computer and many own at least one other mobile device. Additionally, they actively use a variety of tools for administrative, collaborative, communication, information gathering, multimedia, social media, and other purposes in their personal domain. However, the transfer of their personal use does not completely extend into their professional life. As discussed in the literature review, there are multitudes of outside influences that impact the incorporation of technology tools into teaching practices, including teacher's comfort and skill level. Overall, the teachers, digital native or not, reported that they did not find technology to be very frustrating (Table 11). When coupled with high ownership of various devices across the entire population, this suggests they all enjoy some level of comfort and familiarity with technology.

Second, while a host of technology tools and features are employed in the participants' toolboxes both in the face-to-face and accompanying online environment, these tools are more teacher-centered tools. As described in the literature review, these tools can provide a system of organization, administrative needs, or transparency; and these tools do not promote higher-order thinking skills of students and are not student-centered. In terms of instructional delivery, instructors use very teacher-centered methods (Table 10). While using mobile devices, computers, or smartphones increase the student engagement, 82% of the teachers reported using

this method, but still it ranked fifth in how teachers deliver content. 100% of the participants reported use of a chalkboard or dry erase board, thus suggesting perhaps language instructors still teach by being a *sage on the stage*, at least for part of their teaching. By its nature, CMS / LMS are designed to be mostly teacher-centered. Effective engagement of a CMS / LMS can be integrated well into a language class and provide students with the necessary course components and exposure to authentic materials. However, there was little evidence in this study that teachers were using the discussion features, which would elevate the students' involvement and evoke higher-order learning skills.

### **Professional Development**

In addition to determining that teachers' use of technology was more prevalent in their personal lives, this thesis also identified patterns and trends that influenced instructors' use of technology in teaching. While instructors are susceptible to various influences, teachers in general are considered to be lifelong learners. Even the most experienced instructor can keep learning to stay current in the field, which now includes digital applications. Therefore, the data identify the need for ongoing professional development in terms of technology. Furthermore, instructors in this study seemed to possess self-motivation, a critical component of the learning process, to continue learning about technology, whether it was through organized professional development opportunities or through their own quest. Participants agreed fairly strongly that they like to learn new things by using technology (Table 12). The participants felt even more strongly that they would like to use more technology tools in future teaching (Table 13). Likewise, they felt about the same that they would integrate more technology if they had more training (Table 15). These three factors support that the language teachers in this study were

interested in learning more about technology tools, and eventually wanted to assimilate them into their teaching.

In an era where governments, universities, and departments invest enormous sums of money on technology infrastructure, devices and tools, they strongly encourage the use of technology in teaching, such as clickers, blogs, multimedia presentations, video lectures, and online learning. Overall, instructors reported a level of “somewhat agreement” with the statement that they received enough support through their institution or department (Table 16). This included technology training, the source of 82% of the respondents’ training, and for many their only source of technology training. The participants were also unanimous in that they do not pay for outside technology training. This suggests that technology-training opportunities should continue to take place through language departments and programs, and perhaps take place during an instructor’s normal working hours. Whether technology-training is mandatory or not, holding the training sessions during the normal working hours will help ensure more teachers receive additional skill or tool idea coaching.

Instead of teachers just learning in a classroom environment, they are afforded numerous opportunities to continue to learn and grow. In addition to supporting the need for institutional training of language teachers in technology, findings in this thesis support that teachers learn by mentoring each other and collaborating with colleagues. In examining data, the instructors reported that they received or liked to receive training and ideas through exchanges with others or self-exploration (Tables 14, 17, and 18). This suggests that departments and institutions could foster and support cohorts (Wenzlaff & Wieseman, 2004) or discourse communities (Putnam & Borko, 2000) for collaborative technology learning. By definition, instructors within a department or institution already form a cohort. However, administration and training programs

could promote the collaborative sharing of technology skills and tools among instructors. The notion of a cohort facilitates the individual's beliefs, which are important for learning and positive change to occur (Wenzlaff & Wieseman, 2004). Additionally, individuals feel empowerment and ownership of their skills and knowledge acquired through self-exploration. When augmented by collaborative sharing, this can also promote increased camaraderie among faculty. Moreover, instructors from various experience and age levels can learn from each other, in small group settings or colleague-to-colleague. In terms of time, exchange of skills and ideas can be accomplished in a few minutes, as compared to lengthy in-service sessions. Additionally, the skill or idea exchange is accompanied by experience from a learning curve and practical application, which can decrease a teacher's experimental time with new tools or skills.

The notion of a cohort could also be beneficial in bridging the divide between the personal and professional use of technology. In addition to sharing tips and tricks that one teacher is currently using or technology lesson ideas, colleagues can also share how they transfer skills or tools from their personal use to professional use. Not only are tools and skills necessary for the transfer between the two domains, pedagogically sound application is imperative. One way to accomplish this task is to share experiences with various "apps" available through smartphones, iPads, or other mobile devices. In recent years, several teachers and researchers have been advancing Benjamin Bloom's Taxonomy to twenty-first century relevancy. Among others, Andrew Churches, Kathy Schrock, Allan Carrington, have built on Bloom's work to scaffold higher forms of thinking into learning by creating connections to technology tools that facilitate learning (Allan Carrington's Blog, 2012, July 7, & Churches, 01/04/2009). The tools themselves are not important; it is the application of the activity. Perhaps the most visual presentation of this is Allan Carrington's *Pedagogy Wheel*, which maps various "apps" that are



available on an iPad or smartphone to Bloom’s Taxonomy (Allan Carrington’s Blog, 2012, July 7). The use of these devices and apps make learning more student-centered. Moreover, instructors are able to transfer their know-how and skills from their personal life to their teaching toolbox. Figure 2 is an illustration of Allan Carrington’s most recent version of his *Pedagogy Wheel*.

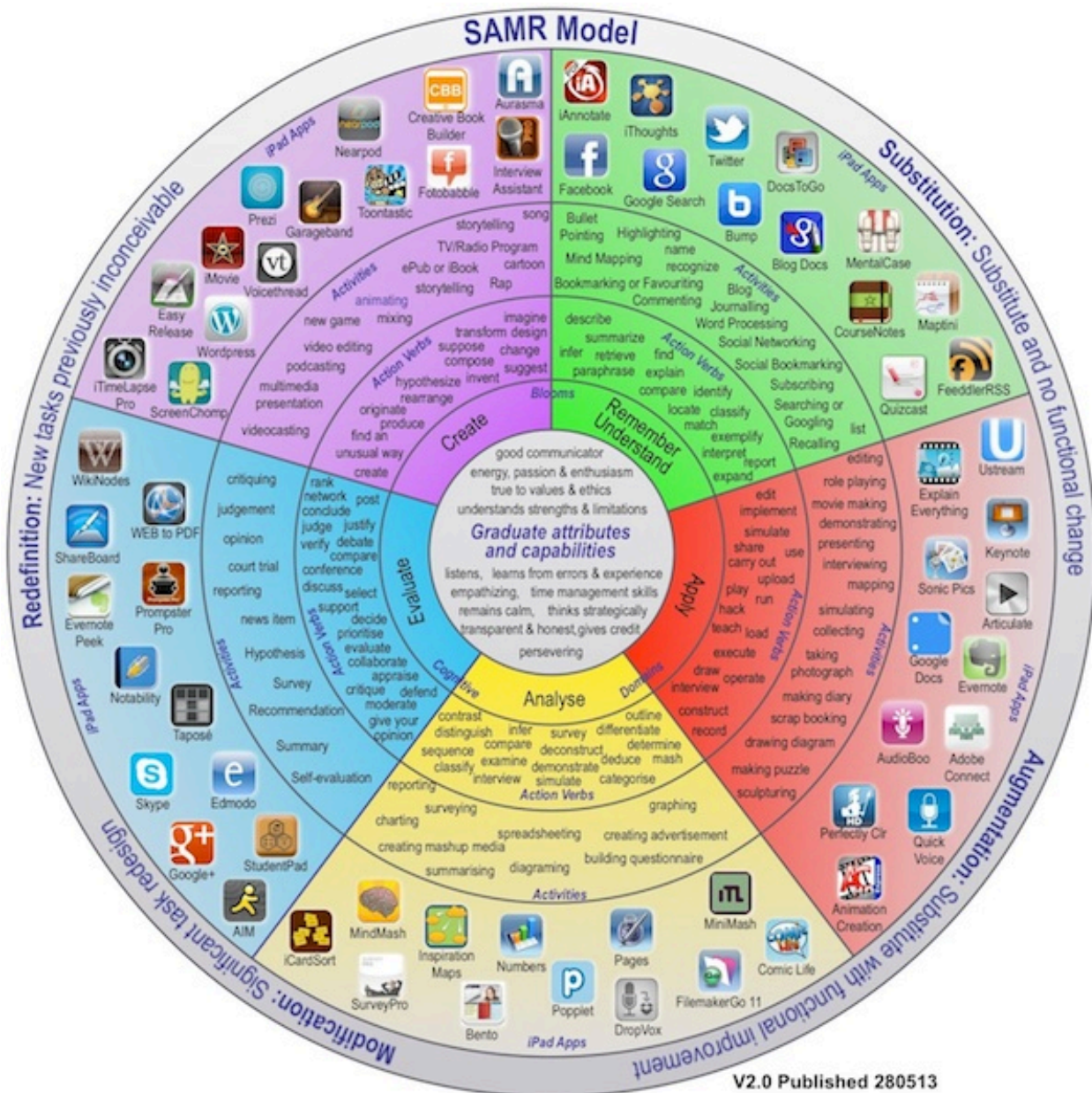


Figure 2: Allan Carrington’s Pedagogy Wheel (Allan Carrington’s Blog, 2012, July 7)

While instructors are conditioned to be lifelong learners, this is especially true when it comes to the ever-advancing world of technology. As noted in the literature review, regardless of how technology skills and ideas are acquired, instructors need time to experiment with the tools or skills. This is essential for building an instructor's self-efficacy, which will impact the likelihood that the newly acquired skill or tool will be integrated into practice.

## CHAPTER VI: IMPLICATIONS AND CONCLUSION

Perhaps more so than other disciplines within in the social sciences, language education has had and continues to have a rich connection with technology integration. There is an undeniable connection between the evolution of pedagogical methods for language teaching and technology tools available. As the world becomes more intertwined by technology and learners grow up immersed in a tech savvy digital environment, the future of language education must embrace the use of technology. At this point, post secondary language professionals have made great strides to integrate digital technology tools into their practices; however, it has not yet become normalized to the same extent as other teaching tools, such as textbooks, paper, and pencils. While instructors in this study appear to incorporate and depend on technology devices and functions in their personal lives, the application of similar tools and features is not as prevalent in their teaching. Additionally, in regards to their professional use of technology tools, the instructors utilize more teacher-centered aspects of technology (e.g. largely for administrative purposes, instructional delivery, or enrichment). Thus, learners are receiving information, but are not actively and authentically participating in their learning.

In order for instructors to continue integrate technology into their toolbox while adopting more student-centered learning opportunities; educators need continual training and exchange of ideas. Based on participants' desire to integrate more technology into their teaching, this study recommends that professional development include the promotion of cohorts, where teachers at various ages and experience levels are encouraged to exchange ideas for using technology, and also technical know-how. This is not to suggest that institutions, departments, and programs should exclude or abandon training of technology tools and computer skills from their current

offerings. However, topics could be expanded to reflect the transfer of technology applications and features from their personal use to pedagogically sound purposes in their teaching. Many post secondary language-teaching positions require instructors to stay current in their field, which includes staying current with trends in pedagogy and the digital age. As technology keeps advancing, post secondary language instructors need to learn how to transfer their technology skills and know-how from their personal life to their professional life, adopt more student-centered digital teaching practices, and play an active role in their professional development in regards to technology.

The results of this study have implications for practice. By understanding instructors' perceptions and skills, professional development coordinators can more closely align training sessions to the needs of their instructors. Additionally, by promoting cohorts, instructors at various ages and experience levels are able to exchange ideas and technical know-how. This also provides for increased camaraderie and communication within the institution. This type of sharing also facilitates the idea that technology is a lifelong learning process. Developing the necessary skills today need to continually be improved upon or expanded. Likewise, the availability and variety of technology tools proceeds to expand exponentially, and some of these resources are more pedagogically sound than others. By participating in an exchange, it can reduce an individual's time of experimentation and provide a more meaningful integration of technology tools into practice.

While this study has some limitations, it serves as a platform from which additional studies can be based. A larger population pool would yield more data for analysis or capture a broader cross section of post secondary language instructors. A future study of this nature could be expanded for a larger population pool or tweaked to be applicable to a single department or

institution. Another limitation to this study was that the responses were general and self-reported. Instructors were not asked about frequency of use or proficiency level various tools were utilized. While these specific questions do not impact the general description tools used in language teaching, a difference might become more apparent with lower proficiency levels receiving more teacher-centered tools, and higher levels receiving more student-centered tools. A qualitative or empirical study could also be based on this study, and provide more evidence of the tools being employed. Results could be further analyzed to provide qualitative support for language teacher training for pre- and in- service instructors and their professional development. In addition to training, the results could provide institutions and departments with data to support budgeting for technology tools (e.g. infrastructure, hardware, software, subscriptions, and licenses) and resources (e.g. personnel, technical support, and training).

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**APPENDIX A: Email to Potential Participants in the Research Study**

Greetings Post Secondary Language Educators,

My name is Kirsten Stauffer, and I am a second year MA student in the University of Colorado Boulder's Linguistics program. I invite you to take part in a research study examining the ***Technology in Post Secondary Language Education*** because you are a language educator with language teaching responsibilities at the University of Colorado Boulder or other post secondary/higher-education institution or program. Specifically, the brief questionnaire asks about your personal technology use, use of technology in teaching, and a few opinions about statements regarding the use of technology in language teaching.

The survey should take **10 minutes** (or less) to complete. Participation is completely voluntary. You may choose to decline entirely, skip any question(s) that you do not want to answer, or stop taking this survey at any time. I value your input. There will be no repercussions for refusal to participate or withdrawing from the study.

You will **not** be asked to provide any identifying information and your IP address will not be recorded. Therefore, your answers cannot be linked to you specifically. By completing this questionnaire, there is very minimal risk to you, and you will not receive any direct benefit for completing it.

By clicking on the link to the survey below, you are consenting to participate in the study.

To take the survey, please click this link:

[https://cuboulder.qualtrics.com/SE/?SID=SV\\_5bzLdmUpywWw3at](https://cuboulder.qualtrics.com/SE/?SID=SV_5bzLdmUpywWw3at)

The survey will be active through May 13, 2014.

If you have questions, concerns, or complaints, or think the research has hurt you, talk to the Primary Investigator:

Kirsten Stauffer

University of Colorado Boulder

kirsten.stauffer(at)colorado.edu

This research has been reviewed and approved by an Institutional Review Board ("IRB"). If you have any questions or concerns regarding the study and would like to talk with someone other than the researcher, you are encouraged to contact the University of Colorado Human Research and Institutional Review Board, ARC Room A15, 3100 Marine Street, Boulder, CO 80309-0563. (303)735-3702 or irbadmin@colorado.edu.

Thank you for your consideration and time!

**APPENDIX B: Questionnaire****Default Question Block****An Investigation of Technology in Post Secondary Language Education  
Informed Consent*****Purpose of the study:***

This survey accompanies a thesis examining current self-reported activities and perceptions of post secondary technology use in language teaching.

***Participants:***

The survey is open to faculty and graduate students with language teaching responsibilities at the University of Colorado Boulder or language educators affiliated with other post secondary/higher-education institutions or programs. (Language refers to a second/foreign language or bilingual program: i.e. English as a Second Language - ESL, French as a Foreign Language, Bilingual English-Spanish, etc. Computer languages and sign languages are excluded.)

***What to expect:***

The questionnaire consists of closed-ended questions in four sections: Biographical & Institutional Information, Personal Technology Use, Technology Use in Teaching, and Opinions about Technology Use. No identifying information will be collected. The survey should take approximately 10 minutes to complete.

***Risks or discomforts:***

No risks or discomforts are anticipated from taking part in this study. If you feel uncomfortable with a question, you can skip the question or withdraw from the study altogether. If you decide to quit at any time before you have finished the questionnaire, your answers will NOT be recorded.

***Confidentiality:***

Your responses will be kept completely confidential and anonymous. The questionnaire does NOT request identifiable information (e.g. name, email address, etc.), and your IP address will NOT be recorded. Only the researcher will see the anonymous individual survey responses.

***Contact information:***

If you have concerns or questions about this study, please contact the Principal Investigator - Kirsten Stauffer at [kirsten.stauffer@colorado.edu](mailto:kirsten.stauffer@colorado.edu).

Thank you for contributing to the knowledge about the current state of technology in post secondary language education at the University of Colorado Boulder.

***By beginning the survey, you acknowledge that you have read this information and agree to participate in the research with the knowledge that you are free to withdraw your participation at any time.***

**Part 1: Biographical & Institutional Information**

What is your first/native language (L1)?

- Arabic
- Chinese
- English
- French
- German

- Italian
  - Japanese
  - Korean
  - Russian
  - Spanish
  - Other
- 

**What language(s) do you teach? (Click all that apply)**

- Arabic
  - Chinese
  - English
  - French
  - German
  - Italian
  - Japanese
  - Korean
  - Russian
  - Spanish
  - Other
- 

**What is your age?**

- 20 - 29 years old
- 30 - 39 years old
- 40 - 49 years old
- 50 - 59 years old
- 60 years old or older

**Total number of years teaching language:**

**Current state (where instruction takes place):**

**Type of post secondary institution you are currently teaching at:  
(If teaching at more than one institution, please select your primary location of teaching.)**

- Adult Basic Education / Adult Community / Literacy Organization

Adult Basic Education / Adult Community / Literacy Organization

College / University

Community College

Private Language School

Other

**Type of program at Adult Basic Education / Adult Community / Literacy Organization:**

Bilingual Program

Foreign Language Program (i.e. Modern Languages)

Intensive English Program (IEP)

Second Language Program (e.g. English as a Second Language, Spanish as a Second Language, German as a Second Language)

Teacher Training / Development Program

Other

**Type of program at College / University:**

Bilingual Program

Foreign Language Program (i.e. Modern Languages)

Intensive English Program (IEP)

Second Language Program (e.g. English as a Second Language, Spanish as a Second Language, German as a Second Language)

Teacher Training / Development Program

Other

**Type of program at Community College:**

Bilingual Program

Foreign Language Program (i.e. Modern Languages)

Intensive English Program (IEP)

Second Language Program (e.g. English as a Second Language, Spanish as a Second Language, German as a Second Language)

Teacher Training / Development Program

Other

**Type of program at Private Language School:**

Bilingual Program

Foreign Language Program (i.e. Modern Languages)

—

- Intensive English Program (IEP)
- Second Language Program (e.g. English as a Second Language, Spanish as a Second Language, German as a Second Language)
- Teacher Training / Development Program
- Other

**Type of program at Other:**

- Bilingual Program
- Foreign Language Program (i.e. Modern Languages)
- Intensive English Program (IEP)
- Second Language Program (e.g. English as a Second Language, Spanish as a Second Language, German as a Second Language)
- Teacher Training / Development Program
- Other

**Length of one instructional session / period at your primary teaching institution:**

- 1-4 weeks
- 5-8 weeks
- 9-16 weeks
- 17-24 weeks
- 25 weeks or more
- Open enrollment (no start or end date)
- Other

**Where do you receive technology training?  
(Please click all that apply.)**

- Colleague
- Conference
- Friend or family member
- Internet or YouTube searches
- My department / program / institution
- Online modules (from MOOCs, software companies, etc.)
- Other institution (I pay)
- Self (experiment)
- Other
- I do not receive / seek out any training.



**Part 2: Personal Technology Use**

**Do you have a personal smartphone (e.g. Android, Blackberry, iPhone, Samsung, etc.)?**

- Yes
- No

**Do you use your smartphone for professional purposes?**

- Yes
- No

**Do you have a personal computer (e.g. Windows, Mac, etc.)?**

- Yes
- No

**Do you use your personal computer for professional purposes?**

- Yes
- No

**Do you have a personal tablet or other mobile device (e.g. Android, Google, iPad, Kindle, Microsoft, Nook, Samsung, etc.)?**

- Yes
- No

**Do you use your personal tablet or other mobile device for professional purposes?**

- Yes
- No

**On a smartphone / mobile device / computer, do you use the following functions for personal use?**

	Yes	No
Access, create, share, edit, or retrieve documents stored on the cloud (e.g. Dropbox, Evernote, Google Docs, etc.)	<input type="radio"/>	<input type="radio"/>
Audio recorder	<input type="radio"/>	<input type="radio"/>
Blogging	<input type="radio"/>	<input type="radio"/>
Calculator	<input type="radio"/>	<input type="radio"/>
Calendar or reminders (e.g.	<input type="radio"/>	<input type="radio"/>

appointments, tasks, etc.)	<input type="radio"/>	<input type="radio"/>
Clock (including alarm clock, stopwatch, timer, etc.)	<input type="radio"/>	<input type="radio"/>
Documents or presentations (e.g. word processing, spreadsheets, presentations)	<input type="radio"/>	<input type="radio"/>
Email	<input type="radio"/>	<input type="radio"/>
Games	<input type="radio"/>	<input type="radio"/>
Instant messages, chatrooms, texting	<input type="radio"/>	<input type="radio"/>
Internet browsing or searches	<input type="radio"/>	<input type="radio"/>
Music (e.g. GarageBand, mp3 player, podcasts, web radio, etc.)	<input type="radio"/>	<input type="radio"/>
News or weather source	<input type="radio"/>	<input type="radio"/>
Photo or video (including camera, editing, sharing, storage)	<input type="radio"/>	<input type="radio"/>
Reading	<input type="radio"/>	<input type="radio"/>
Social media (e.g. Facebook, Foursquare, Instagram, LinkedIn, Pinterest, Twitter, etc.)	<input type="radio"/>	<input type="radio"/>
Specific programs or applications (including business, GPS or navigation, graphic design, food & drink, finance, health & fitness, hobby, home & garden, kids, lifestyle, medical, reference, shopping, sports, travel, etc.)	<input type="radio"/>	<input type="radio"/>
Telephone	<input type="radio"/>	<input type="radio"/>
Video chats (e.g. Facetime, Google Hangout, ooVoo, Skype, etc.)	<input type="radio"/>	<input type="radio"/>
Video watching or sharing (e.g. Hulu, Netflix, TED, YouTube, etc.)	<input type="radio"/>	<input type="radio"/>
Other	<input type="radio"/>	<input type="radio"/>

**Part 3: Technology Use in Teaching**

During one session, how do you deliver instructional content in any of your courses?

	Yes	No
Audio	<input type="radio"/>	<input type="radio"/>
Chalkboard or dry erase board	<input type="radio"/>	<input type="radio"/>
Clickers or other digital survey tool	<input type="radio"/>	<input type="radio"/>
Digital presentations (e.g. Keynote, PowerPoint, Prezi, etc.)	<input type="radio"/>	<input type="radio"/>

etc.)

Flipped Classroom (students watch tutorials / read instructional content prior to class)



Mobile device, computer, or smartphone



Overhead projector with transparencies



Videos



Other



**Do you use a course management system (e.g. Blackboard, Desire2Learn, Moodle) for your class(es)?**

Yes

No

**Which of the following course management system features do you use?  
(Please click all that apply.)**

Attendance tracking

Check for plagiarism

Discussion boards or chatrooms

Dropbox for students to submit assignments

Gaming

Grade book

Post homework

Post optional reading, video, or audio files

Post pre-class assignments (flipped classroom materials)

Post required readings

Post required videos or audio files

Quizzes

Surveys

Unlocking features (students complete certain tasks or receive certain scores to receive additional assignments or rewards)

Other

**Do you have a professional website?**

Yes

No

**Does your professional website contain course / class specific information?**

Yes

No

**What kind of course / class specific information do you have on your professional website?  
(Please click all that apply.)**

- Additional resources / links
- Class blog
- Games (or links to games)
- Homework / project assignments
- Listing of current classes
- Optional assignments / readings / materials
- Required readings
- Other
- None of these

**During the duration of one semester / session / course, do you make use of the technology tools listed below in  
any one given lesson?  
(Please click all that apply.)**

- Audio files
- Audio labs
- Blogs (audio or text)
- Bulletin or discussion boards
- Computer labs
- Digital games (designed for language pedagogy)
- Digital games (other)
- Digital storytelling (e.g. Camtasia Studio, iMovie, PowerPoint with voice over, VoiceThread, etc.)
- Email (e.g. administrative, assignments, communication, etc.)
- Language specific programs
- Online dictionaries / concordancers
- Podcasts / videocasts
- Repetitive audio drills
- Shared documents (students collaborate to create documents / presentations)
- Social media (e.g. Facebook, Twitter, etc.)
- Student audio / video recordings
- Videos / other digital images
- Virtual worlds (e.g. Second Life, Twinity, etc.)
- Voice over IP applications (e.g. Skype, ooVoo, etc.)
- WebQuests (students find information on the Internet)
- Wikis
- Word processing

- word processing
- Other
- I do not use any of these.

**Part 4: Opinions About Technology Use**

How strongly do you agree with the following statements?

	Agree Completely	Somewhat Agree	Neutral	Somewhat Disagree	Disagree Completely
I find technology to be frustrating.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I like learning new things by using technology tools.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I receive enough support (funding, IT assistance, training, etc.) from my institution / department to teach with technology.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I receive new ideas for using technology tools from colleagues / friends.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I search out new ideas / ways to teach with technology on my own.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would integrate more technology if I had more training.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In the future, I would like to use more technology tools in my teaching.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My institution / department mandates the use of technology in language teaching.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My students are more likely to do homework / assignments when technology is used.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My students know more about technology than I do.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Planning a lesson using technology purposefully takes longer than a lesson without technology.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Someday, language teachers will be replaced by computer learning.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Block 1**

**Please click the submit button to record your answers. Results will be available upon request - [kirsten.stauffer\(at\)colorado.edu](mailto:kirsten.stauffer@colorado.edu). Thank you for participating in this survey!**

**APPENDIX C: Additional Data**

**Participant Pool:** 22 participants

**Age**

Age 20-29	
Participant	Years of Experience
2	2
3	5
6	3.5
12	5
15	3
Count	5
Mean	3.7
Median	3.5
Std Dev	1.30384048

Age 30-39	
Participant	Years of Experience
1	13
8	5
10	17
11	16
16	8
18	4.5
19	8
20	5
20	16
Count	9
Mean	10.2777778
Median	8
Std Dev	5.21482928

Age 40+

Age 40-49		Age 50-59		Age 60 +	
Participant	Years of Experience	Participant	Years of Experience	Participant	Years of Experience
4	7	5	30	9	18
17	20	7	0	Count	1
Count	2	13	16		
		14	22		
Mean	13.5	21	7	Count	5
Median	13.5	Count		Mean	15
Std Dev	9.19238816	Mean		Median	16
		Std Dev		Std Dev	11.8743421

**Experience**

**Years of Experience by Category**

Novice			Experienced 1			Experienced 2		
Participant	Years of Experience	Age	Participant	Years of Experience	Age	Participant	Years of Experience	Age
2	2	20-29	3	5	20-29	1	13	30-39
6	3.5	20-29	4	7	40-49	5	30	50-59
7	0	50-59	8	5	30-39	9	18	60 +
15	3	20-29	12	5	20-29	10	17	30-39
Count	4		16	8	30-39	11	16	30-39
			18	4.5	30-39	13	16	50-59
Mean	2.125		19	8	30-39	14	22	50-59
Median	2.5		20	5	30-39	17	20	40-49
Std Dev	1.54784797		20	7	50-59	22	16	40-49
			Count	9		Count	9	
			Mean	6.05555556		Mean	18.6666667	
			Median	5		Median	17	
			Std Dev	1.42400062		Std Dev	4.97493719	

**Devices**

<b>Personal Devices</b>														
<i>Answer</i>	<i>Total Response</i>	<i>%</i>	<i>Age 20-29</i>	<i>%</i>	<i>Age 30-39</i>	<i>%</i>	<i>Age 40 +</i>	<i>%</i>	<i>Novice</i>	<i>%</i>	<i>Experienced 1</i>	<i>%</i>	<i>Experienced 2</i>	<i>%</i>
Smartphone (e.g. Android, Blackberry, iPhone, Samsung, etc.)	18	86%	5	100%	7	88%	6	75%	4	100%	7	88%	6	75%
No Smartphone	3	14%	0	0%	1	13%	2	25%	0	0%	1	13%	2	25%
<i>Total Responses</i>	<i>21</i>		<i>5</i>		<i>8</i>		<i>8</i>		<i>4</i>		<i>8</i>		<i>8</i>	
Personal Computer (e.g. Windows, Mac, etc.)	22	100%	5	100%	9	100%	8	100%	4	100%	9	100%	9	100%
No Personal Computer	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
<i>Total Responses</i>	<i>22</i>		<i>5</i>		<i>9</i>		<i>8</i>		<i>4</i>		<i>9</i>		<i>9</i>	
Tablet or Other Mobile Device (e.g. Android, Google, iPad, Kindle, Microsoft, Nook, Samsung, etc.)	14	64%	4	80%	7	78%	3	38%	3	75%	7	78%	5	56%
No Tablet or Other Mobile Device	8	36%	1	20%	2	22%	5	63%	1	25%	2	22%	4	44%
<i>Total Responses</i>	<i>22</i>		<i>5</i>		<i>9</i>		<i>8</i>		<i>4</i>		<i>9</i>		<i>9</i>	

<b>Personal Devices Used for Professional Purposes</b>														
<i>Answer</i>	<i>Total Response</i>	<i>%</i>	<i>Age 20-29</i>	<i>%</i>	<i>Age 30-39</i>	<i>%</i>	<i>Age 40 +</i>	<i>%</i>	<i>Novice</i>	<i>%</i>	<i>Experienced 1</i>	<i>%</i>	<i>Experienced 2</i>	<i>%</i>
Smartphone (e.g. Android, Blackberry, iPhone, Samsung, etc.)	11	61%	3	60%	4	57%	4	67%	3	75%	4	57%	4	67%
No Smartphone	7	39%	2	40%	3	43%	2	33%	1	25%	3	43%	2	33%
<i>Total Responses</i>	<i>18</i>		<i>5</i>		<i>7</i>		<i>6</i>		<i>4</i>		<i>7</i>		<i>6</i>	
Personal Computer (e.g. Windows, Mac, etc.)	22	100%	5	100%	9	100%	8	100%	4	100%	9	100%	9	100%
No Personal Computer	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
<i>Total Responses</i>	<i>22</i>		<i>5</i>		<i>9</i>		<i>8</i>		<i>4</i>		<i>9</i>		<i>9</i>	
Tablet or Other Mobile Device (e.g. Android, Google, iPad, Kindle, Microsoft, Nook, Samsung, etc.)	8	57%	1	25%	5	71%	2	67%	2	67%	5	71%	4	80%
No Tablet or Other Mobile Device	6	43%	3	75%	2	29%	1	33%	1	33%	2	29%	1	20%
<i>Total Responses</i>	<i>14</i>		<i>4</i>		<i>7</i>		<i>3</i>		<i>3</i>		<i>7</i>		<i>5</i>	

**Instructional Delivery & CMS / LMS**

Instructional Content Delivery																								
Teacher Centered	General					20-29			30-39			40+			Novice			Experienced 1			Experienced 2			
	Yes	%	No	%	Response	Yes	%	Response	Yes	%	No	Response	Yes	%	Response	Yes	%	Response	Yes	%	Response	Yes	%	Response
Audio	19	86%	3	14%	22	4	80%	5	8	89%	1	9	7	88%	8	3	75%	4	8	89%	9	9	100%	9
Chalkboard or dry erase board	22	100%	0	0%	22	5	100%	5	9	100%	0	9	8	100%	8	4	100%	4	9	100%	9	9	100%	9
Digital presentations	20	91%	2	9%	22	5	100%	5	9	100%	0	9	6	75%	8	4	100%	4	9	100%	9	8	89%	9
Overhead projector with transparencies	3	15%	17	85%	20	0	0%	0	2	22%	7	9	1	12%	8	1	33%	3	2	22%	9	0	0%	9
Videos	21	95%	1	5%	22	5	100%	5	9	100%	0	9	7	88%	8	4	100%	4	9	100%	9	9	100%	9
Student Centered	General					20-29			30-39			40+			Novice			Experienced 1			Experienced 2			
	Yes	%	No	%	Response	Yes	%	Response	Yes	%	No	Response	Yes	%	Response	Yes	%	Response	Yes	%	Response	Yes	%	Response
Mobile device, computer, or smartphone	18	90%	2	10%	20	3	100%	3	8	89%	1	9	7	88%	8	3	100%	3	8	89%	9	8	89%	9
Teacher or Student Centered (depending on usage)	General					20-29			30-39			40+			Novice			Experienced 1			Experienced 2			
	Yes	%	No	%	Response	Yes	%	Response	Yes	%	No	Response	Yes	%	Response	Yes	%	Response	Yes	%	Response	Yes	%	Response
Clickers	1	5%	19	95%	20	0	0%	3	0	0%	9	9	1	12%	8	0	0%	3	0	0%	9	1	11%	9
Flipped Classroom (students watch tutorials / read instructional content prior to class)	8	38%	13	62%	21	2	50%	4	4	44%	5	9	2	25%	8	1	33%	3	4	44%	9	2	22%	9

Use of a CMS / LMS														
Answer	General		Age 20-29		Age 30-39		Age 40+		Novice		Experienced 1		Experienced 2	
	Response	%	Response	%	Response	%	Response	%	Response	%	Response	%	Response	%
Yes	14	78%	3	60%	6	100%	5	71%	2	50%	6	100%	8	100%
No	4	22%	2	40%	0	0%	2	29%	2	50%	0	0%	0	
Total	8		5		6		7		4		6		8	

CMS / LMS Functions								
Teacher Centered	Yes	%	Student Centered	Yes	%	Teacher & Student Centered (depending on usage)	Yes	%
Attendance tracking *	7	50%	Discussion boards or chat rooms	2	14%	Quizzes *	4	29%
Check for plagiarism *	9	64%	Gaming	1	7%	Surveys *	1	7%
Dropbox for students to submit assignments *	9	64%	Unlocking features (students complete certain tasks or receive certain scores to receive additional assignments or rewards) *	0	0%			
Grade book *	11	79%						
Post homework *	9	64%						
Post optional reading, video, or audio files *	9	64%						
Post pre-class assignments (flipped classroom materials) *	4	29%						

\* Notes the function as administrative or instructional delivery in nature.

Total of 12 out of 16 respondents use a CMS / LMS



**Tools**

Tool Functions in Personal Domains																							
Type of Function	Personal Domain	General			Ages 20-29			Ages 30-39			Ages 40+			Novice			Experienced 1			Experienced 2			
	Personal Use Functions	Yes	%	Response s	Yes	%	Response s	Yes	%	Response s	Yes	%	Response s	Yes	%	Response s	Yes	%	Response s	Yes	%	Response s	
Administrative	Calculator	22	100%	22	5	100%	5	9	100%	9	8	100%	8	4	100%	4	9	100%	9	9	100%	9	
	Calendar or reminders (e.g. appointments, tasks, etc.)	20	91%	22	5	100%	5	7	78%	9	5	63%	8	4	100%	4	7	78%	9	4	44%	9	
	Clock (including alarm clock, stopwatch, timer, etc.)	20	91%	22	5	100%	5	9	100%	9	6	75%	8	3	75%	4	9	100%	9	7	78%	9	
Collaborative	Access, create, share, edit, or retrieve documents stored on the cloud (e.g. Dropbox, Evernote, Google Docs, etc.)	19	86%	22	5	100%	5	9	100%	9	5	63%	8	4	100%	4	9	100%	9	6	67%	9	
Communication	Email	22	100%	22	5	100%	5	9	100%	9	8	100%	8	4	100%	4	9	100%	9	9	100%	9	
	Telephone	19	86%	22	5	100%	5	8	89%	9	6	75%	8	4	100%	4	8	89%	9	7	78%	9	
	Video chats (e.g. Facetime, Google Hangout, ooVoo, Skype, etc.)	19	86%	22	5	100%	5	8	89%	9	6	75%	8	4	100%	4	8	89%	9	6	67%	9	
Information	Internet browsing or searches	21	95%	22	5	100%	5	9	100%	9	8	100%	8	4	100%	4	9	100%	9	9	100%	9	
	News or weather source	21	95%	22	5	100%	5	9	100%	9	7	88%	8	4	100%	4	9	100%	9	8	89%	9	
	Specific programs or applications (incl. business, GPS or navigation, graphic design, food & drink, finance, health & fitness, hobby, home & garden, kids, lifestyle, medical, reference, shopping, sports, travel, etc.)	21	95%	22	5	100%	5	9	100%	9	7	88%	8	4	100%	4	9	100%	9	9	100%	9	
Multimedia	Audio recorder	16	73%	22	4	80%	5	7	78%	9	5	63%	8	3	75%	4	7	78%	9	5	56%	9	
	Music (e.g. GarageBand, mp3 player, podcasts, web radio, etc.)	19	86%	22	4	80%	5	8	89%	9	7	88%	8	3	75%	4	8	89%	9	7	78%	9	
	Photo or video (incl. camera, editing, sharing, storage)	22	100%	22	5	100%	5	9	100%	9	8	100%	8	4	100%	4	9	100%	9	9	100%	9	
	Video watching or sharing (e.g. Hulu, Netflix, TED, YouTube, etc.)	21	95%	22	5	100%	5	9	100%	9	7	88%	8	4	100%	4	9	100%	9	8	89%	9	
Social Media	Blogging	3	14%	22	1	20%	5	2	22%	9	0	0%	8	0	0%	4	2	22%	9	1	11%	9	
	Instant messages, chatrooms, texting	22	100%	22	5	100%	5	9	100%	9	7	88%	8	4	100%	4	9	100%	9	8	89%	9	
	Social media (e.g. Facebook, Foursquare, Instagram, LinkedIn, Pinterest, Twitter, etc.)	20	91%	22	4	80%	5	9	100%	9	7	88%	8	3	75%	4	9	100%	9	8	89%	9	
Other	Documents or presentations (e.g. word processing, spreadsheets, presentations)	20	91%	22	4	80%	5	9	100%	9	7	88%	8	3	75%	4	9	100%	9	8	89%	9	
	Games	12	57%	21	5	100%	5	4	44%	9	3	43%	7	4	100%	4	5	56%	9	4	44%	9	
	Reading	16	73%	22	3	60%	5	8	89%	9	5	63%	8	3	75%	4	8	89%	9	5	56%	9	

**Tool Functions in Professional Domains**

Type of Function	Professional Domain	General			Professional Domain	General			Professional Domain	General	
	Professional Use Functions	Yes	%	Responses	Instructional Delivery	Yes	%	Responses	CSM or Professional Website	Yes	%
Administrative									Grade Book	11	79%
									Attendance tracking	7	50%
									Check for plagiarism	9	64%
									Dropbox for students to submit assignments	9	64%
									Post homework assignments	9	64%
									Quizzes	4	29%
									Surveys	1	7%
Collaborative	Shared documents (students collaborate to create documents / presentations)	7	32%	22							
	Wikis	1	5%	22							
Communication	Email	18	82%	22							
	Voice over IP applications (e.g. Skype, ooVoo, etc.)	0	0%	22							
Information	WebQuests (students find information on the Internet)	3	14%	22					Additional resources / links		
	Online dictionaries / concordancers	13	59%	22					Optional assignments / readings/ materials	9	64%
	Language specific programs	6	27%	22							
Multimedia	Student audio / video recordings	18	73%	22							
	Audio files	20	91%	22	Audio	19	86%	22			
	Digital storytelling (e.g. Camtasia Studio, iMovie, PowerPoint with voice over, VoiceThread, etc.)	3	14%	22							
	Videos / other digital images	17	77%	22	Flipped classroom (students watch tutorials / read instructional content prior to class)	8	38%	21	Post pre-class assignments (flipped classroom materials)	4	29%
	Podcasts / videocasts	5	23%	22	Videos	21	95%	22	Post required videos or audio files	4	29%
	Audio labs	2	9%	22							
	Repetitive audio drills	5	23%	22							
Social Media	Blogs (audio or text)	2	9%	22					Class blogs		
	Bulletin or discussion boards	8	36%	22					Discussion boards or chatrooms	2	14%
	Social Media (e.g. Facebook, Twitter, etc.)	2	9%	22							
Other	Word processing	15	68%	22	Digital presentations (e.g. Keynote, PowerPoint, Prezi, etc.)	20	91%	22			
	Digital games (designed for language pedagogy)	4	18%	22					Gaming	1	7%
	Digital games (other)	3	14%	22					Games (or links to games)		
	Virtual worlds (e.g. Second Life, Twinity, etc.)	0	0%	22					Unlocking features (students complete certain tasks or receive certain scores to receive additional assignments or rewards)	0	0%
	Computer labs	13	59%	22							
									Required readings	5	36%